



11/70
Engineering Drawings
Digital Equipment Corporation

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DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE		SEQUENCE
DRAWING DIRECTORY 11/70 (SHEET 1 ONLY)	B-DD-11/70-0	
DRAWING DIRECTORY KB11-B	B-DD-KB11-B (PRINT SET #1 ONLY)	
DRAWING DIRECTORY H7420	B-DD-H7420-0	
DRAWING DIRECTORY KB11-C	B-DD-KB11-C (PRINT SET #2 ONLY)	
DRAWING DIRECTORY KW11-L	B-DD-KW11-L	
DRAWING DIRECTORY DL11-A	B-DD-DL11-A	
DRAWING DIRECTORY MJ11-0	B-DD-MJ11-0	
MASTER PARTS LIST KM11	A-ML-KM11-0	
TERMINATOR BOOTSTRAP	D-CS-M9301-0-1	
BUS TERMINATOR	D-CS-M9302-0-1	
TERMINATOR H873	D-CS-H873-0-1	
UNIT ASSY 11/70	E-UA-11/70-0-0	
UNIT ASSY 11/70 (PL)	A-PL-11/70-0-0	
PWR. SYSTEM CONFIG.	D-IC-11/70-0-2	
HARNESS PWR.	J-IA-7011051 -0-0	
I/O CABLE BC06R	D-UA-BC06R-0-0	
SHIPPING LIST 11/70	A-PL-11/70-0-3	
SYSTEM EXPANSION 11/70	E-AR-11/70-0-1	
11/70 SYSTEM EXPANSION		
OPTION LIST	C-PL-11/70-0-4	
11/77 SYSTEM EXPANSION		
OPTION LIST	C-PL-11/77-0-1	
11/70 SYSTEM MAINTENANCE		
TOOLS	A-PL-SP70-KA-0	

UNIT VARIATIONS		PRINT SET	
VAR	TITLE	1	2
11/70-CA	KB11-B, KW11-L, DL11-A	X	
	MJ11-AY 115V		
11/70-CB	KB11-B, KW11-L, DL11-A	X	
	MJ11-AZ 230V		
11/70-MA	KB11-C, KW11-L, DL11-A,		X
	MJ11-AY 115V		
11/70-MB	KB11-C, KW11-L, DL11-A,		X
	MJ11-AZ 230V		
11/70-ME	KB11-C, M9301-YH, KW11-L		X
	DL11-A, MJ11-AA, H9506-A		
	86L-D, 115V (3 PHASE)		
11/70-MF	KB11-C, M9301-YH, KW11-L		X
	DL11-A, MJ11-AB, H9506-A		
	86L-E, 230V (3 PHASE)		
11/70-MC	KB11-C, KW11-L, DL11-A,		X
	MJ11-BY 115V		
11/70-MD	KB11-C, KW11-L, DL11-A,		X
	MJ11-BZ 230V		
11/70-MH	KB11-C, M9301-YC, KW11-L,		X
	DL11-A, MJ11-BA, H9506-A		
11/70-MJ	KB11-C, M9301-YC, KW11-L,		X
	DL11-A, MJ11-BB, H9506-A		

CAUTION:
SHEETS 2 THRU 7 ARE FOR 11/70-CA, CB, MA, MB, MC & MD.
SHEETS 8 THRU 11 ARE FOR 11/70-ME, MF, MH & MJ

REVISIONS		USED ON OPTION/MODEL		DATE	TITLE	SIZE	CODE	NUMBER	REV
DATE	CHG. NO.			DATE	DRAWING DIRECTORY	D	CD	11/70-0	PL
4/75	1170-00001			2/21/75	11/70				
5/75	1170-00002			3/21/75					
8/75	1170-00003			3/25/75					
NOV-75	1170-00004			4/21/75					
JAN-76	1170-00006								
7/76	1170-00007								
JULY-76	1170-00008								
8-76	1170-00009								
2-77	1170-00010								
3-77	1170-00011								

DEC 16-13251-1062-1A-R972

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NOTE:
 1 t* BUS PAUSE =
 t2 FOR UNIBUS CYCLES
 t3 FOR CACHE CYCLES

- FET.00 (217)
- FET.01 (331)
- FET.02 (332)
- FET.03 (334)
- FET.04 (164)
- FET.05 (126)
- FET.06 (373)
- FET.07 (237)
- FET.08 (356)
- FET.09 (265)

START FETCH NEXT INSTR
 CLEAR INSTR REG
 t1 BA ← PCB; BC ← DATI
 t2 SHFR ← SR - SR
 t3 BUST; CLEAR FLAGS
 t4 IR ← SHFR

BEN/2 (240)
 BRQ

BRK.00
 12 (240)

- FET.10 (264)
- FET.11 (321)
- FET.12 (322)
- FET.13 (324)

GET INSTR STEP PC
 BEYOND
 t1 BA ← PCB; BC ← DATI
 t2 SHFR ← PCB + 2
 t3 BRQ STROBE
 t4 BUS PAUSE
 t5 PCA ← PCB + 2
 t6 IR ← BUS; BR ← B. 5
 PCB ← PCA

IRD.00 (393)

IRD.00 (393)
 DECODE THIS INSTR STEP
 PCA BEYOND; READ SRC
 DST FIELD; GEN REGS
 t1 BA ← PCB; BC ← DATI
 t2 SHFR ← PCB
 t3 CONDITIONAL BUST
 t4 PCA ← PCB + 2
 t5 -SFT: SR ← GDCDFJ
 t6 -SFT: SR ← SHFR
 t7 -DFT: DR ← GDCDFJ
 t8 -DFT: DR ← SHFR

FEN1 (377)

A-FORK

BIN * SM123 (021) SM1
 (022) SM23
 S13.00
 S13.01
 FETCH SRC & STEP
 REGISTER UP
 t1 BA ← SR; BC ← SRC1 DATI
 t2 SHFR ← SR + SRCCON
 t3 BUST
 t4 PCA ← SR + SRCCON
 t5 GRC SFJ ← SHFR
 t6 SFT: F ← B ← PCA

S13.10 (027)
 GET SRC & READ DST REG
 t1 BA ← SR; BC ← SRC1 DATI
 t2 SHFR ← PCB
 t3 BRQ STROBE
 t4 BUS PAUSE
 t5 BR ← BUS
 t6 -DFT: DR ← GDCDFJ
 t7 -DFT: DR ← SHFR

C-FORK

BIN * SM45 (029)
 S45.00
 STEP REGISTER DOWN
 t1 <BA ← PCB>
 t2 SHFR ← SR - SRCCON
 t3 BEND
 t4 PCA ← SR - SRCCON
 t5 GRC SFJ ← SHFR
 t6 SR ← SHFR
 t7: PCB ← PCA

S45.10 (023)
 FETCH SRC
 t1 BA ← SR; BC ← SRC1 DATI
 t2 <SHFR ← PCB>
 t3 BUST; -R L SFJ

MTP (045)
 MTR.00
 REG 6 IN SR (SFG IN OR
 CODE); POP TOP OF STACK
 t1 <BA ← PCB>
 t2 SHFR ← SR + 2
 t3 BEND
 t4 GRC SFJ ← SHFR

MTR.10 (151)
 CORRECT DR IN CASE DEST
 FIELD G; GET TOP OF STACK
 t1 BA ← SR; BC ← SRC2 DATI
 t2 SHFR ← PCB
 t3 BUST
 t4 -DFT: DR ← GDCDFJ
 t5 -DFT: DR ← SHFR

BXX * BCOK (320) - BRQ (BNE, BGE, BGT, * - BRQ
 BPL, BHI, BVC, BCC)
 BXX.01 (325) - BRQ (BMI, BLS, BVS, BCS)
 BXX.02 (326) - BRQ (BR, BEQ, BLT, BLE)
 BXX.03 (330) BRQ (BNE, BGE, BGT, BPL,
 BHI, BVC, BCC)
 BXX.04 (335) BRQ (BMI, BLS, BVS, BCS)
 BXX.05 (336) BRQ (BEQ, BEQ, BLT, BLE)
 SUCCESSFUL BRANCH,
 FIX PC

FET.00 (217)
 t1 <BA ← PCB>
 t2 <SHFR ← PCB + BXX DISP>
 t3 BEND; BRQ STROBE
 t4 PCA ← PCB + BXX DISP
 t5 PCB ← PCA

BXX * BCOK * BRQ
 FET.11 (321) BPL, BHI,
 BVC, BCC

FET.12 (322) BNE, BGE, BGT

BXX * BCOK * BRQ
 FET.01 (331) BPL, BHI, BVC, BCC

FET.02 (332) BNE, BGE, BGT

BXX * BCOK * BRQ
 FET.03 (334) BEQ, BLT, BLE, BMI, BLS, BVS, BCS

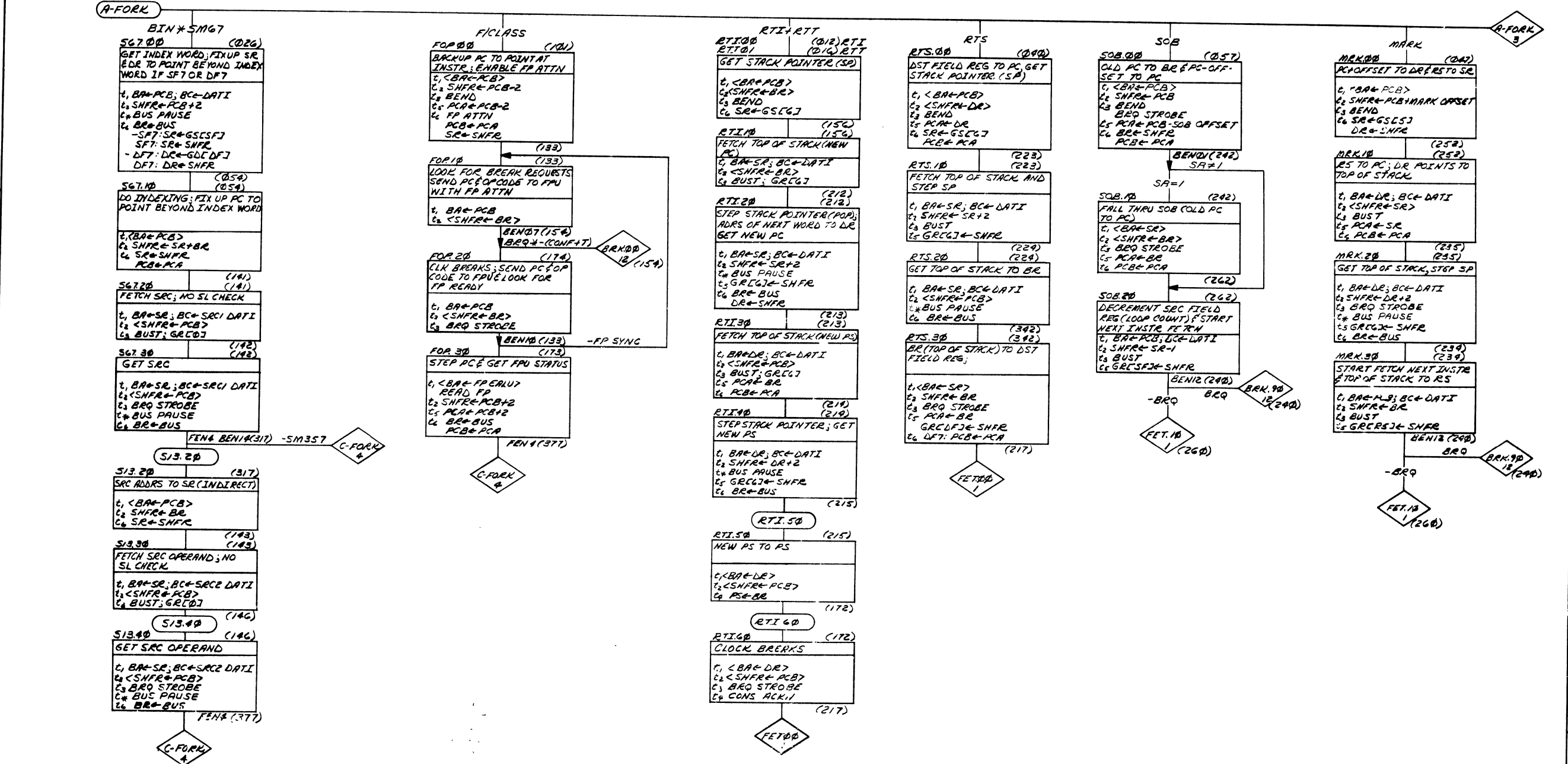
FET.04 (339)

INSTRUCTION FETCH

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX - 005	± 0° 30'	KBII-B		
XX - 02		FLOW DIAGRAMS		
X - 1		(FLOWS 1)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL				
NEXT HIGHER ASSY				
FINISH				

PART NO
 DFD KBII-B-1
 REV
 1

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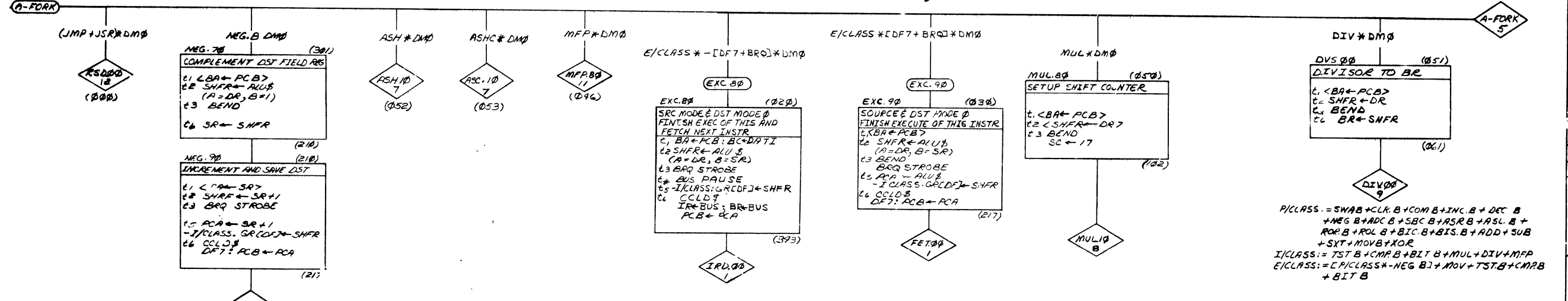
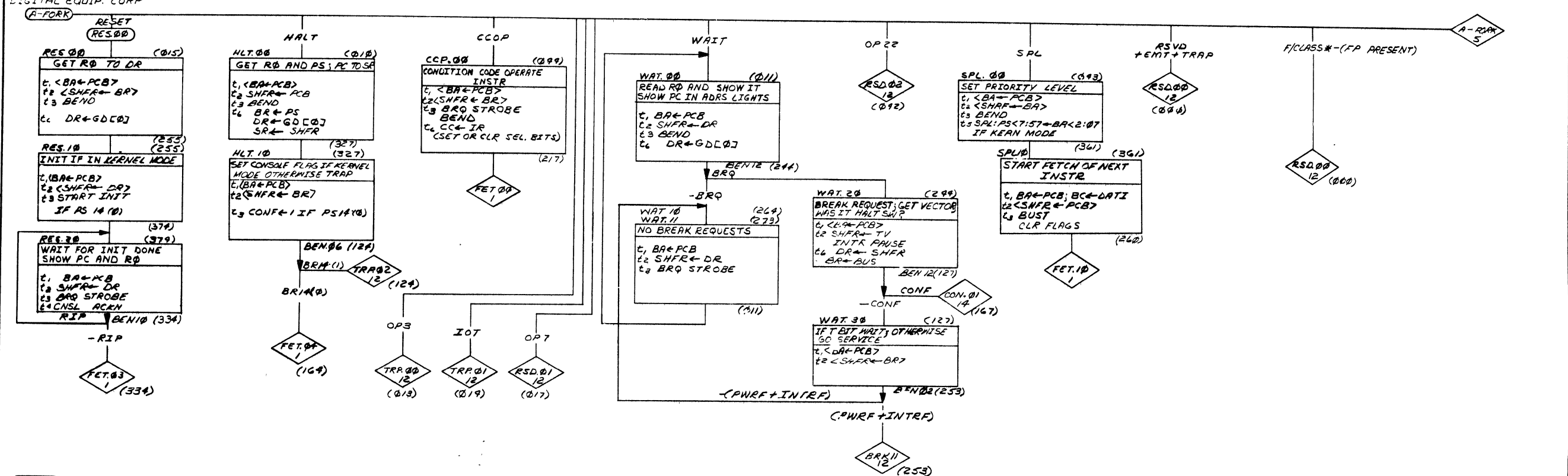
CONTROL; FLOATING; INDEXED SOURCE

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	PARTS LIST		
XXX - 005	± 0' 30"	DRN: J. Lyons	DATE: 11/5/74	EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
XX - 02		CHKD: J. Lyons	DATE: 11/15/75	
X - 1		ENGR: J. Lyons	DATE: 11/15/75	
		PROJ. ENG: J. Lyons	DATE: 11/15/75	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	TITLE: KBII-B		
FINISH	B-DD-KBII-B	SIZE CODE	NUMBER	REV
	SCALE	DFD	KBII-B-1	
	SHEET 3 OF 15	DIST		

REV	CHANGE NO	REVISIONS

DEL FORM NO DAJ 102-B

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P/CLASS = SWAB+CLR.B+COM.B+INC.B+DEC.B
+NEG.B+ADC.B+SBC.B+ASR.B+ASL.B
+ROL.B+ROR.B+BIC.B+BIS.B+ADD.SUB
+SXT+MOV.B+XOR

I/CLASS = TST.B+CMR.B+BIT.B+MUL+DIV+MFP

E/CLASS = C/P/CLASS+NEG.B+MOV+TST.B+CMR.B
+BIT.B

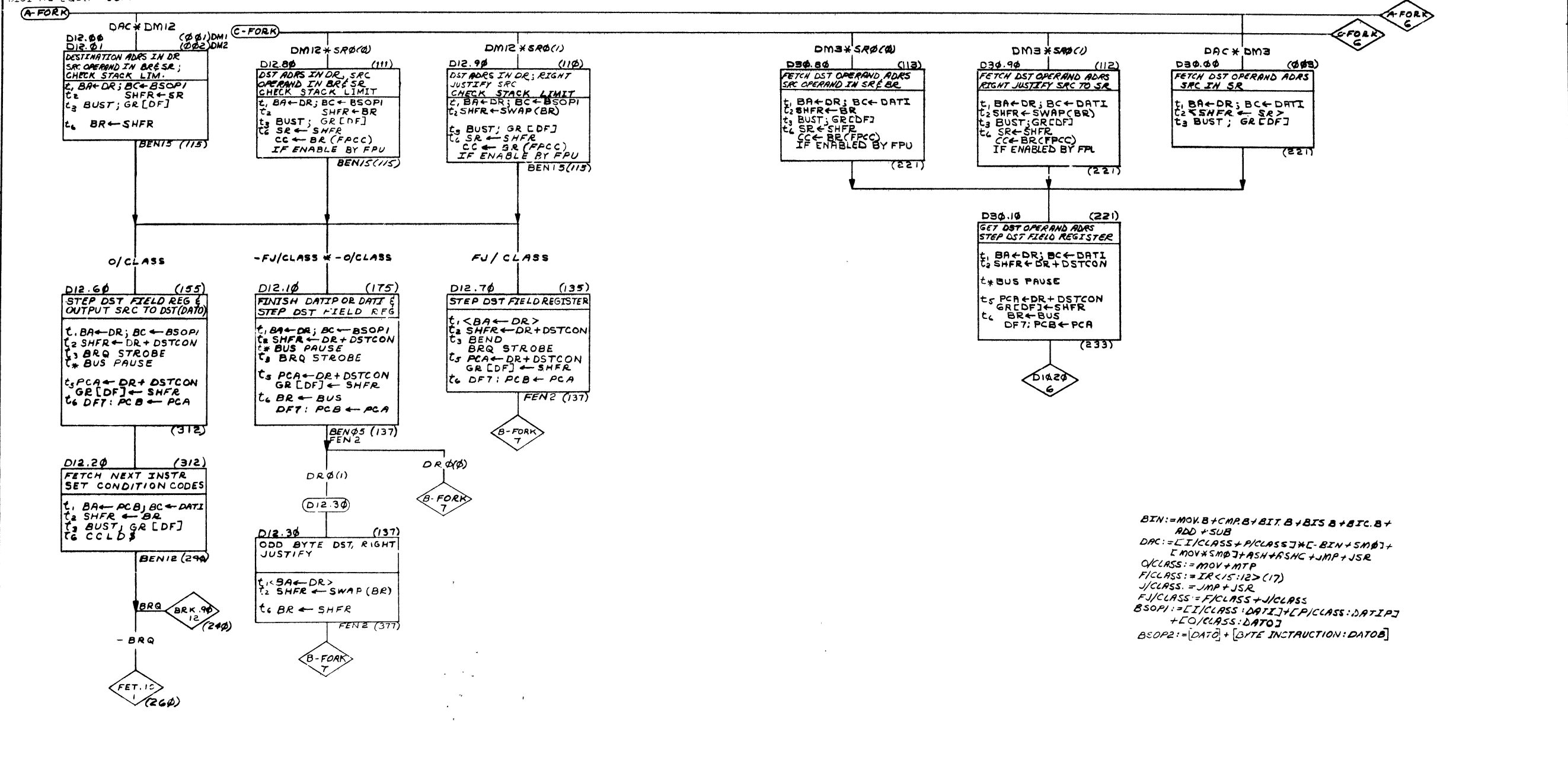
EXECUTE NO MEM REF

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED				
DRY		DATE 1-6-74	PARTS LIST	
CHK'D		DATE 1/15/75	EQUIPMENT CORPORATION	
ENG'D		DATE 1/15/75	TITLE KBII-B	
PROD		DATE 1/15/75	FLOW DIAGRAMS	
			(FLOWS 3)	
MATERIAL		NEXT HIGHER ASSY	SIZE/ODE	NUMBER
		R-DD-KBII-B	DIFD	KBII-B-1
FINISH		SCALE	SHEET	REV
			4 OF 15	

REVISIONS
CHANGE NO

DRM NO
102A

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REV	CHG	NO

DEC FORM NO. RD 102A

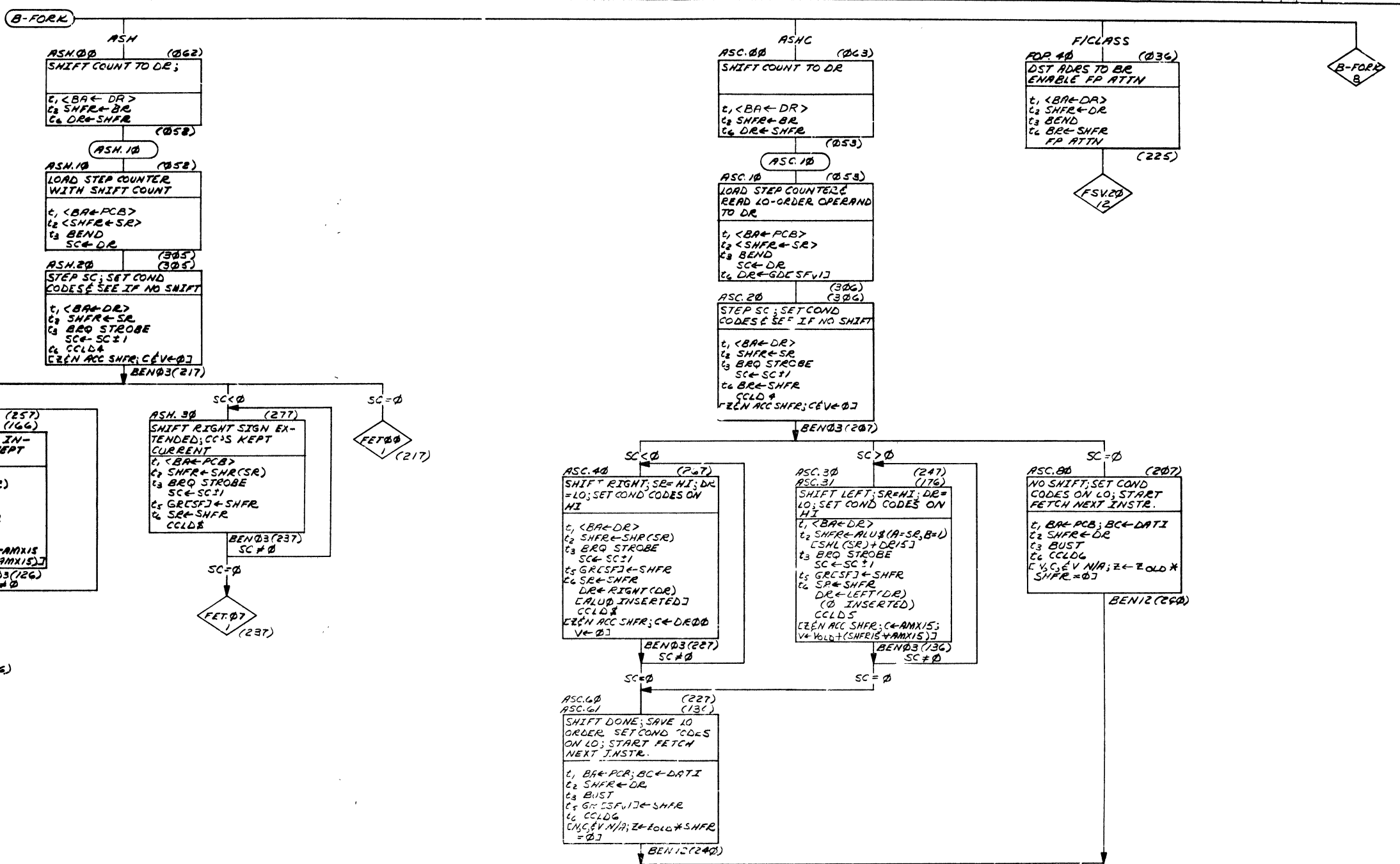
DESTINATION MODES 1-3

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED				
DRN		DATE	EQUIPMENT CORPORATION	
CHK		DATE	DATE	
UNLESS OTHERWISE SPECIFIED				
DIMENSION IN INCHES				
TOLERANCES				
DECIMALS	FRACTIONS	ANGLES		
= .005	= 1/64	= 0°30'		
FINAL SURFACE QUALITY				
REMOVE BURRS AND BREAK SHARP CORNERS				
MATERIAL				
NEXT HIGHER ASSY				
FINISH				
SCALE				
SHEET 5 OF 15				

TITLE
KBII-B
FLOW DIAGRAMS
(FLOWS 5)

SIZE/CODE
D.F.D. KBII-B-1

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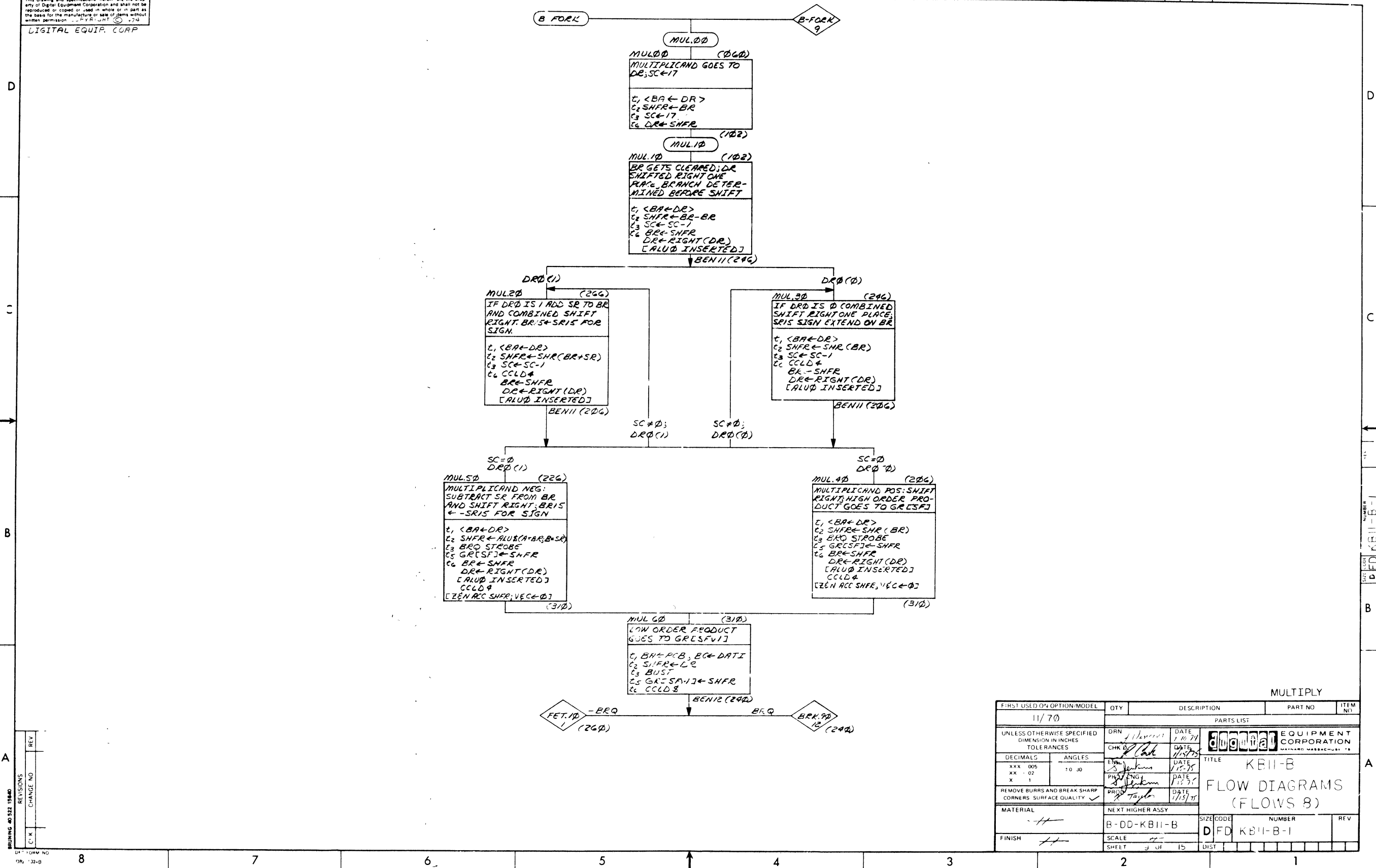


FIRST USED OR OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	PARTS LIST		
XXX - .005	XX - .02	DRN: J. H. ...	DATE: 9-7-74	EQUIPMENT CORPORATION
X - .1		CHR: ...	DATE: 11/77	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL: NEXT HIGHER ASSY				
FINISH: SCALE: SHEET 8 OF 15				
TITLE: KBII-B FLOW DIAGRAMS (FLOWS 7)		SIZE CODE: D FD		
NUMBER: KBII-B-1		REV: 1		

REVISIONS
CHANGE NO
REV

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DIGITAL EQUIP. CORP

2 1
DIGITAL EQUIP. CORP
REV. JHT 74

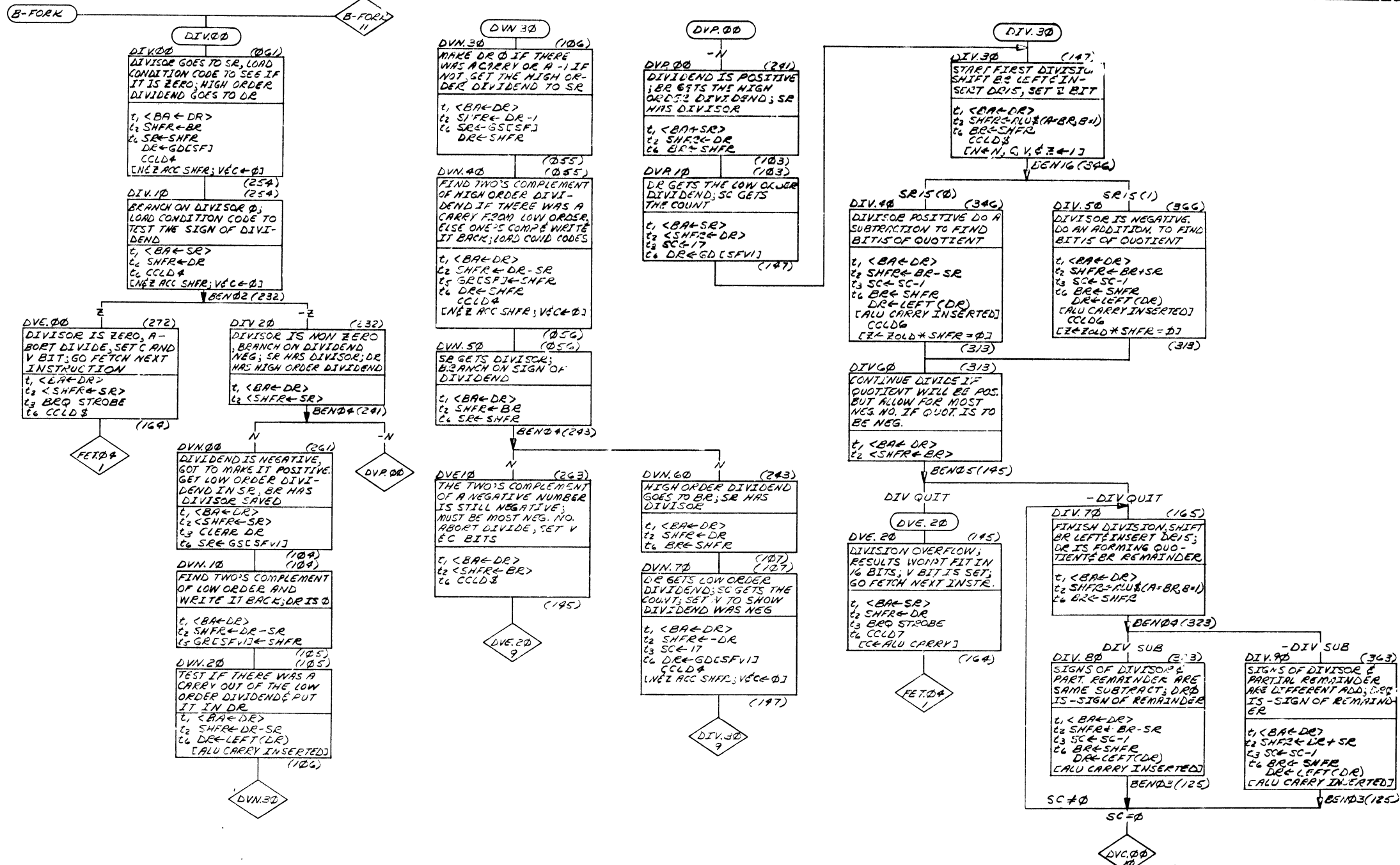


REV	CHANGE NO

FIRST USED OR OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	DRN	DATE	PARTS LIST	
xxx .005	xx .02	CHK	1/10/71	DIGITAL EQUIPMENT CORPORATION	
x 1	+0 .30	DATE	1/15/75	TITLE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	1/15/75	KEBII-B	
NEXT HIGHER ASSY		DATE	1/15/75	FLOW DIAGRAMS (FLOWS 8)	
MATERIAL	B-DD-KBII-B	SIZE CODE	NUMBER	REV	
FINISH		SCALE			
SHEET 2 OF 15		DIST			

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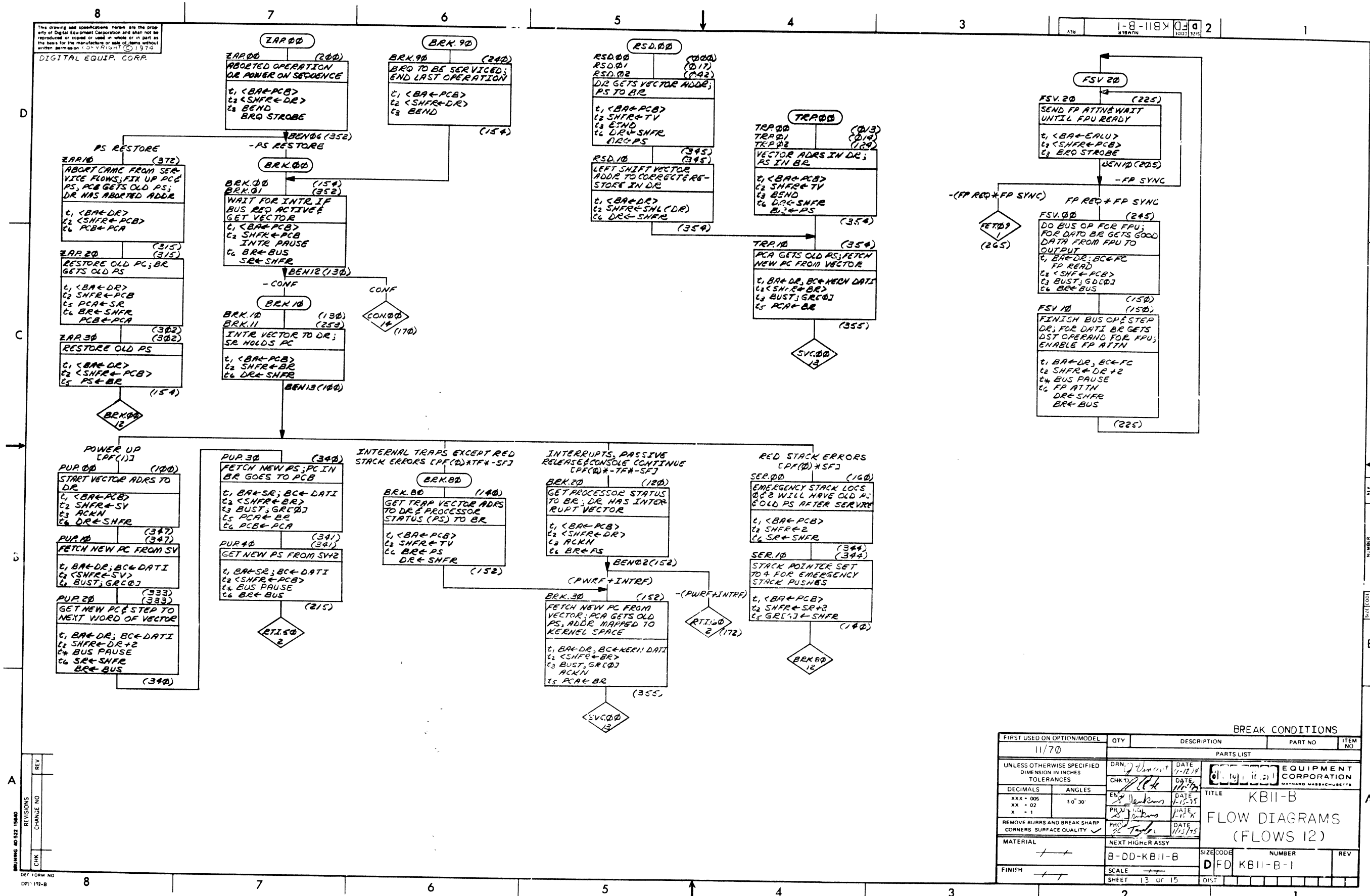
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FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM No.
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DWN	DATE 7-11-74	EQUIPMENT CORPORATION	
DECIMALS ANGLES	CHK D	DATE 11/17/75	MATHIAS WASSER-ROBERTS	
XXX - 005 XX - 02 X 1	ENG	DATE 11/15/75	TITLE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PRV	DATE 11/15/75	KBII-B FLOW DIAGRAMS (FLOWS 9)	
MATERIAL	APP	DATE 11/15/75	NEXT HIGHER ASSY	
FINISH	SCALE	SCALE 10 OF 15	SIZE CODE	NUMBER
			D FD	KBII-B-1

REV	CHANGE NO

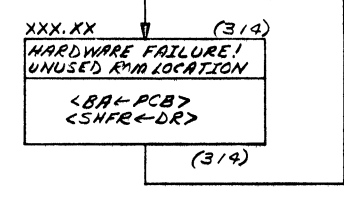
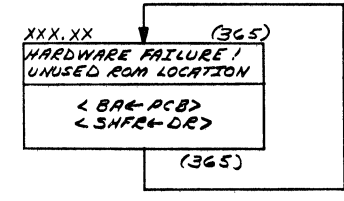
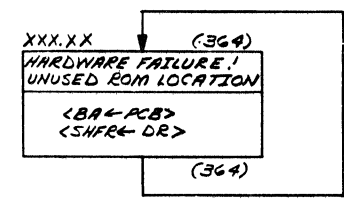
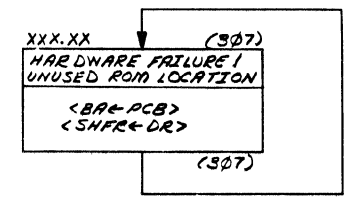
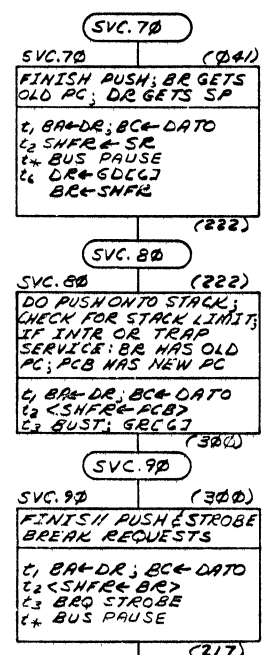
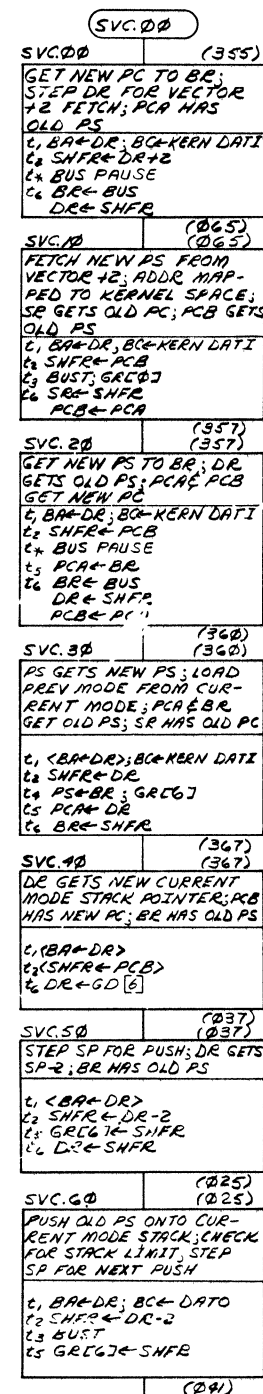
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BREAK CONDITIONS				
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN: <i>[Signature]</i> DATE: 11-12-74	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	CHK'D: <i>[Signature]</i> DATE: 11-17-74	TITLE: KB11-B	
XXX - 005	10° 30'	EN'G: <i>[Signature]</i> DATE: 11-15-74	FLOW DIAGRAMS (FLOWS 12)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PR'D: <i>[Signature]</i> DATE: 11-15-74	NUMBER: B-DD-KB11-B	
MATERIAL	NEXT HIGHER ASSY	PHO: <i>[Signature]</i> DATE: 11/15/74	SIZE CODE	REV
FINISH	B-DD-KB11-B		D/DFD	KB11-B-1
	SCALE		SHEET	13 OF 15
			DIST	

REV. CHANGE NO.
CHK
DEF FORM NO
DP: 1172-B

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D
C
B
A

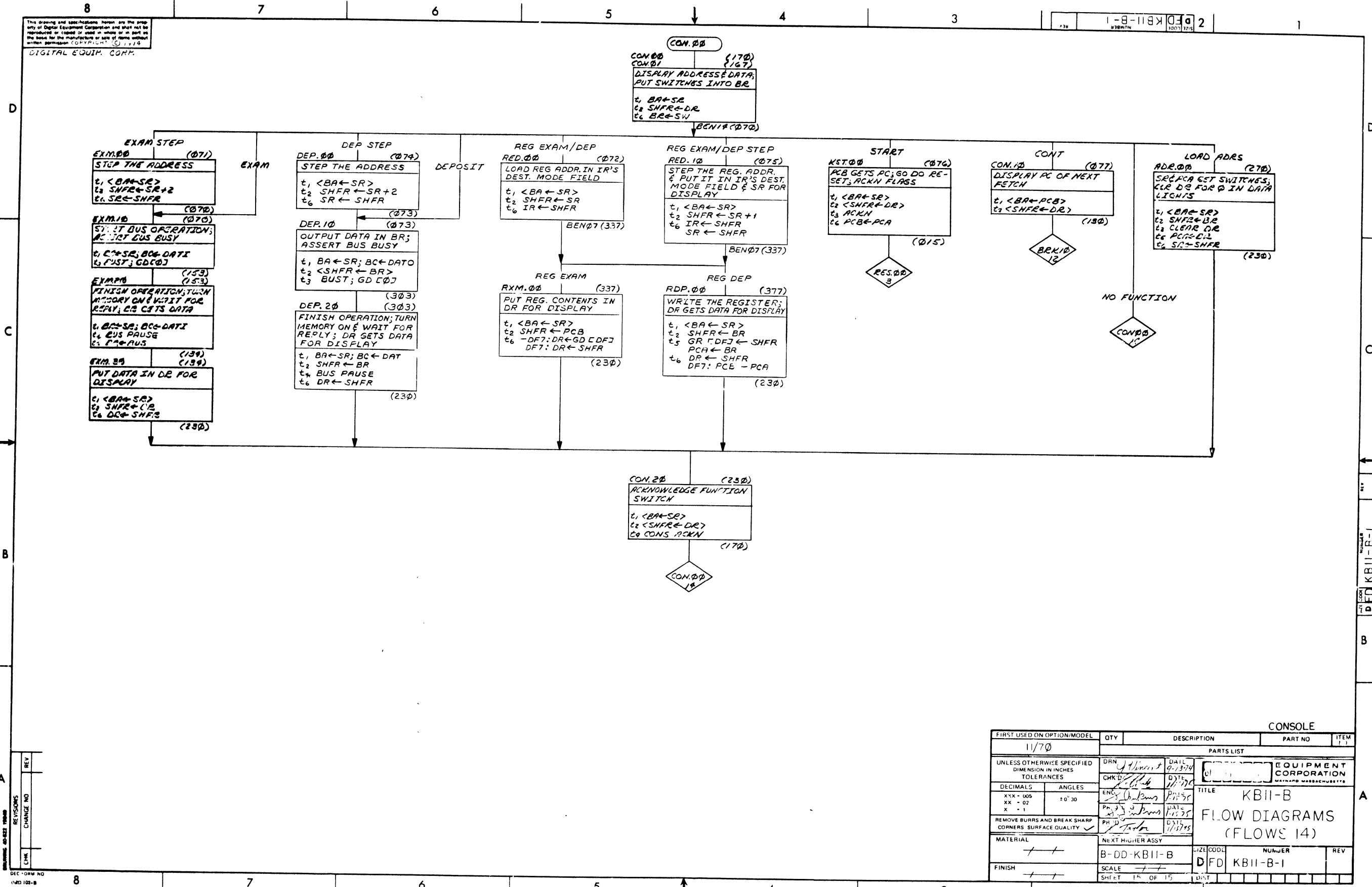
D
C
B
A

REV	CHANGE NO	REVISIONS

SERVICE SEQUENCE			
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO
11/70			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN: <i>William</i> DATE: 9-12-74	EQUIPMENT CORPORATION
DECIMALS ANGLES		CHK: <i>P. B. B.</i> DATE: <i>11-1-74</i>	
XXX - 005	±0.30	ENG: <i>William</i> DATE: 1-15-75	TITLE KBII-B FLOW DIAGRAMS (FLOWS 13)
XX - 02		REV: <i>William</i> DATE: 1-15-75	
X - 1		REC: <i>William</i> DATE: 1-15-75	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER
FINISH	SCALE	D F D	KBII-B-1
SHEET 11 OF 15		DIST	

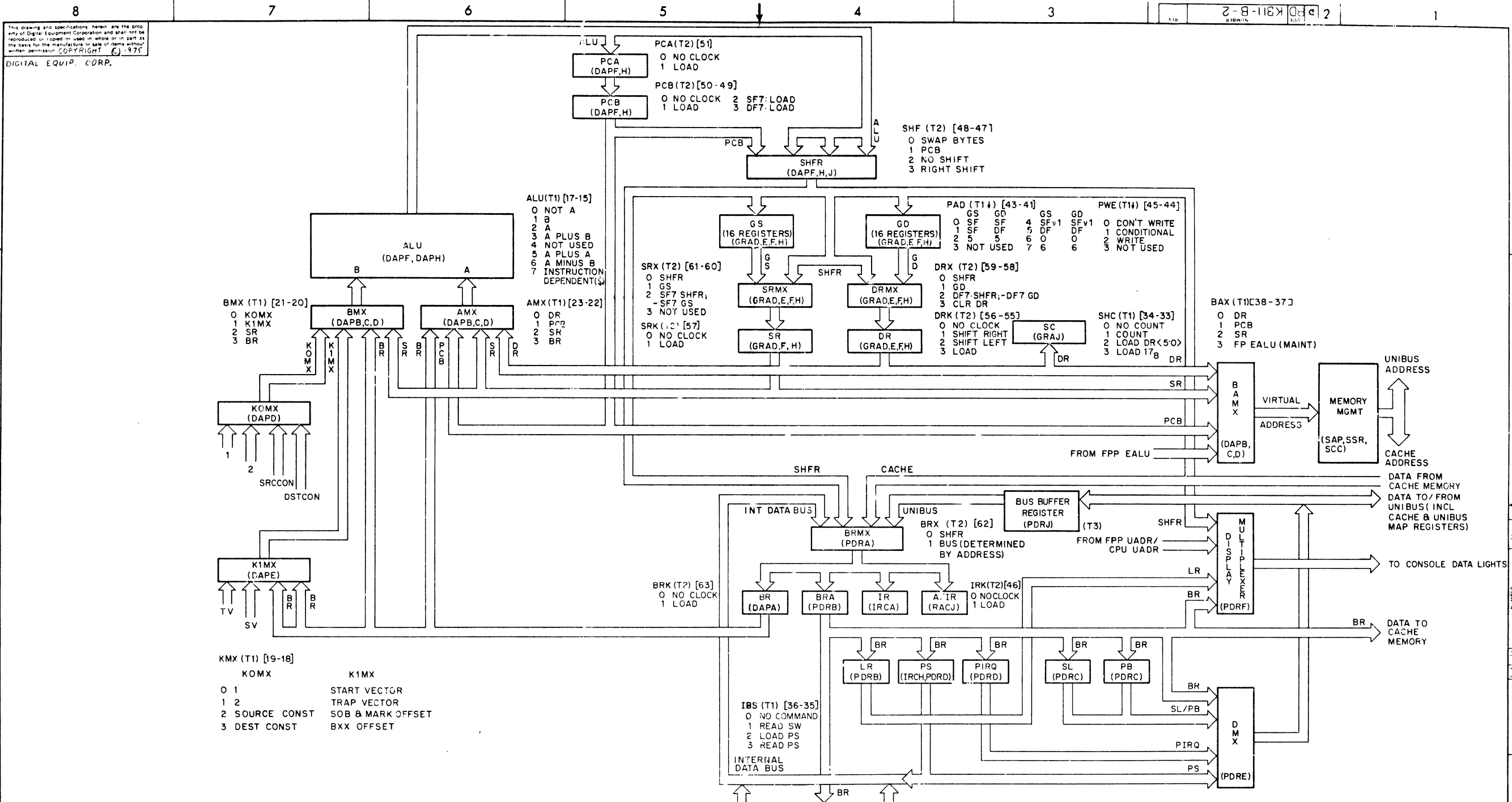
REV
NUMBER
D F D KBII-B-1

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REV	CHANGE NO	DATE

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN <i>J. Thirion</i> DATE 9-13-74	EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	ANGLES	CHK'D <i>[Signature]</i> DATE 11/1/74	TITLE KBII-B FLOW DIAGRAMS (FLOWS 14)	
XX - .005	10' 30	ENG <i>[Signature]</i> DATE 11/1/74		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PR'D <i>[Signature]</i> DATE 11/1/74	MATERIAL NEXT HIGHER ASSY	
FINISH		B-DD-KBII-B	SCALE	REV



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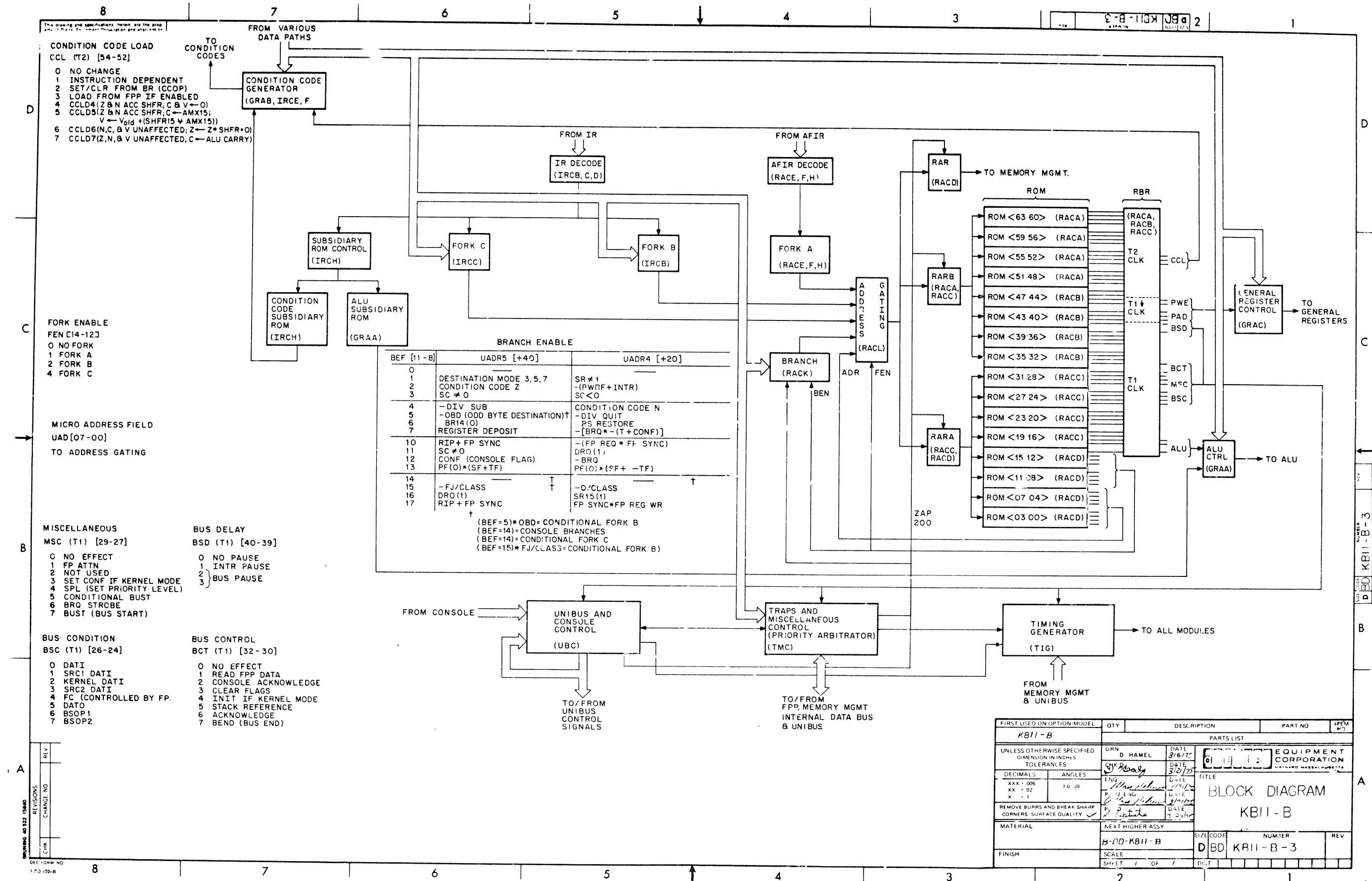
BRUNING 40 522 15840

REV	CHANGE NO

DEF FORM NO 7-7 1975-B

FIRST-USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
KB11-B				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	DWN	DATE 1/75	EQUIPMENT CORPORATION	
DECIMALS		DATE	TITLE	
XXX-005		DATE	BLOCK DIAGRAM	
XX-02		DATE	KB11-B	
X-1		DATE		
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY ✓				
MATERIAL	NEXT HIGHER ASSY	SIZE (CONF)	NUMBER	REV
	B-DD-KB11-B	D BD	KB11-B-2	
FINISH	SCALE	SHEET	OF	DIST

20



CONDITION CODE LOAD
 CCL (T2) [54-52]

- 0 NO CHANGE
- 1 INSTRUCTION DEPENDENT
- 2 SET/CLR FROM BR (CCOP)
- 3 LOAD FROM FPP IF ENABLED
- 4 CCLD4(Z & N ACC SHFR; C & V ← 0)
- 5 CCLD5(Z & N ACC SHFR; C ← AMX15; V ← V_{old} + (SHFR15 × AMX15))
- 6 CCLD6(N, C, & V UNAFFECTED; Z ← Z * SHFR * 0)
- 7 CCLD7(Z, N, & V UNAFFECTED; C ← ALU CARRY)

FORK ENABLE
 FEN [14-12]

- 0 NO FORK
- 1 FORK A
- 2 FORK B
- 4 FORK C

MICRO ADDRESS FIELD
 UAD [07-00]
 TO ADDRESS GATING

MISCELLANEOUS
 MSC (T1) [29-27]

- 0 NO EFFECT
- 1 FP ATTN
- 2 NOT USED
- 3 SET CONF IF KERNEL MODE
- 4 SPL (SET PRIORITY LEVEL)
- 5 CONDITIONAL BUST
- 6 BRQ STRCBE
- 7 BUST (BUS START)

BUS DELAY
 BSD (T1) [40-39]

- 0 NO PAUSE
- 1 INTR PAUSE
- 2 } BUS PAUSE
- 3 }

BUS CONDITION
 BSC (T1) [26-24]

- 0 DATI
- 1 SRC1 DATI
- 2 KERNEL DATI
- 3 SRC2 DATI
- 4 FC (CONTROLLED BY FP)
- 5 DATO
- 6 BSOP1
- 7 BSOP2

BUS CONTROL
 BCT (T1) [32-30]

- 0 NO EFFECT
- 1 READ FPP DATA
- 2 CONSOLE ACKNOWLEDGE
- 3 CLEAR FLAGS
- 4 INIT IF KERNEL MODE
- 5 STACK REFERENCE
- 6 ACKNOWLEDGE
- 7 BEND (BUS END)

BRANCH ENABLE

BEF [11-8]	UADR5 [+40]	UADR4 [+20]
0		
1	DESTINATION MODE 3, 5, 7	SR #1
2	CONDITION CODE Z	-(PWRP+INTR)
3	SC ≠ 0	SC < 0
4	-DIV SUB	CONDITION CODE N
5	-OBD (ODD BYTE DESTINATION)†	-DIV QUIT
6	BR14(0)	PS RESTORE
7	REGISTER DEPOSIT	-[BRQ*-(T+CONF)]
10	RIP+FP SYNC	-(FP REQ * FF SYNC)
11	SC ≠ 0	DRO(1)
12	CONF (CONSOLE FLAG)	-BRQ
13	PF(0)*(SF+TF)	PF(0)*(SF+TF)
14		
15	-FJ/CLASS	-O/CLASS
16	DRO(1)	SR15(1)
17	RIP+FP SYNC	FP SYNC*FP REG WR

† (BEF=5)*OBD=CONDITIONAL FORK B
 (BEF=14)=CONSOLE BRANCHES
 (BEF=14)=CONDITIONAL FORK C
 (BEF=15)*FJ/CLASS=CONDITIONAL FORK B

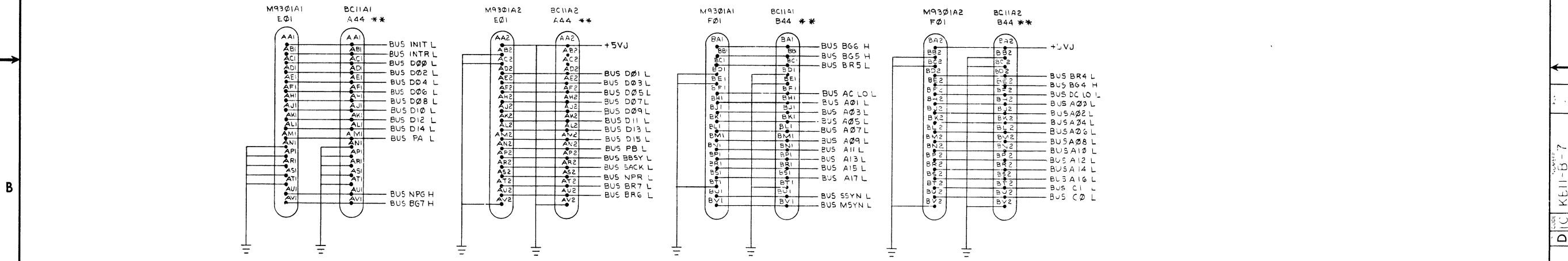
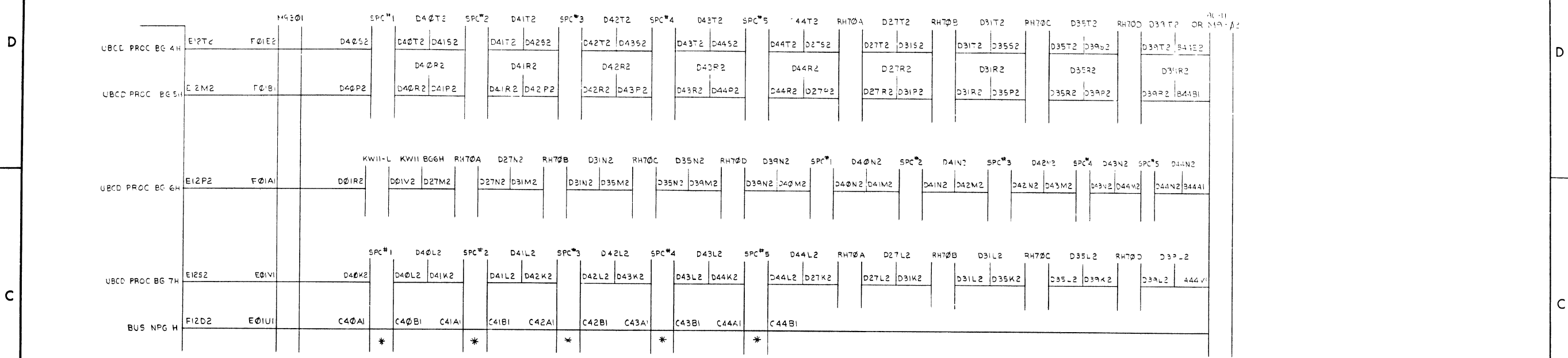
FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	LFEM
KB11-B				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN D HAMEL	DATE 3/16/75	EQUIPMENT CORPORATION	
DECIMALS: .005 XX .02 X .1	CHK Realy	DATE 3/21/75		
ANGLES: 10.30	ENG W. J. Eng	DATE 3/16/75	BLOCK DIAGRAM KB11-B	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	DATE 3/21/75	DATE 3/21/75		
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV
FINISH	B-DD-KB11-B	D BD	KB11-B-3	
SCALE	SHEET 1 OF 1	DIST		

DRAWING NO 322 15460

REV	CHANGE NO

DEC 1966 NO 170 02-B

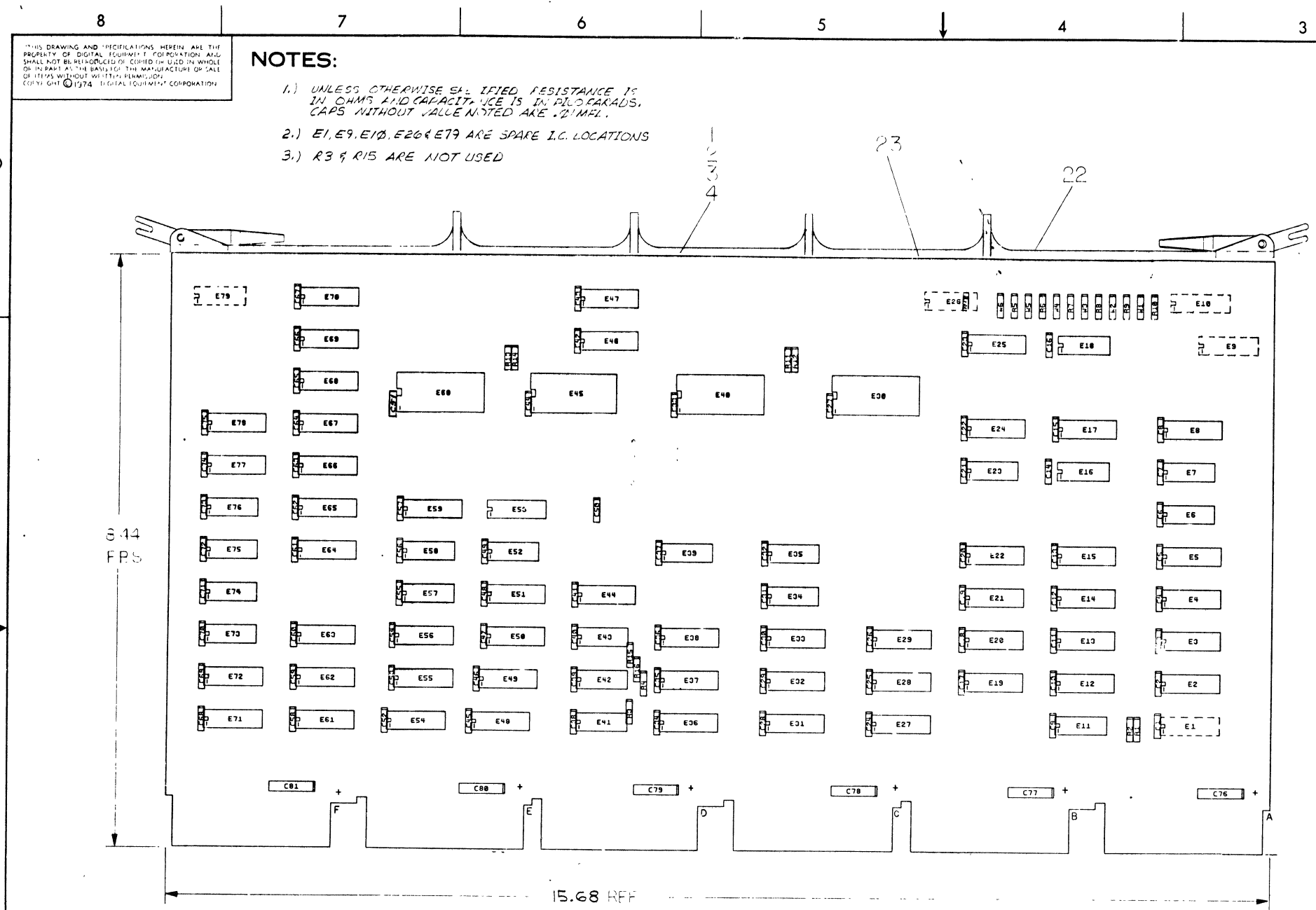
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* A TO B JUMPER CONNECTION TO BE REMOVED IF AN NPG DEVICE IS INSERTED IN AN S.P.C. SLOT;
 ** IF NO UNIBUS DEVICES ARE PRESENT, REPLACE BCII CABLE WITH M9302 UNIBUS TERM.

REV.	CHG	NO.
A	0004	

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
KB11				
DIMENSIONAL TOLERANCE				
DIMENSIONS ARE <u>MILLIMETERS</u> UNLESS OTHERWISE SPECIFIED				
MILLIMETERS	INCHES	ANGLES		
.XXX ±.005	XX ±.02	±0°30'		
XXX ±.010	X ±.1			
THIRD ANGLE PROJECTION				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
NEXT HIGHER ASSY.				
MATERIAL			B-DD-KB11-B	SIZE CODE
FINISH			SCALE NONE	NUMBER
			SHEET 1 OF 1	REV A



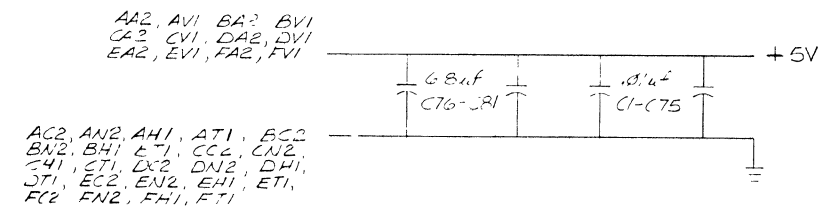
NOTES:
 1.) UNLESS OTHERWISE SPECIFIED, RESISTANCE IS IN OHMS AND CAPACITANCE IS IN PICO FARADS. CAPS WITHOUT VALUE NOTED ARE 10% TOL.
 2.) E1, E9, E10, E26 & E79 ARE SPARE I.C. LOCATIONS
 3.) R3 & R15 ARE NOT USED

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DEC NO	EIA NO	DEC NO	EIA NO
DEC 741E2-1	8	11	
DEC 74S151	12	24	
DEC 74S174	8	16	
DEC 74S157	8	16	
DEC 74S153	8	16	
IC TYPE	GND	+5V	

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC P LOCATIONS



REF	QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
REF			X-Y COOR HOLE LOCATION	K-CC-MB130-0-1	1
REF			55V/DRILLING HOLE LAYOUT	EAM-MB130-0-5	2
REF			MODULE ECO HISTORY	B-MH-MB130-0-6	3
1			ETCHED CIRCUIT BOARD	5011347	4
75		C1 THRU C75	CAP, .01uF, 100V, 20%o	1001010-01	5
6		C76 THRU C81	CAP, 6.8uF, 35V, 20%o	10000067	6
7		R5 THRU R10, R18	RES, 10K, 1/4W, 5%o	13000479	7
3		R1, R11, R13	RES, 330R, 1/4W, 5%o	1300295	8
2		R4, R16	RES, 150R, 1/4W, 5%o	13018250	9
3		R2, R12, R14	RES, 500R, 1/4W, 5%o	1301890	10
1		E42	I.C. DEC 74S64	1910542	11
4		E30, E40, E45, E60	I.C. DEC 74S181	1910531	12
3		E23, E35, E74	I.C. DEC 74S00	1910532	13
2		E10, E34	I.C. DEC 74S10	1910530	14
4		E7, E43, E57, E76	I.C. DEC 74S11	1910537	15
1		E52	I.C. DEC 74S20	1910539	16
2		E48, E49	I.C. DEC 74S157	1910548	17
39		E3, E4, E5, E8, E13, E14, E15, E17, E20, E21, E22, E24, E25, E27, E28, E29, E31, E32, E33, E36, E37, E38, E50, E51, E53, E54, E55, E56, E59, E61, E62, E63, E64, E65, E68, E71, E72, E77, E78	I.C. DEC 74S153	1910547	18
1		E44	I.C. DEC 74182-1	1910551	19
9		E2, E12, E19, E66, E67, E46, E47, E69, E70	I.C. DEC 74S174	1910550	20
8		E6, E11, E18, E39, E41, E53, E73, E70	I.C. DEC 74S04	1910534	21
1			HANDLE MODULE	1210711-2	22
12			EYELET	9000732	23
A/R			WIRE, #30 BUS (RETROFIT)	9105-40-55	24

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO

FIRST USED ON OPTION MODEL: 11, 75

ETCH BOARD REV: A

REVISIONS:

CHK	CHANGE NO	REV

DRN: *Freidman* DATE: 11/1/74
 CHK'D: *Freidman* DATE: 11-2-74
 ENG'D: *Freidman* DATE: 11-2-74
 P.C.B. *Freidman* DATE: 11-2-74
 PH. *Freidman* DATE: 11-2-74

digital EQUIPMENT CORPORATION

TITLE: DATA PATHS (DAP)

NEXT HIGHER ASSY: B-DD-KB11-B

SCALE: 1 OF 9

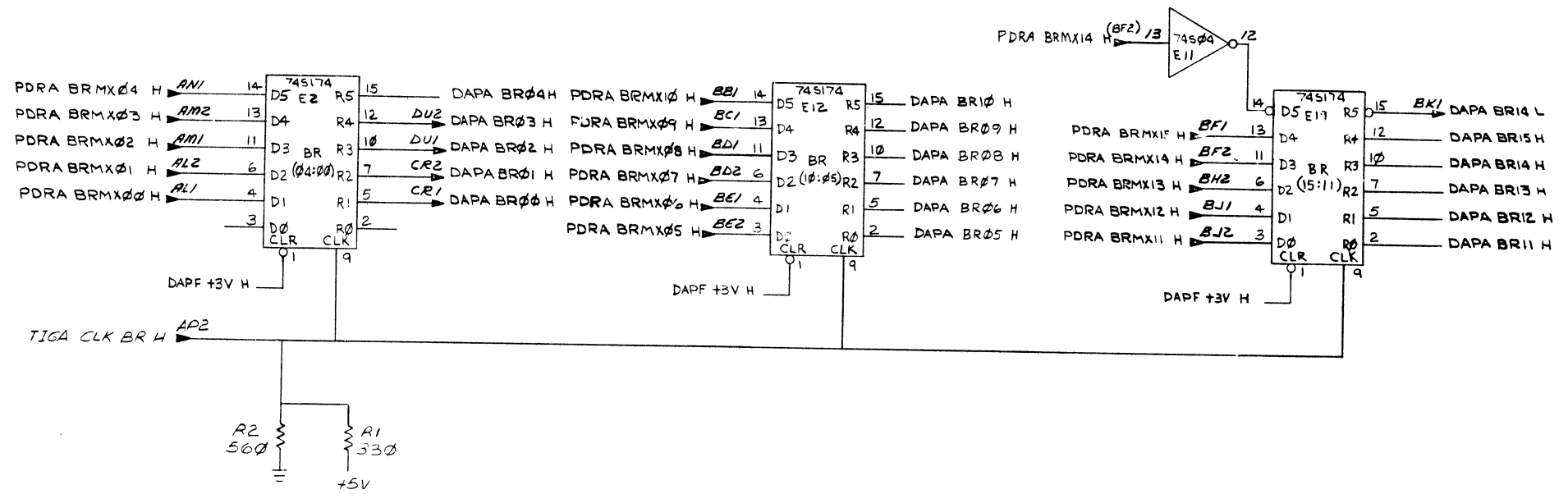
SIZE CODE: D CC M B130-0-1

NUMBER: 1 REV: B

SEMICONDUCTOR CONVERSION CHART

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DIGITAL EQUIPMENT CORPORATION



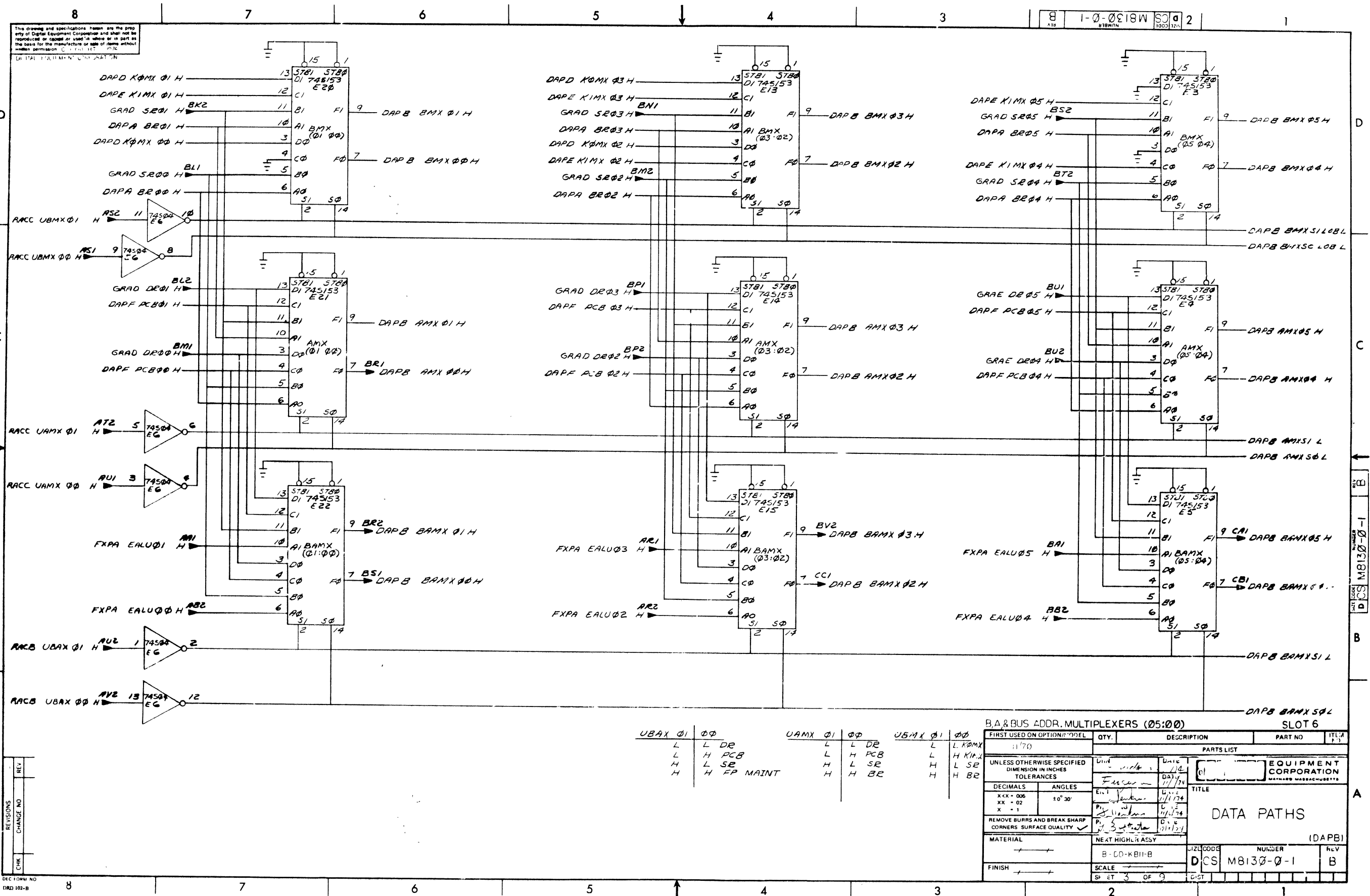
BUS REGISTER		SLOT6	
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO
11/70			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	DATE
DECIMALS	ANGLES	11/74	11/74
XXX - .006	±0° 30'	TITLE	
XX - .02		DATA PATHS	
X - .1		MATERIAL	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		NEXT HIGHER ASSY	
		SIZE CODE	NUMBER
		D CS	M8130-0-1
FINISH		SCALE	REV
		SCALE 2 OF 9	B

REV B
NUMBER
D CS M8130-0-1

REV	CHANGE NO

SEC FORM NO 102-B

24



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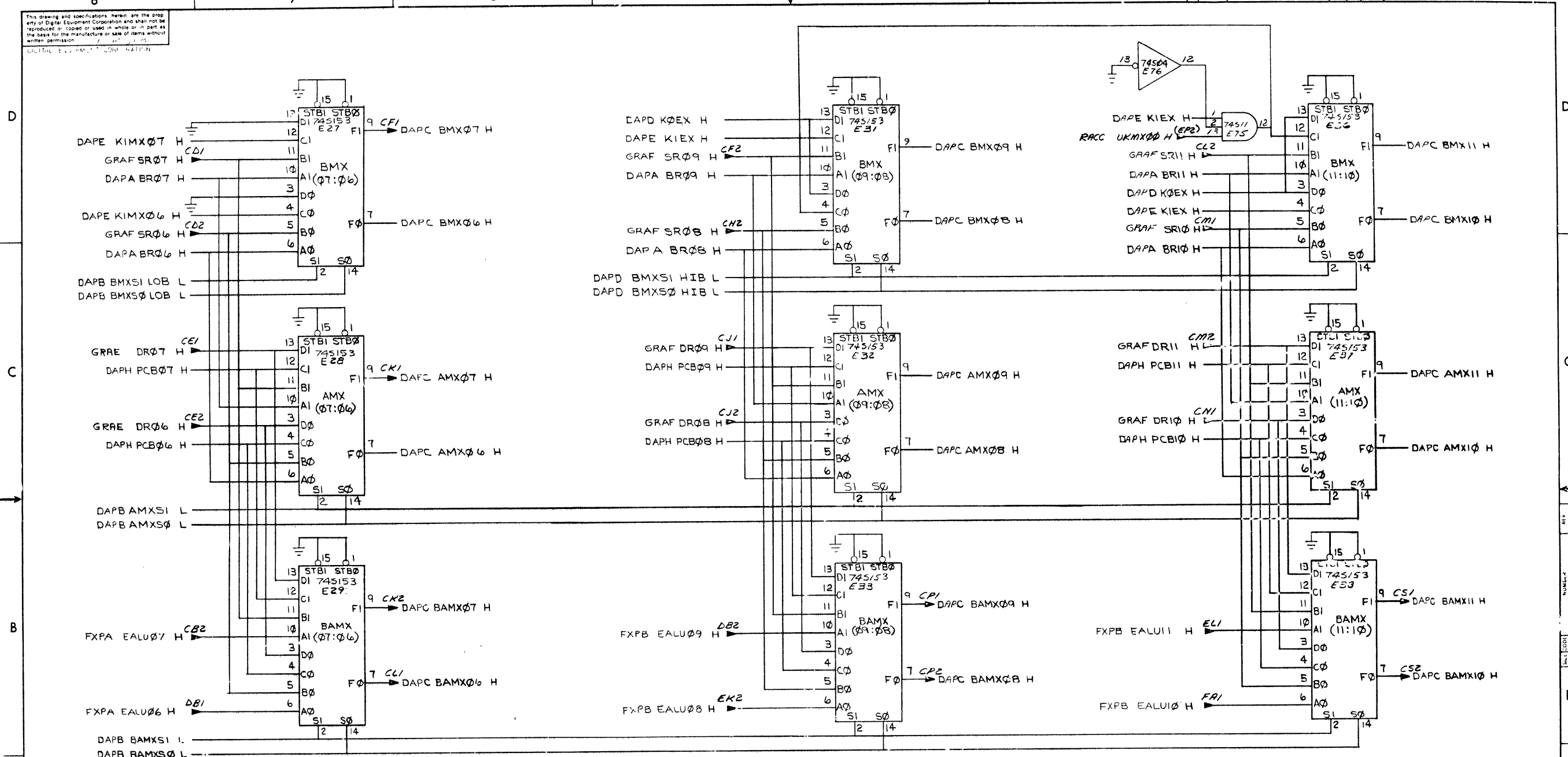
1-0-018W 2

REV	
CHANGE NO	
CHK	

UBAX Φ	$\Phi\Phi$	UAMX Φ	$\Phi\Phi$	UBMX Φ	$\Phi\Phi$
L	L DR	L	L DR	L	L KMX
L	H PCB	L	H PCB	L	H KMX
H	L SR	H	L SR	H	L SR
H	H FP MAINT	H	H BR	H	H BR

FIRST USED ON OPTION MODEL		QTY.	DESCRIPTION	PART NO.	ITEM
1170					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	TITLE			
XX - .006	$\pm 0^{\circ} 30'$	DATA PATHS (DAPB)			
XX - .02					
X - .1					
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL	NEAT HIGH R ASSY	JIZ CODE	NUMBER	REV	
		B-CD-KBII-B	DCS M8130-0-1	B	
FINISH	SCALE	SCALE			
		SF ET 3 OF 9			

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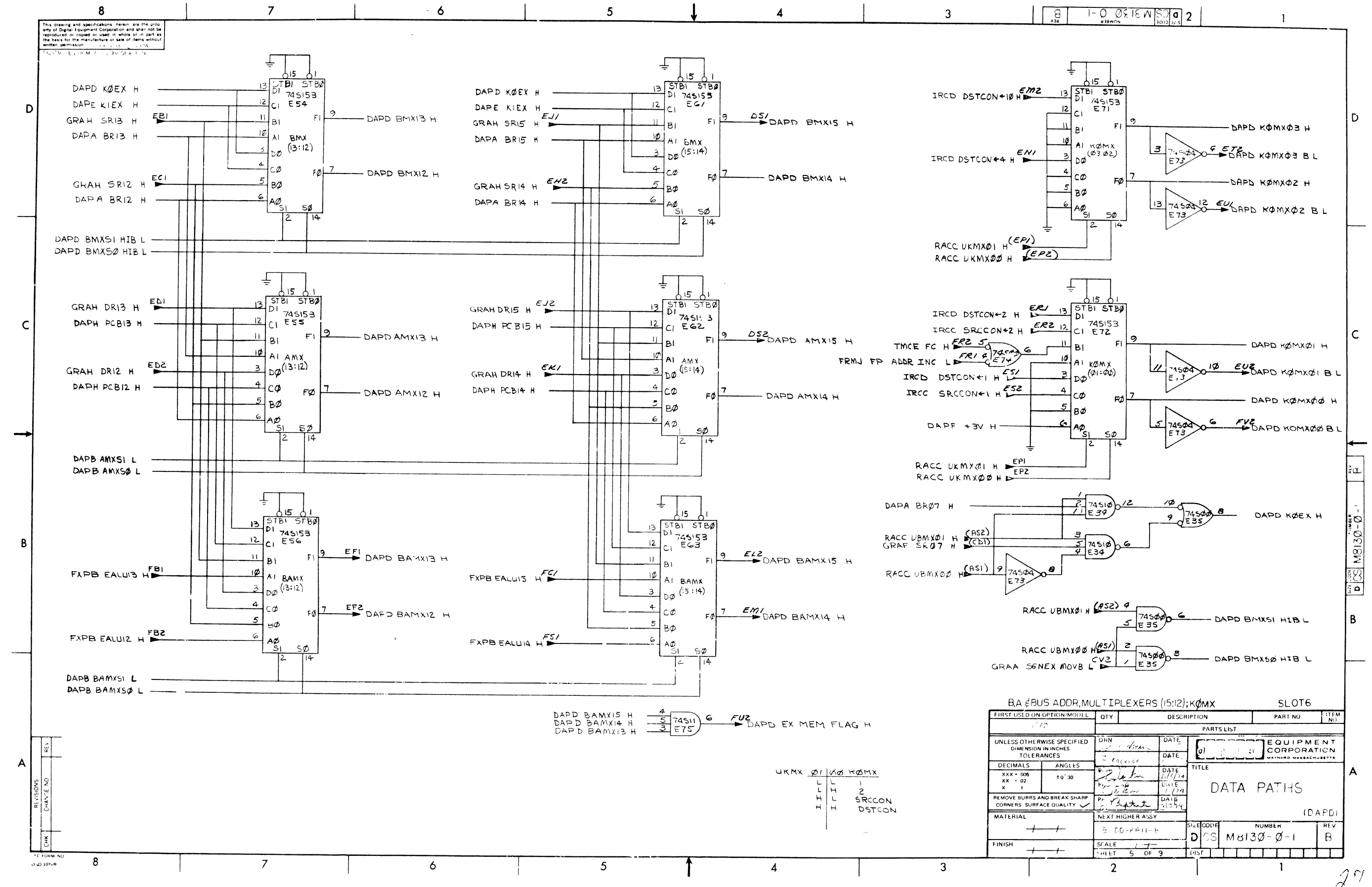
B, A, & BUS ADDR. MULTIPLEXERS (11-07)

SLOT 6

FIRST USED OR OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM N°
17				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DWN	DATE	EQUIPMENT CORPORATION MAYFORD, MASSACHUSETTS
DECIMALS	ANGLES		DATE	
XXX .005	±0'30"		DATE	TITLE DATA PATHS
XX .02			DATE	
X .1			DATE	MATERIAL NXT HIGHER ASSY
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
FINISH		SCALE	SHEET	REV
//		4 (1) 9	1	B

REV	CHANGE NO

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REVISIONS	REV.
CHK	DATE

DAPD BAMX15 H
 DAPD BAMX14 H
 DAPD BAMX13 H

74511 E75

FU2

DAPD EX MEM FLAG H

UKMX Ø1 Ø2 Ø3 Ø4 Ø5 Ø6 Ø7 Ø8 Ø9 Ø10 Ø11 Ø12 Ø13 Ø14 Ø15 Ø16 Ø17 Ø18 Ø19 Ø20 Ø21 Ø22 Ø23 Ø24 Ø25 Ø26 Ø27 Ø28 Ø29 Ø30 Ø31 Ø32 Ø33 Ø34 Ø35 Ø36 Ø37 Ø38 Ø39 Ø40 Ø41 Ø42 Ø43 Ø44 Ø45 Ø46 Ø47 Ø48 Ø49 Ø50 Ø51 Ø52 Ø53 Ø54 Ø55 Ø56 Ø57 Ø58 Ø59 Ø60 Ø61 Ø62 Ø63 Ø64 Ø65 Ø66 Ø67 Ø68 Ø69 Ø70 Ø71 Ø72 Ø73 Ø74 Ø75 Ø76 Ø77 Ø78 Ø79 Ø80 Ø81 Ø82 Ø83 Ø84 Ø85 Ø86 Ø87 Ø88 Ø89 Ø90 Ø91 Ø92 Ø93 Ø94 Ø95 Ø96 Ø97 Ø98 Ø99 Ø100

BA Ø BUS ADDR. MULTIPLEXERS (15:12); KØMX		SLOT6	
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO. ITEM NO.
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DATE	DATE	DATE
DECIMALS	ANGLES	DATE	DATE
XXX - 006	±0'30	DATE	DATE
XX - 02		DATE	DATE
X - 1		DATE	DATE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	DATE	DATE	DATE
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER
FINISH	SCALE	FILET	REV
	5 OF 9	CS	M8130-Ø-1

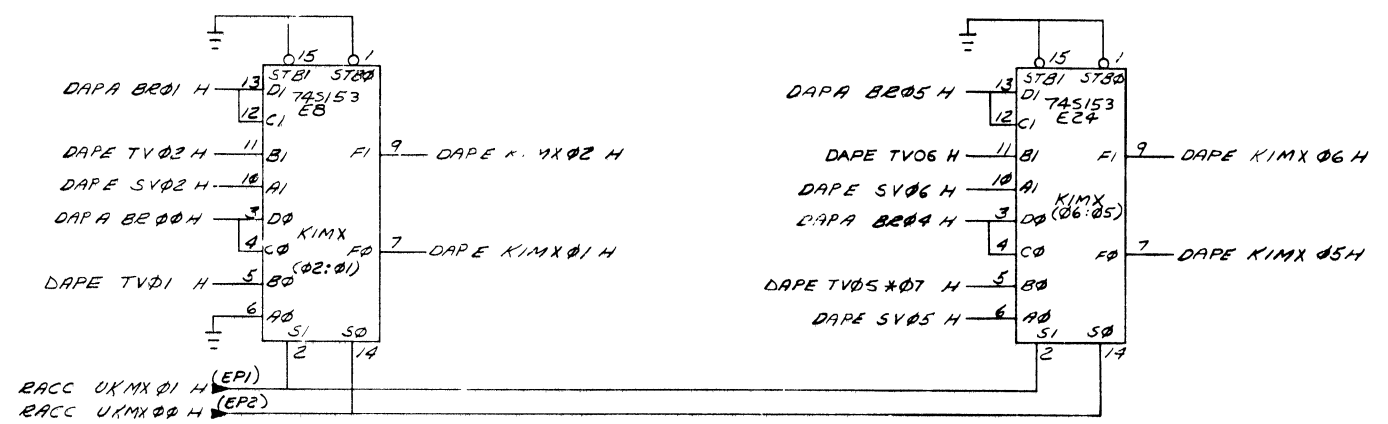
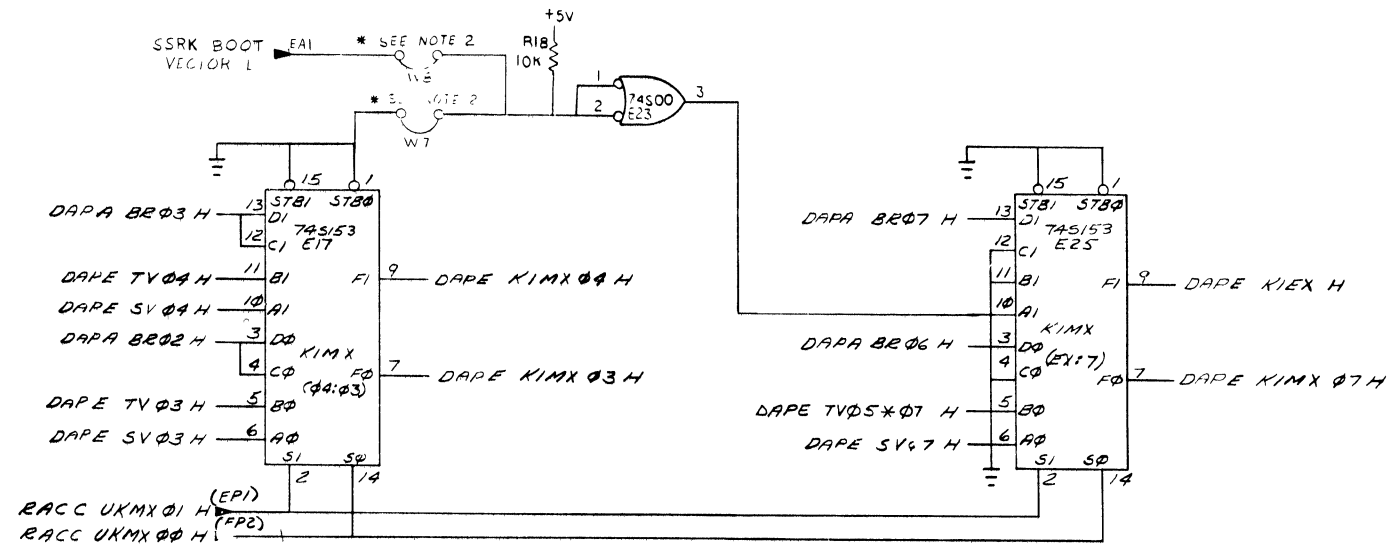
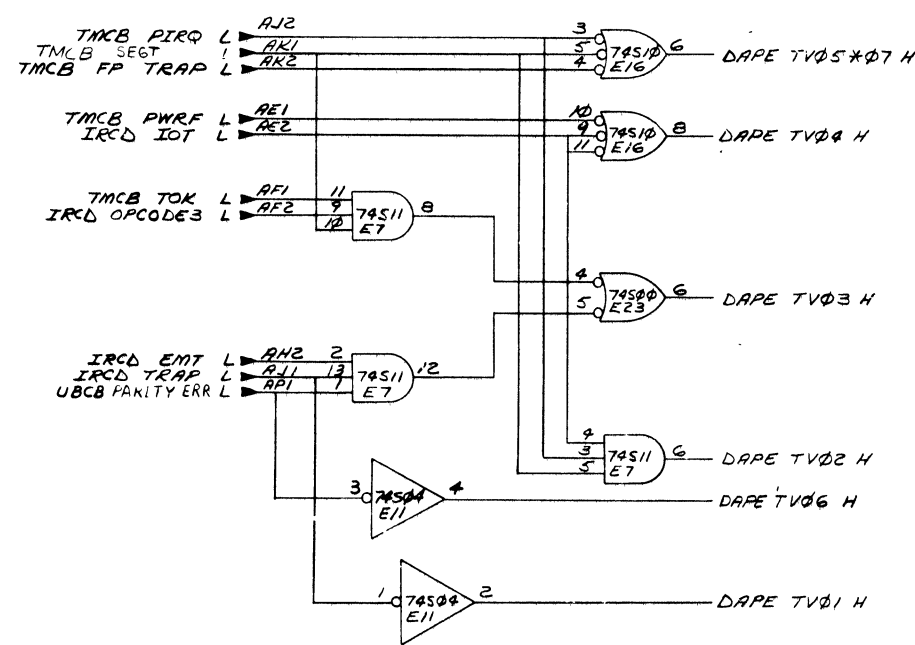
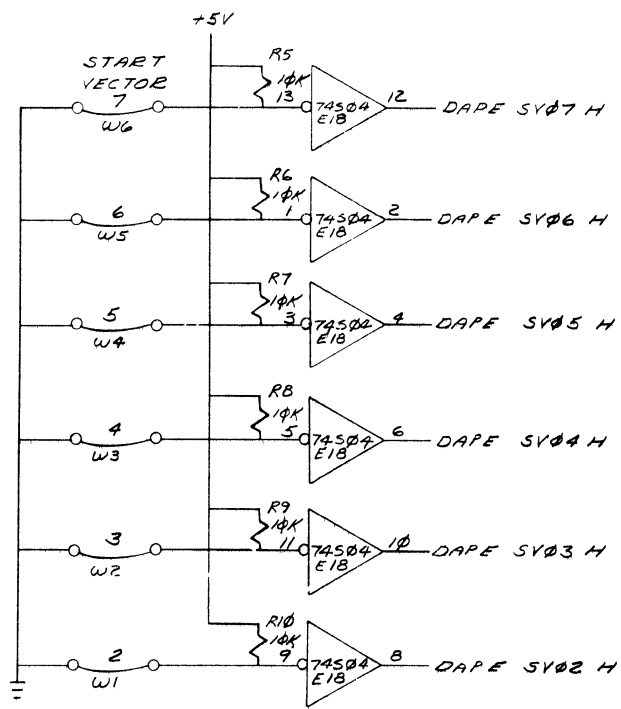
27

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JUMPER ARRANGEMENT

W6 IN	173200+XXX
W7 IN	773000+XXX
W6 OUT	000000+XXX
W7 OUT	000000+XXX
W6 IN	000200+XXX
W7 IN	000200+XXX

XXX OFFSET (7BITS)
BITS 00 & 01 ALWAYS 0



TRAP VECTOR	UKMX 01	00	KIMX
RSVD INST	L	L	SV
TOK+3	L	H	TV
IOT	H	L	SOB&MARK DISPLACEMENT
PWRP	H	H	BRKX DISPLACEMENT
EMT	30 (19 LEFT SHIFTED)		
TRAP	34 (16 LEFT SHIFTED)		
TRAP	240		
FP TRAP	244		
KT TRAP	250		
PERF	114		

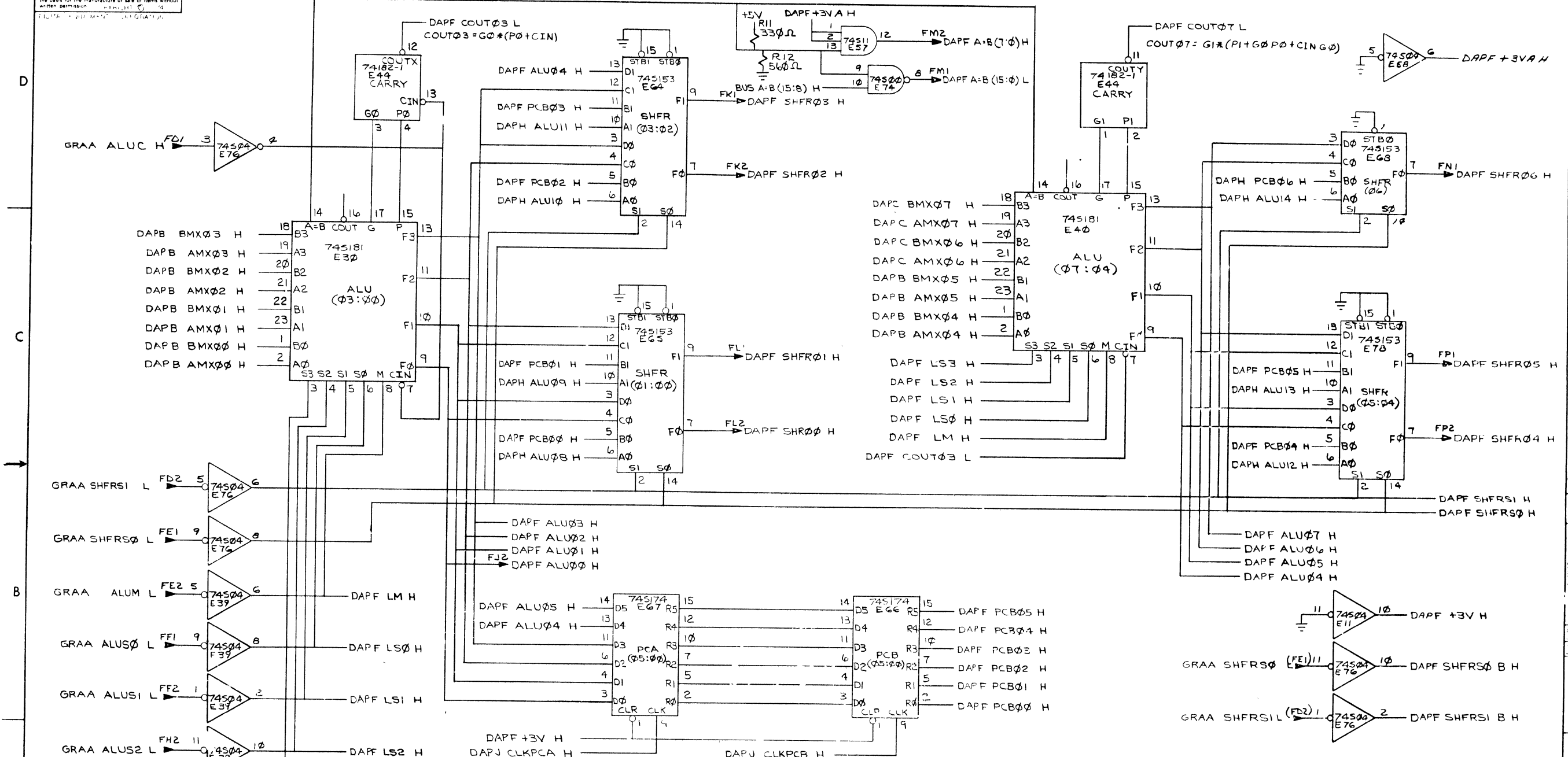
NOTE: 1 LEFT SHIFTING TAKES PLACE ON FLOWS 12 R5D.10
NOTE: 2
IF M930 LCO'S FEATURE IS TO BE USED IN W7:5 OUT W7:10 IF M930 IS INSTALLED IN CPU SLOT 1, W1 IS IN, OR M9301 ECO *5 IS NOT INSTALLED.

TRAP VECTORS, START VECTOR, & KIMX SLOT 6

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN	DATE	EQUIPMENT CORPORATION
DECIMALS	ANGLES	DATE	DATE	DATE
XXX - 006	±0°30	11/3/74	11/3/74	11/3/74
XX - 02		11/3/74	11/3/74	11/3/74
X - 1		11/3/74	11/3/74	11/3/74
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	DATE	DATE
MATERIAL		NEXT HIGHER ASSY	SIZE CODE	NUMBER
		B DD FBII E	DIC	M8130-0-1
FINISH		SCALE	SHEET	REV
		6 OF 9		B

REV	
CHANGE NO	
CHK	

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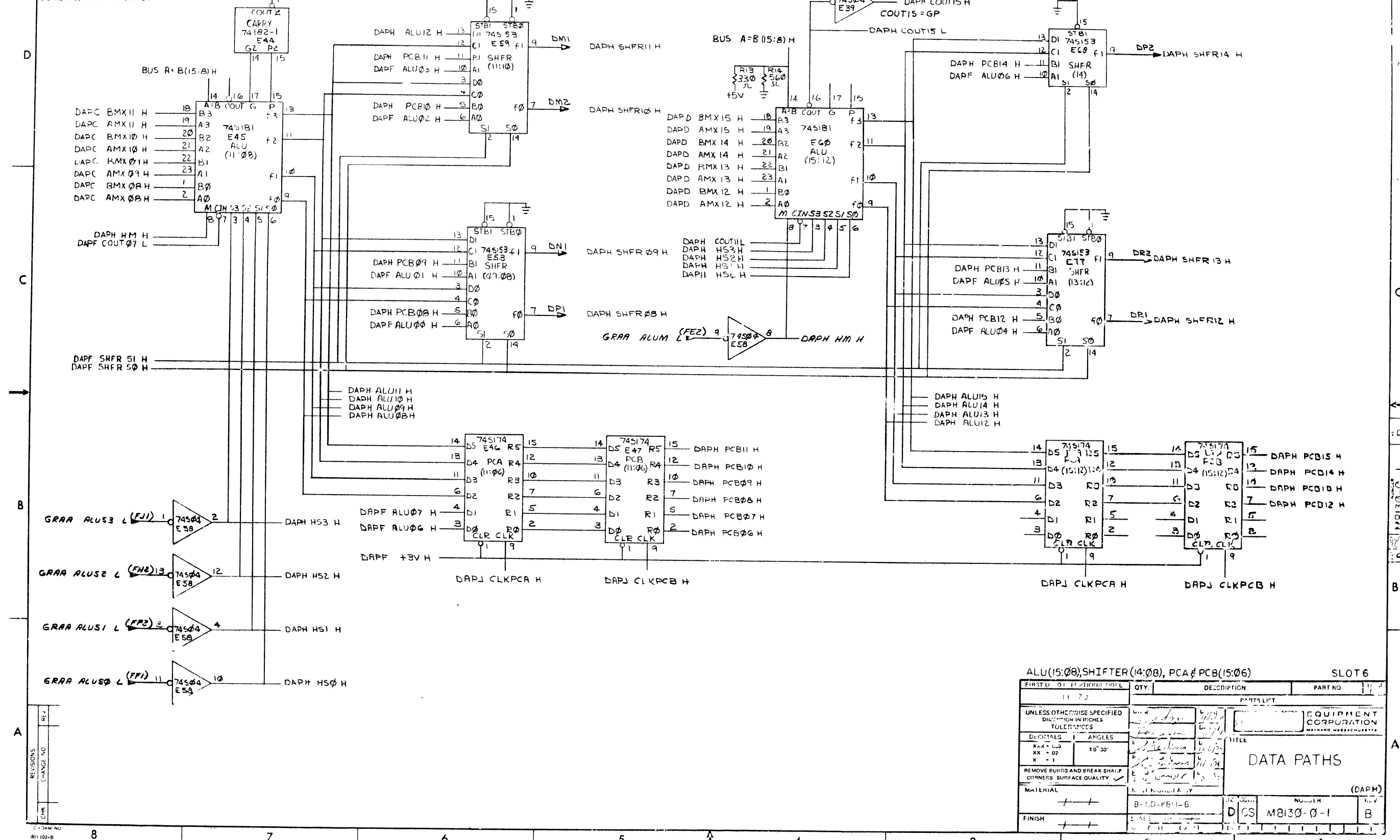
SHFR	SI	S0	H
L	L	L	SWAB (OB SWAP)
L	H	L	PCB
H	L	L	ALU
H	H	H	RT. SHIFT ALU

745181-ALU

M=H	LOGIC FUNCTIONS	M=L; ARITHMETIC OPERATIONS C _N =0=H	C _N =1=L
L L L L	F=A	F=A	F=A PLUS 1
L L H H	F=0	F=MINUS 1 (2'S COMP)	F=ZERO
L H L L	F=A+B	F=A MINUS B MINUS 1	F=A MINUS B
L H H H	F=A-B	F=A-B MINUS 1	F=A-B
H L L H	F=A+B	F=A PLUS B	F=A PLUS B PLUS 1
H L H L	F=B	F=(A+B) PLUS AB	F=(A+B) PLUS AB PLUS 1
H L H H	F=AB	F=AB MINUS 1	F=AB
H H L L	F=1	F=A PLUS A	F=A PLUS A PLUS 1
H H H L	F=A+B	F=(A+B) PLUS A	F=(A+B) PLUS A PLUS 1
H H H H	F=A	F=A MINUS 1	F=A

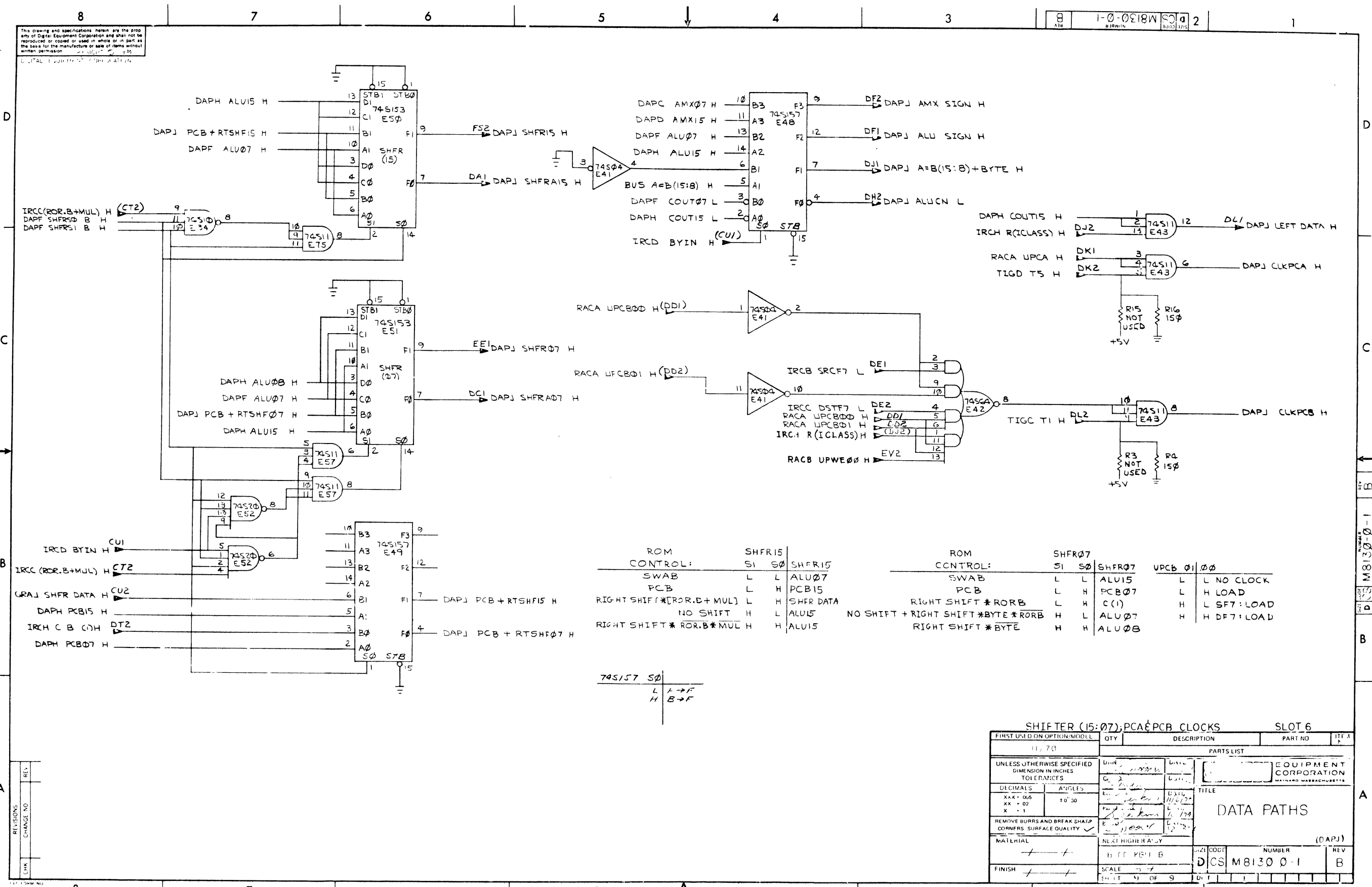
QTY	DESCRIPTION	PART NO	ITEM NO
1	745181-ALU		
1	745153-E68		
1	745174-E66		
1	745182-E44		
1	745153-E68		
1	74504-E76		
1	74504-E76		
1	74504-E76		
1	74504-E76		

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ALU(15:08), SHIFTER(14:08), PCA & PCB(15:06)		SLOT 6	
FIRST	DESCRIPTION	QTY.	PART NO.
11	73		
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES			
DECIMALS	ANGLES	TITLE	
XX = .05	±0°30'	DATA PATHS	
XX = .02			
XX = .01			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			
MATERIAL		(DAPH)	
FINISH		NUMBER	REV.
		D CS	M8130-0-1
			B

30



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REV.	CHG.	NO.

ROM CONTROL:		SHFR15		SHFR07		UPCB 01, 00	
SWAB	L	L	ALU07	L	L	L	L NO CLOCK
PCB	L	H	PCB15	L	H	L	H LOAD
RIGHT SHIF (*ROR.B+MUL)	L	H	SHFR DATA	L	H	H	L SF7: LOAD
NO SHIFT	H	L	ALU15	H	L	H	H DF7: LOAD
RIGHT SHIF *ROR.B*MUL	H	H	ALU15	H	H	H	ALU08

ROM CONTROL:		SHFR07		UPCB 01, 00	
SWAB	L	L	ALU15	L	L NO CLOCK
PCB	L	H	PCB07	L	H LOAD
RIGHT SHIF *RORB	L	H	C(1)	H	L SF7: LOAD
NO SHIFT + RIGHT SHIF *RORB	H	L	ALU07	H	H DF7: LOAD
RIGHT SHIF *BYTE	H	H	ALU08	H	H

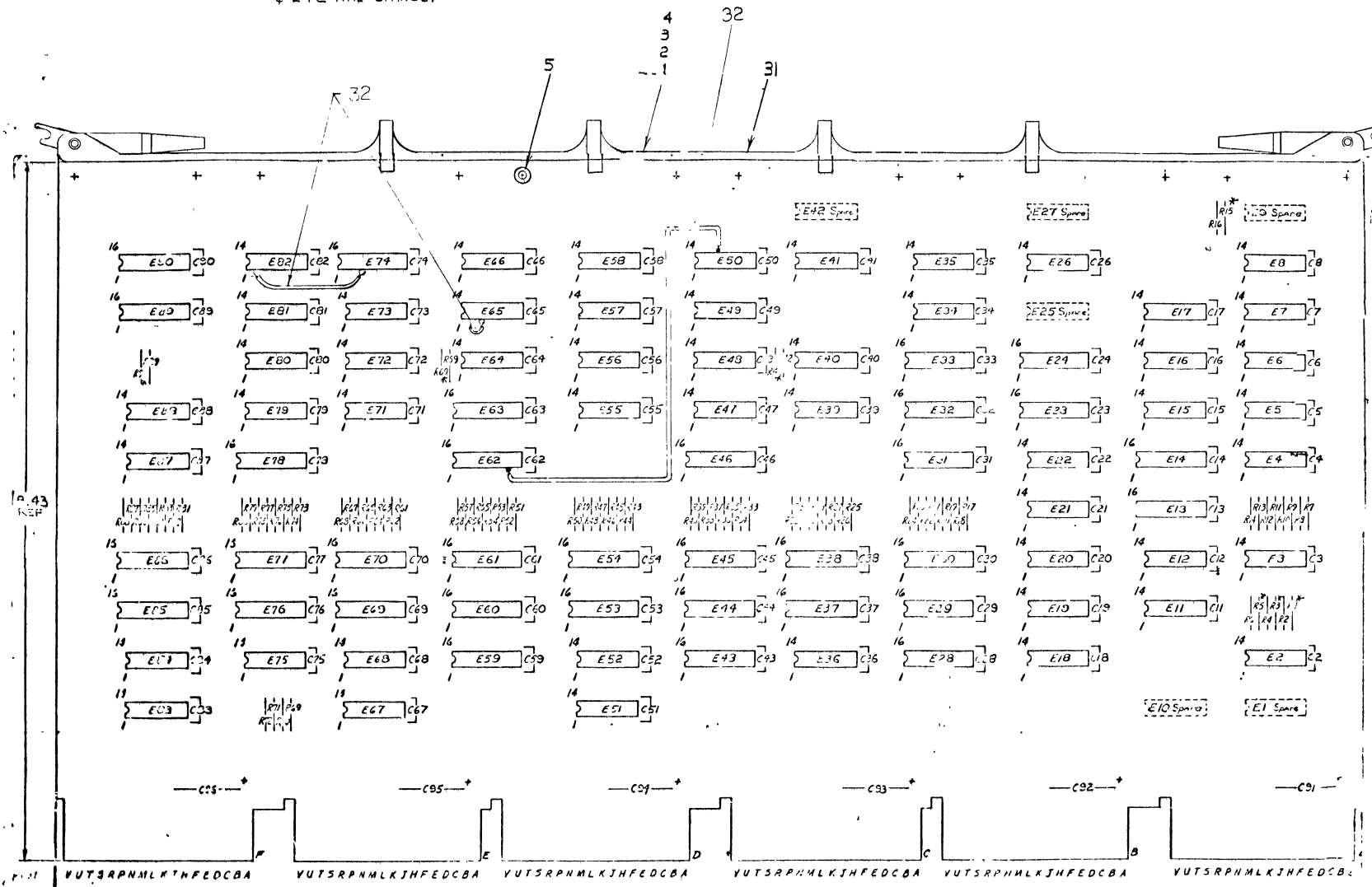
74S157 S0
L L→F
H B→F

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITE. #
11, 70					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES			EQUIPMENT CORPORATION		
DECIMALS	ANGLES	TITLE			
XX - 005	±0°30'	DATA PATHS			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL					
NEXT HIGHER AUTH.					
FINISH		SCALE	DATE	NUMBER	REV
				DCS M81300-1	B

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NOTES:

1. RESISTORS MARKED WITH ASTERISK ARE NOT USED
2. LOCATIONS MARKED E1, E9, E10, E25, E27, & E42 ARE SPARES.



15.63 REF

AA2, AV1, BA2, BV1
 CA2, CV1, DA2, DV1
 EA2, EV1, FA2, FV1

+5V
 +16.9µF
 -35V C91 THRU C96

01111
 C2 THRU C8, C11 THRU C24
 C26, C28 THRU C41
 C43 THRU C90

AC2, AN2, AH1, AT1
 BE2, BN2, BH1, BT1
 CE2, CN2, CH1, CT1
 DE2, DN2, DH1, DT1
 EE2, EN2, EH1, ET1
 FE2, FN2, FH1, FT1

DEC DM 8590-AD	U	16
DEC 3101A	U	16
DEC 745174	U	16
DEC 745159	U	16
DEC 745153	U	16
DEC 745194	U	16
DEC 745112	U	16
DEC 74141	U	16
IC TYPE	CHD	+5V
CHD AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

REF	DESIGNATION	DESCRIPTION	PART NO	QTY
REF	COORDINATE HOLE LOCATION	K-CO-M0101-0-4		1
R2	WIRE	WIRE	E-1-M0101-0-5	2
1	WIRE	WIRE	E-1-M0101-0-5	3
1	WIRE	WIRE	E-1-M0101-0-5	4
6	C31 THRU C96	CAP. 0.01uf 100V ±20% DISC	1000957	5
84	C2 THRU C8, C11 THRU C24, C26, C28 THRU C41, C43 THRU C90	CAP. 0.01uf 100V ±20% DISC	1001610	6
38	R7, R9, R11, R13, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90	RES 330 OHM 1/4W ±5%	1500295	7
7	R2, R4, R6, R16, R42, R59, R99	RES 150 OHM 1/4W ±5%	1300250	8
4	R9, R10, R12, R14	RES 560 OHM 1/4W ±5%	1301090	9
32	R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85, R87	RES 680 OHM 1/4W ±5%	1301424	10
2	R73, R72	RES 750 OHM 1/4W ±5%	1301401	11
2	E95, E72	10 DEC 74133	1900959	12
1	E 7	10 DEC 74133	1910010	13
2	E13, E14	10 DEC 74131	1910008	14
5	E3, E4, E17, E76, E78	10 DEC 74133	1910032	15
10	E7, E79, E80, E81, E82, E83, E84, E85, E86, E87, E88, E89	10 DEC 74134	1910034	16
5	E11, E12, E12, E23, E24	10 DEC 74135	1910035	17
5	E2, E15, E16, E17, E18	10 DEC 74130	1910038	18
7	E1, E91, E92, E93, E94, E95, E96, E97, E98, E99	10 DEC 74131	1910037	19
3	E10, E20, E21	10 DEC 74133	1910029	20
11	E19, E22, E25, E26, E27, E28, E29, E30, E31, E32, E33, E34, E35, E36, E37, E38, E39	10 DEC 74134	1910042	21
2	E90, E79	10 DEC 74134	1910034	22
1	E23	10 DEC 741312	1910043	23
4	E29, E24, E22, E33	10 DEC 74133	1910047	24
10	E22, E20, E41, E45, E20, E21, E43, E27, E29, E30	10 DEC 74138	1910049	25
3	E10, E10, E25	10 DEC 74134	1910050	26
4	E21, E23, E22, E23	10 DEC 74134	1910052	27
8	E17, E18, E20, E21, E22, E23, E24, E25, E26	10 DEC 74134	1910053	28
1	E75	10 DEC 74133	2000331	29
1	WIRE	WIRE	E-1-M0101-0-5	30
A/R	WIRE	WIRE	E-1-M0101-0-5	31

FIRST USED ON OPTION MODEL 11/70

ETCH BOARD REV

REVISIONS

CHK	CHANGE NO	REV

SEMICONDUCTOR CONVERSION CHART

DEC NO EIA NO DEC NO EIA NO

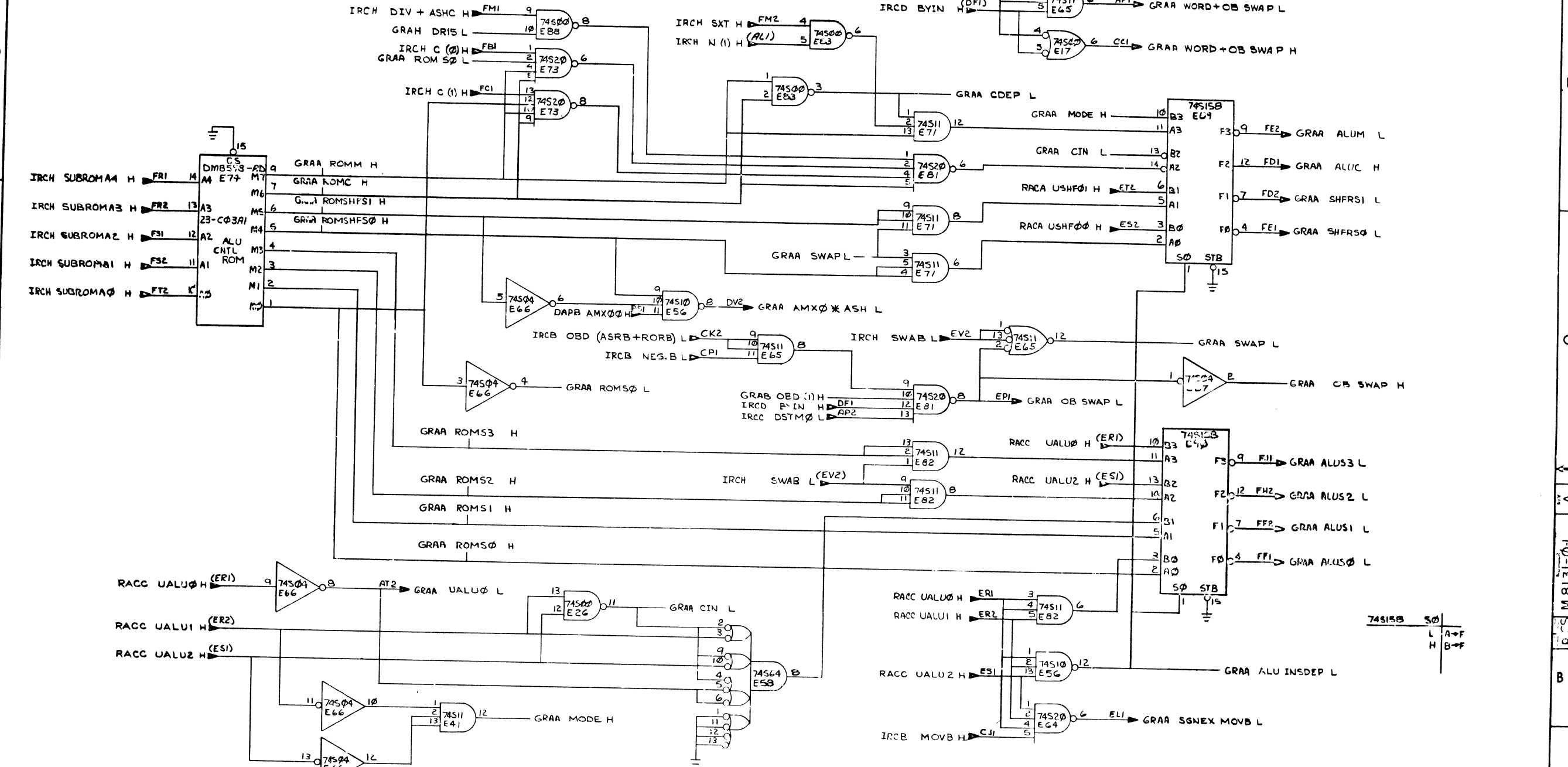
EQUIPMENT CORPORATION

TITLE: GENERAL REGS & ALLI, ONTL. (GRA)

DCS M0101-0-1

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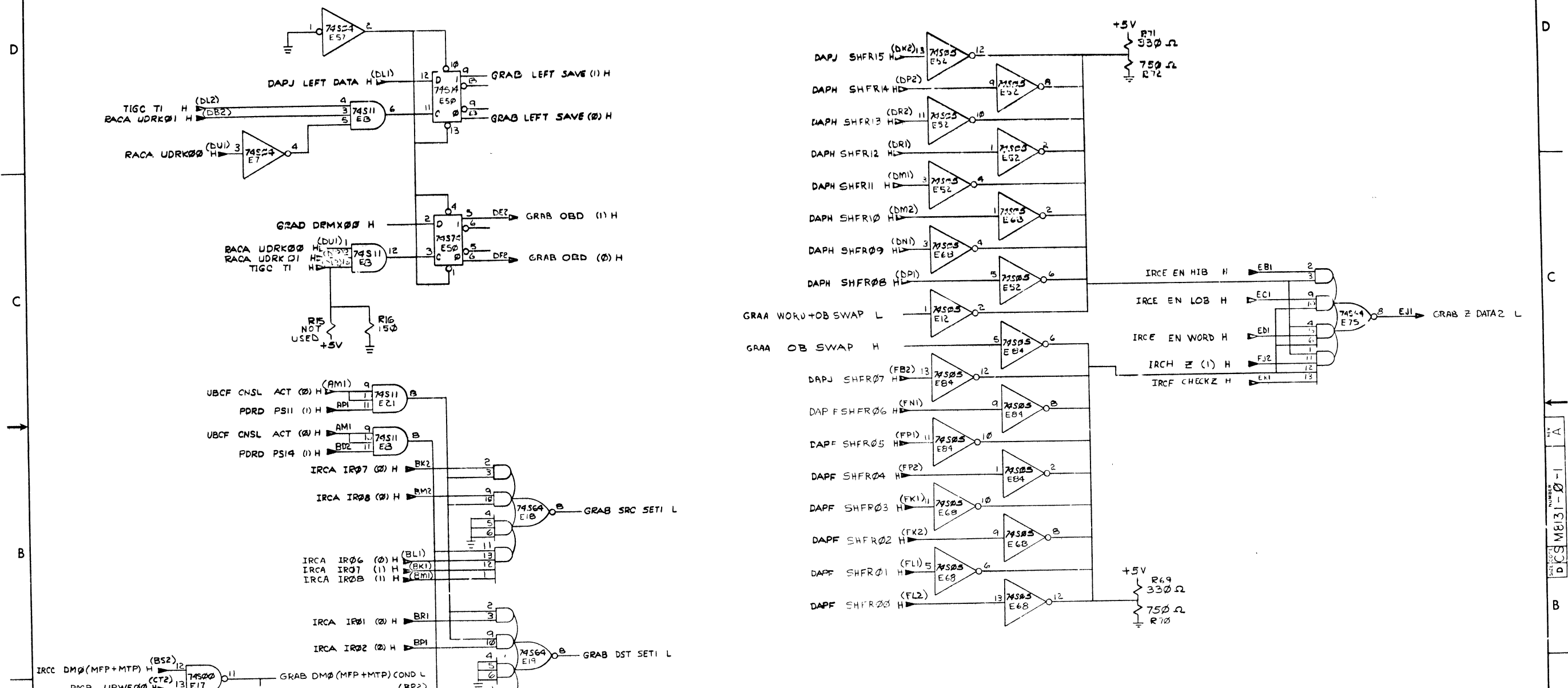
DIGITAL EQUIPMENT CORPORATION



REV	
CHANGE NO	
DATE	

ALU & SHIFTER CONTROL LOGIC SLOT 7			
FIRST LETTER OF PARTIAL PART NO.	QTY	DESCRIPTION	PART NO.
1170			
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			
TOLERANCES			
DECIMALS	F	LE3	
XX4 - L3		±0.00	
XX - C2			
X - 1			
REMOVED DIMENSIONS ARE SHOWN CORRECTED TO QUALITY			
MATERIAL			
FINISH			
		EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
		TITLE GENERAL REGS & ALU CNTL (GRAA)	
		D/C S M8131-0-1 A	

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SHIFTER = 0 DETECTOR; MSC. LOGIC

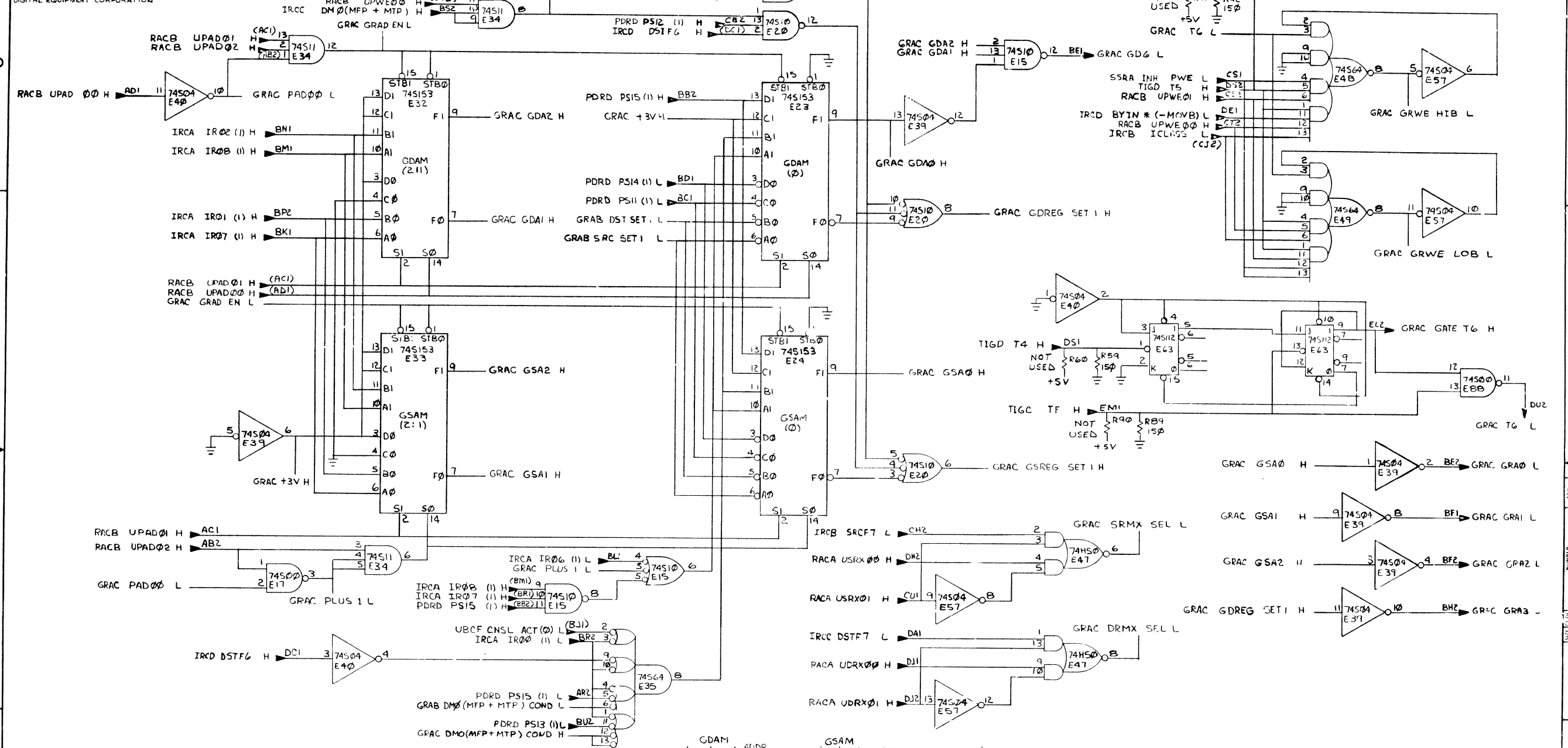
SLOT 7

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM #
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE	TITLE	
XXX - 0.5	±0° 30'	DATE	GENERAL REGS.	
XX - 0.2		DATE	ALU CNTL	
X - 0.1		DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL		SCALE	NUMBER	REV
FINISH		SCALE	DCS M8131-0-1	A

REV	CHANGE NO	REVISIONS

34

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GDAM				GSAM				UPVE 0100		GRWE LOB		GRWE HIB	
UPAD	S1	S0	ADDR OUTPUT	UPAD	S1	S0	ADDR OUTPUT	L	L	DONT WRITE	DONT WRITE	DONT WRITE	
0	L	L	SF	0+1	L	L	SF	L	L	WRITE COND	WRITE COND	WRITE COND	
4	L	L	SFVI	4	L	L	SFVI	L	H	ICLASS	ICLASS + BYTE INST	ICLASS + BYTE INST	
5	L	H	DF	5	L	H	DF	H	L	WRITE	WRITE	WRITE	
2	H	L	5	2+3	H	L	5	H	H	NOT USED	NOT USED	NOT USED	
3+7	H	H	6	7	H	H	6	H	H	NOT USED	NOT USED	NOT USED	

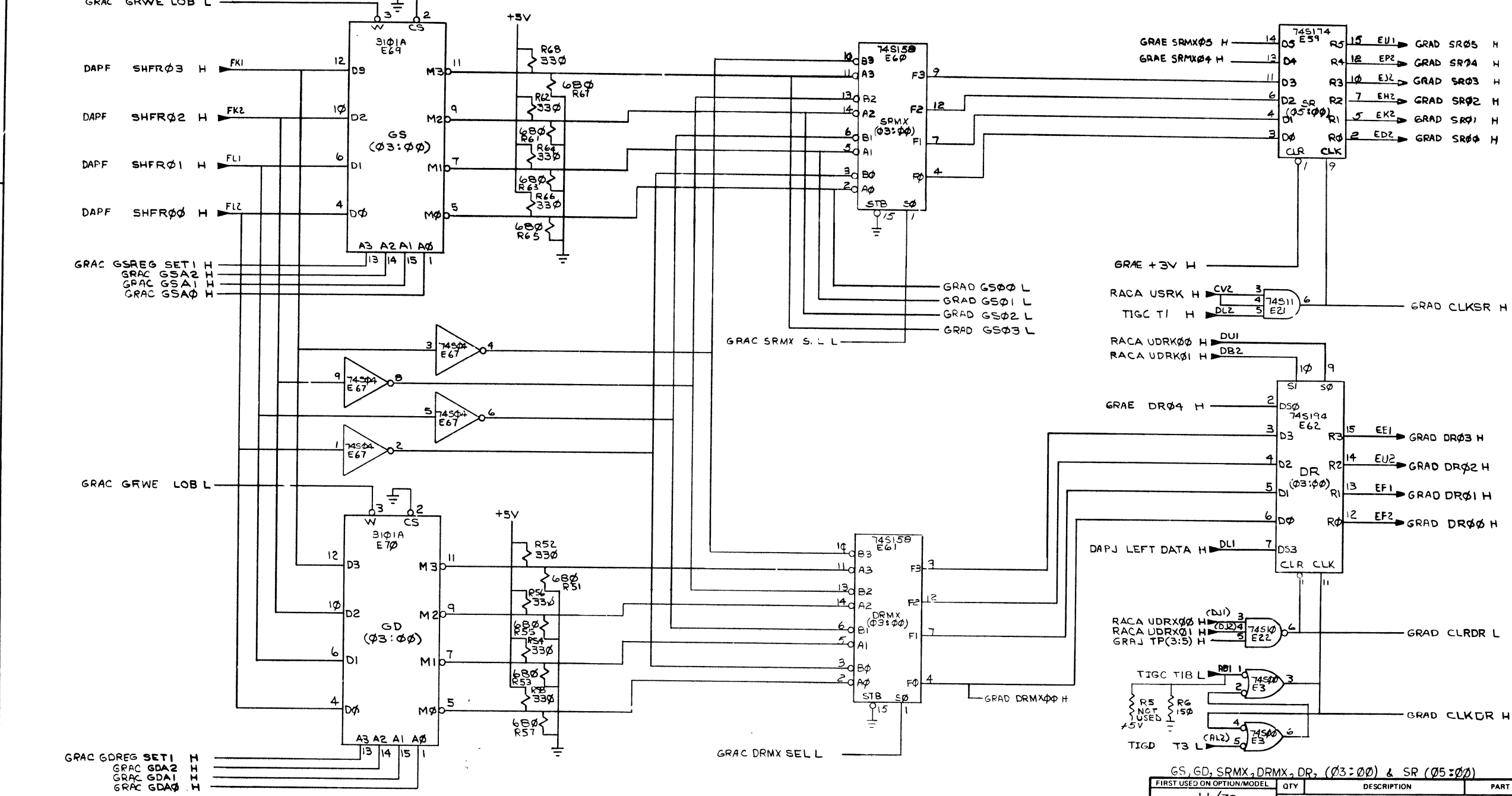
USRX 0100 OUTPUT (SRMX)				UDRX 0100 OUTPUT (DRMX)			
L	L	SFHR	SF7:GS	L	L	SFHR	SF7:GD
L	L	SFHR	SF7:GS	L	L	SFHR	SF7:GD
H	L	SF7:SHFR	SF7:GS	H	L	SF7:SHFR	SF7:GD
H	H	NOT USED	NOT USED	H	H	CLEAR DR	CLEAR DR

GENERAL REGS ADDR & WRITE PULSE CNTL				SLOT 7	
FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO	
11/70					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS			
XXX - 006	±0°30'	TITLE			
XX - 02		GENERAL REGS & ALU CNTL			
X - 1		(GRAC)			
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY					
MATERIAL		NEXT HIGHER ASSY		SIZE CODE	NUMBER
FINISH		SCALE		DCS M8131-0-1	REV A
SHEET 4 OF 10		DIST			

REVISIONS
CHANGE NO
CHK

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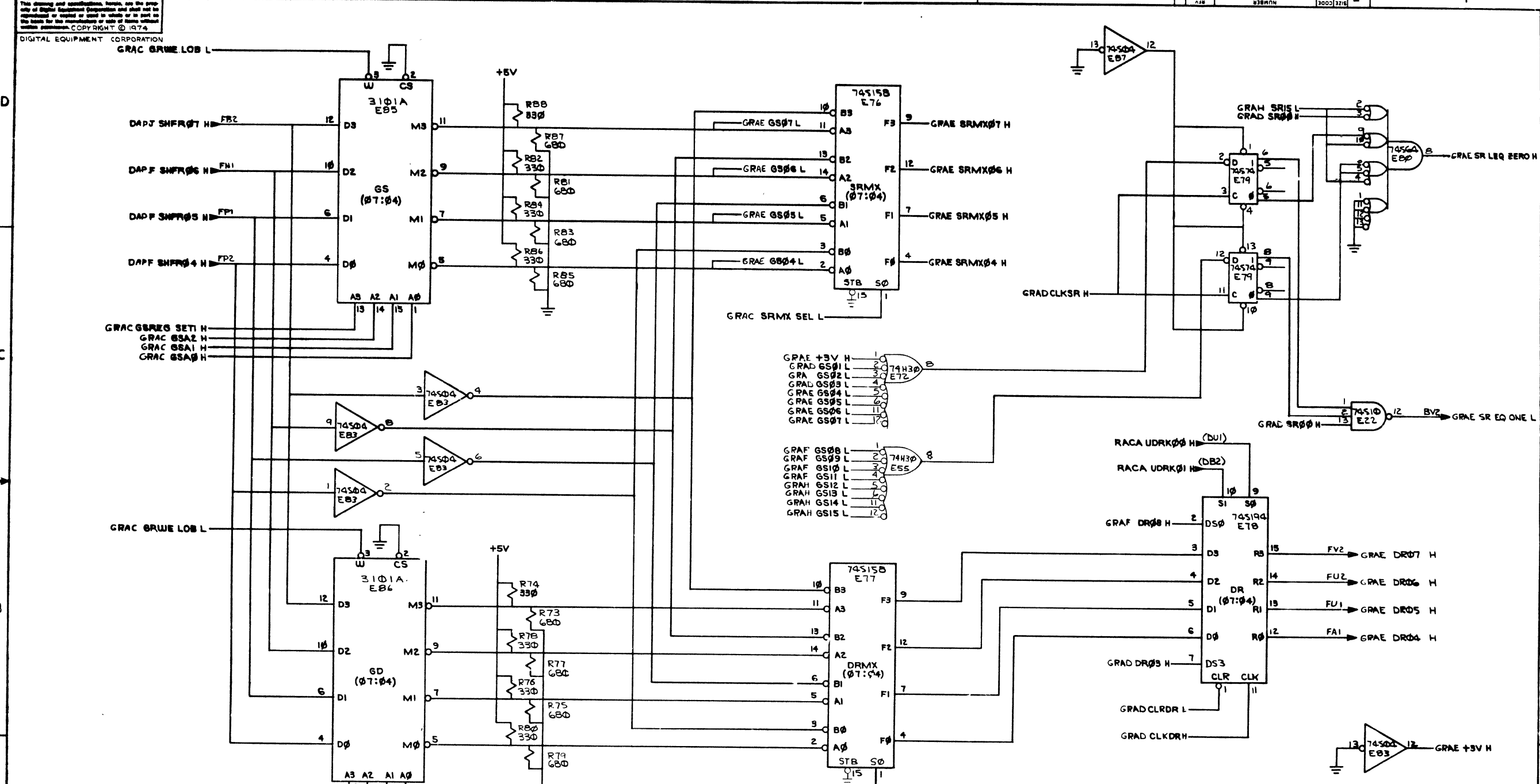


REV	
CHANGE NO	
CHK	

74S194	SI	SΦ	74S158	SΦ	OUTPUT
L	L	NO-OP	L	A	f
L	H	SHIFT RIGHT (DSΦ)	H	B	f
H	L	SHIFT LEFT (DS3)			
H	H	LOAD			

GS, GD, SRMX, DRM, DR, (DS:ΦΦ) & SR (DS:ΦΦ) SLOT 7				
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	11/27/74	GENERAL REGS. & ALU. CNTL (GRAD)	
XXX - 006	±0°30'	11/27/74		
XX - 02	X - 1	11/27/74		
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV
		DCS	M8131-0-1	A
FINISH	SCALE	SHEET	DIST	
	5 OF 10			

36



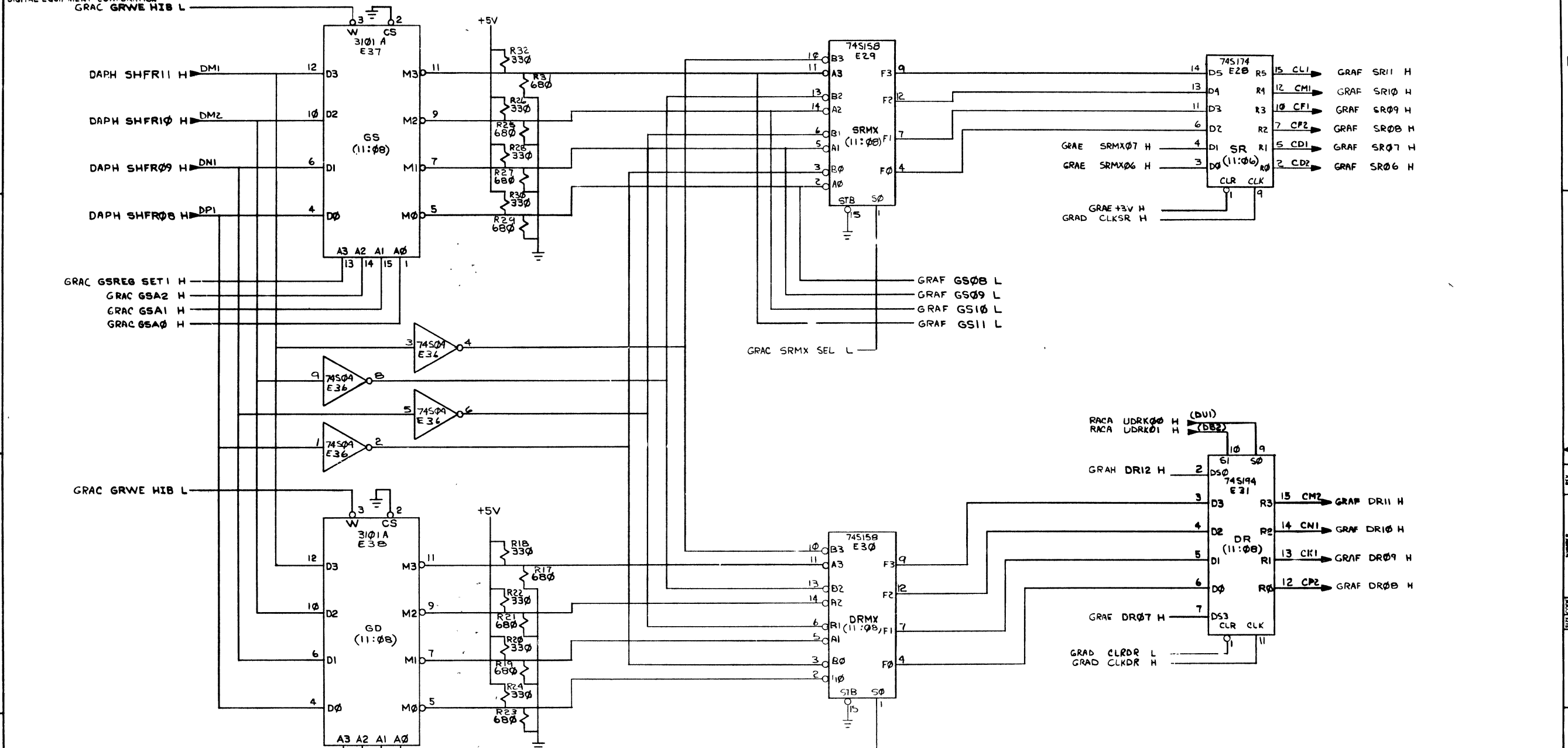
GS, GD, SRMX, DRMX, DR (07:04) & SR LEQ ZERO DET. SLOT 7

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	PARTS LIST		
XXX - 006	±0° 30'	DRN	DATE	DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
XX - 02		DATE	DATE	
X - 1		DATE	DATE	
		DATE	DATE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	TITLE		
FINISH	SCALE	GENERAL REGS & ALU CNTL (GRAE)		
	SHEET 6 OF 10	DIST	NUMBER	REV
			ME131-0-1	A

REVISIONS
CHANGE NO
DATE

REV. NO. MB131-0-1
SHEET NO. 6

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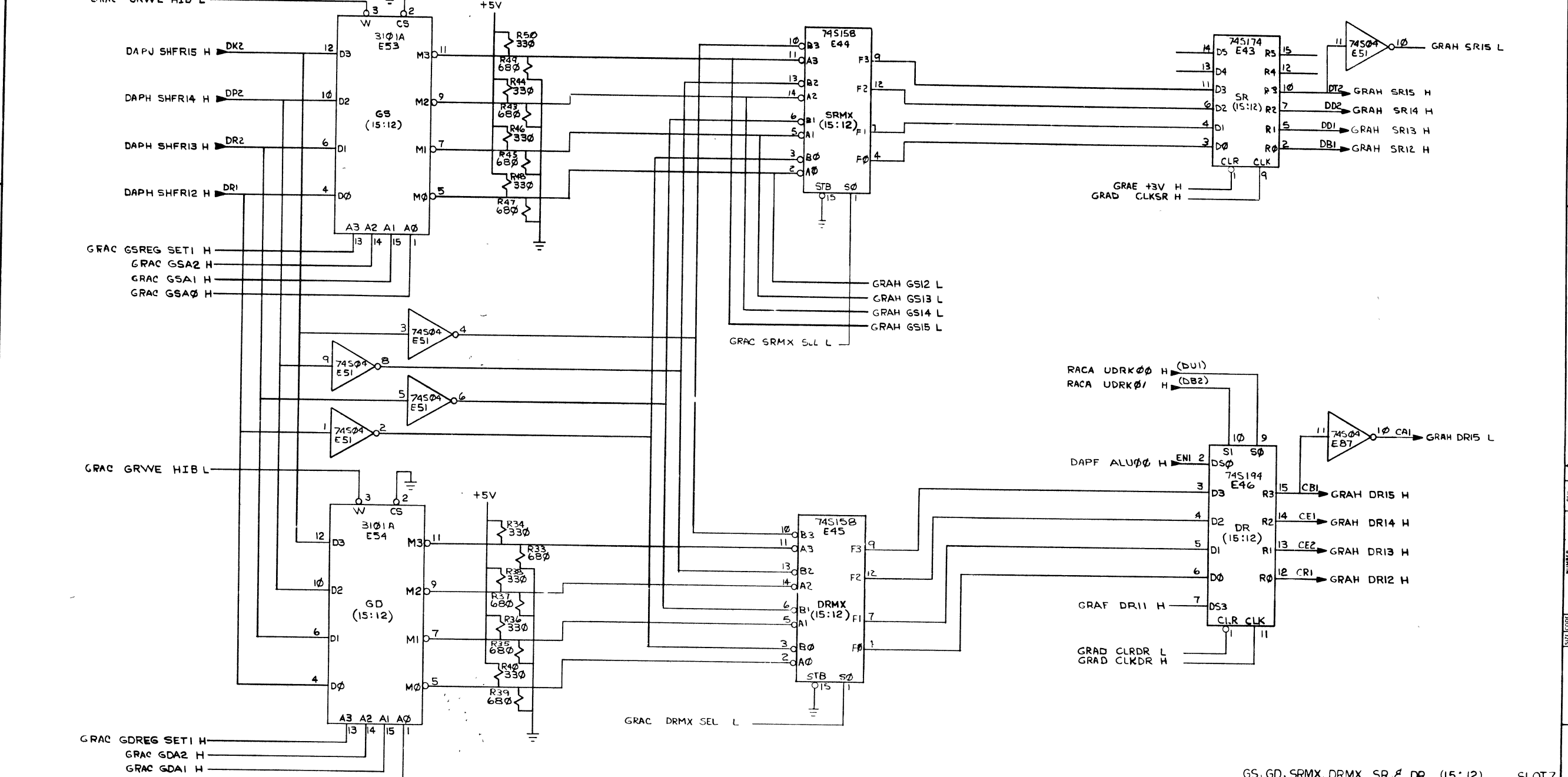


GS, GD, SRMX, DRMX, DR (11:08) & SR (11:06) SLOT 7

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX - 005	±0° 30'	GENERAL REGS & ALU CNTL (GRAF)		
XX - 02		DCS M8:31-0-1		
X - 1		REV A		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	SCALE	SHEET	OF 10
FINISH				

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REV	
CHANGE NO	
CHK	

DEF. FORM NO. DRL 7-8

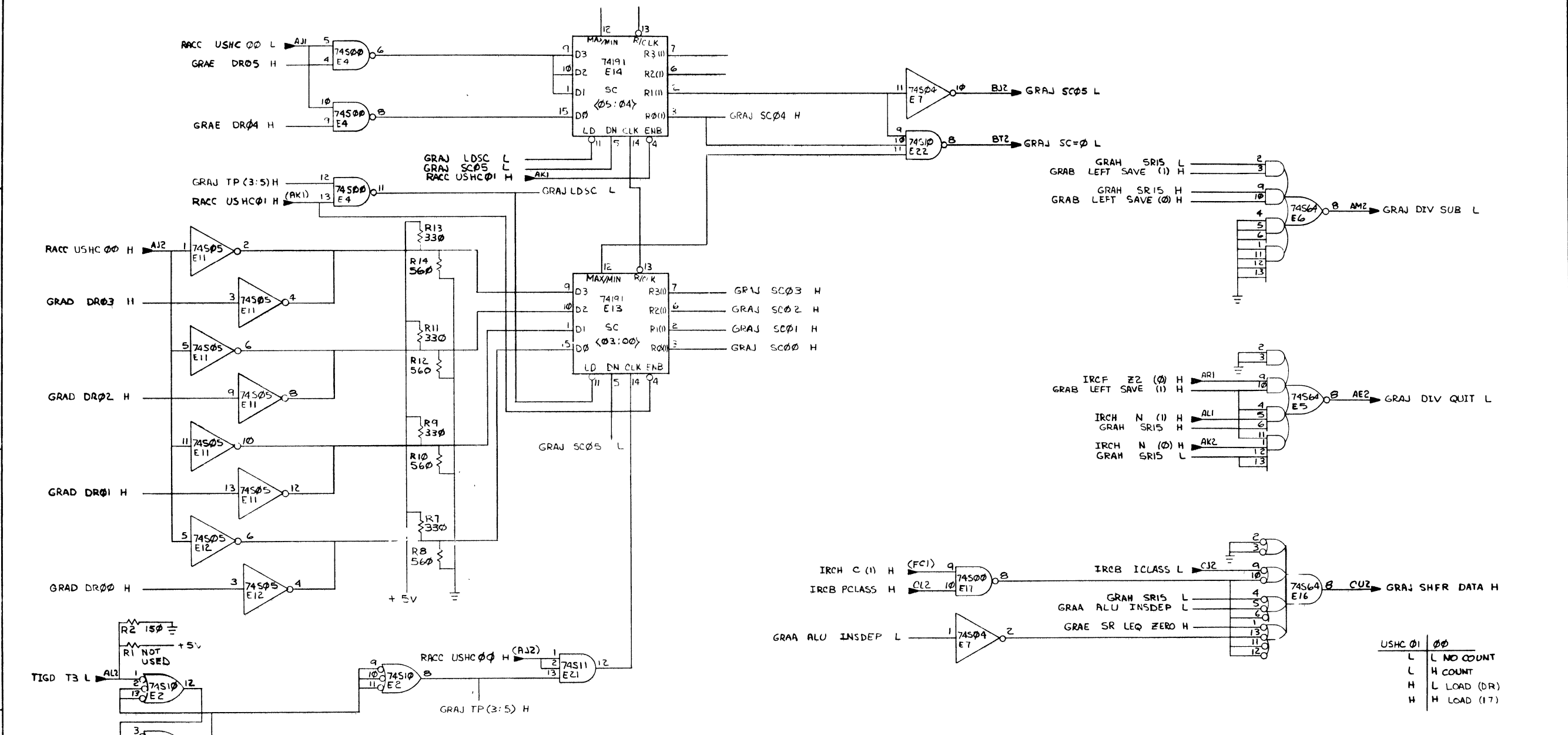
FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO								
11/70													
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES													
DECIMALS	ANGLES	PARTS LIST											
XXX - 006	±0°30'	<table border="1"> <tr> <td>DRN</td> <td>DATE</td> </tr> <tr> <td>CHK</td> <td>DATE</td> </tr> <tr> <td>PHOJ</td> <td>DATE</td> </tr> <tr> <td>PHOJ</td> <td>DATE</td> </tr> </table>				DRN	DATE	CHK	DATE	PHOJ	DATE	PHOJ	DATE
DRN	DATE												
CHK	DATE												
PHOJ	DATE												
PHOJ	DATE												
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY													
MATERIAL		NEXT HIGHER ASSY		SIZE CODE	REV								
				DCS M8131-0-1	A								
FINISH		SCALE		SHEET 8 OF 10									
				DIST									

GS, GD, SRMX, DRMX, SR & DR (15:12) SLOT 7



GENERAL REGS & ALU CNTL (GRAH)

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REV	CHANGE NO	REV

BRUNING 40 521 15840
 DEC FORM NO DRD 102-B

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
1170					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				EQUIPMENT CORPORATION	
DECIMALS	ANGLES			TITLE	
XXX - 006	± 0° 30'			GENERAL REGS & ALU CNTL (GRAJ)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				SIZE CODE	NUME EP
MATERIAL				DCS	M8131-0-1
FINISH				SHEET 9	OF 10

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INSTRUCTION	OCTAL ADDRESS
ROR.B	00
ROL.B	01
ASR.B	02
ASL.B	03
MARK	04
MFP	05
MTP	06
SXT	07
CLR.B	10
COM.B	11
INC.B	12
DEC.B	13
NEG.B	14
ADC.B	15
SBC.B	16
TST.B	17
SUB	20
MOV.B	21
CMP.B	22
BIT.B	23
BIC.B	24
BIS.B	25
ADD	26
	27
MUL	30
DIV	31
ASH	32
ASHC	33
XDR	34
	35
	36
SOB	37

ALU CNTL ROM DM8598-AD

ROM7	ROM6	ROM5	ROM4	ROM3	ROM2	ROM1	ROM0
L	L	H	H	L	L	L	L
H	H	L	L	H	H	L	L
L	L	H	H	L	L	L	L
L	L	H	L	H	H	L	L
L	L	L	L	L	L	L	L
H	L	H	L	H	L	H	L
H	L	H	L	H	L	H	L
H	L	H	L	L	L	H	H
H	L	H	L	L	L	L	H
H	L	H	L	L	L	L	L
L	H	H	L	L	L	L	L
L	L	H	L	L	L	L	L
H	H	H	L	L	L	L	L
H	H	H	L	H	H	H	H
L	L	H	L	L	L	L	L
L	L	H	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L

SWAB

INSTRUCTION DEP. ALU FUNCTION (RACC UALU (2:0)=7)
F=A
F=A PLUS A PLUS CBIT
F=A
F=A PLUS A
NOT INST. DEP.
F=B
F=B
N. F=MINUS 1; N. F=B
F=B
F=A
F=A PLUS 1
F=A MINUS 1
F=A
F=A PLUS C BIT
F=A MINUS C BIT
F=A
F=A MINUS B
F=B
F=A MINUS B MINUS 1
F=AB
F=AB
F=A+B
F=A PLUS B
F=A MINUS B
F=A PLUS A PLUS DR15
NOT INST DEP.
F=A PLUS A PLUS DR15
F=A V B
NOT INST DEP
F=A

INSTRUCTION DEP. SHFR FUNCTION (RACC UALU (2:0)=7)
RIGHT SHIFT
NO - SHIFT **
RIGHT SHIFT
NO - SHIFT **
NOT INST. DEP.
NO - SHIFT
NO - SHIFT
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
NO - SHIFT **
RIGHT SHIFT
NO - SHIFT
NOT INST DEP *
NO - SHIFT
NO - SHIFT
NOT INST DEP
SWAP BYTES

NOTE SWAB INST HAS SAME ROM ADDRESS AS ASL B
*ROMSHF OUTPUTS USED TO DECODE ASH
**ODD BYTE*BYTE INSTR SWAP BYTES

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DATE 11/27/74	DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS		
DECIMALS ANGLS	DATE 11/27/74	TITLE GENERAL REGS. & ALU CNTL (GRAK)		
XX - 005 XX - 02 X - 1	DATE 11-27-74	SIZE CODE D CS MB131 0-1		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	DATE 11-27-74	NUMBER REV A		
MATERIAL	NEXT HIGHER ASSY	SCALE NONE SHEET 10 OF 10		
FINISH		DIST		

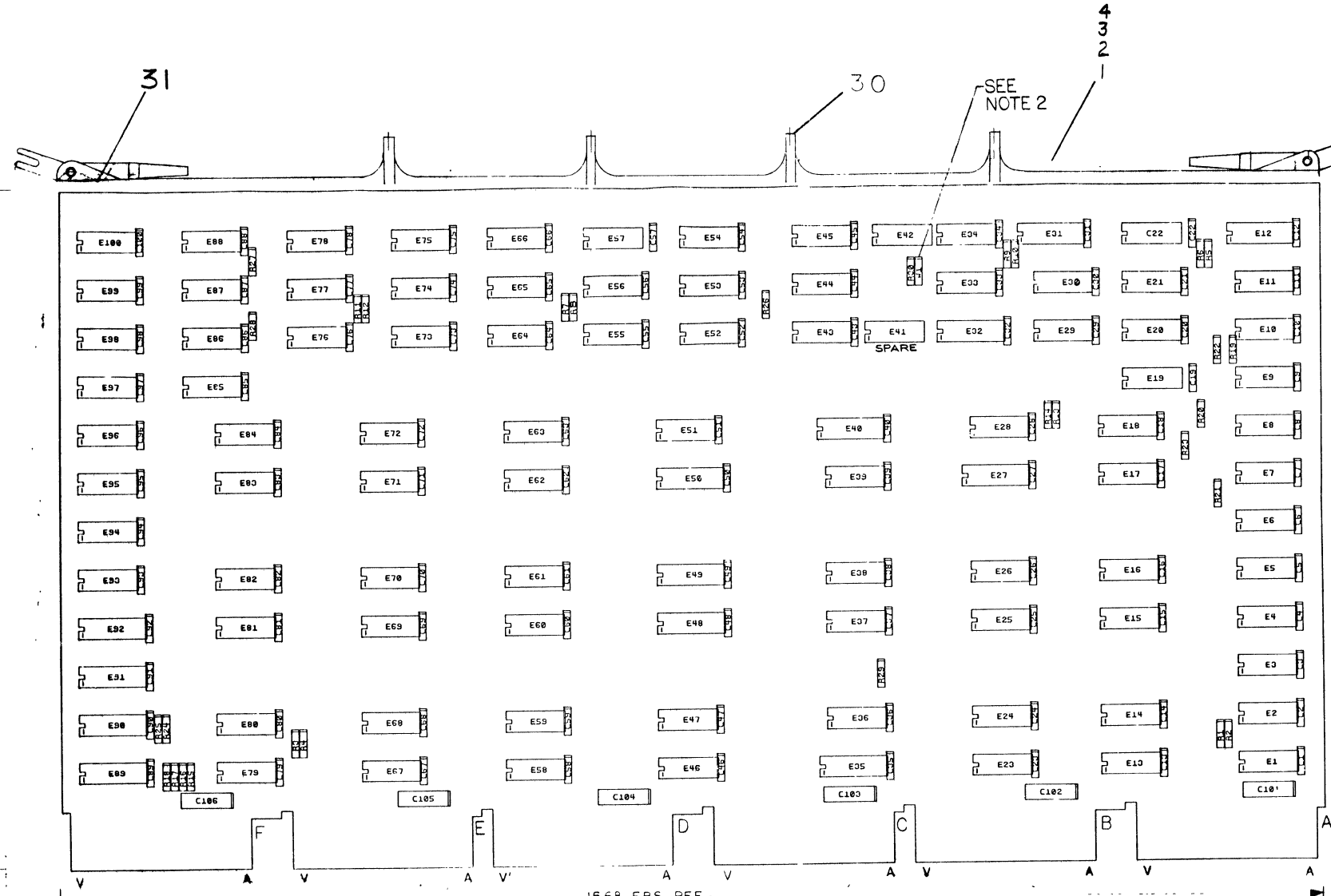
NUMBER
DCS MB131-0-1
REV. 1

REV
CHANGE NO
CHK
DEC FORM NO
DRD 102-B

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NOTES:

1. RESISTORS R1, R2 AND R4 ARE NOT USED.
2. INSTALL JUMPER WI FOR USE WITH FPII-B

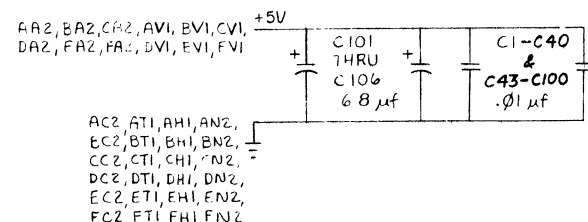


REF	X-Y COORDINATE HOLE LOCATION	K-CD-M8132-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8132-0-5	2
REF	MODULE ECO HISTORY	B-MH-M8132-0-6	3
1	ETCHED CIRCUIT BOARD	35011394	4
6	C101 THRU C106	CAPACITOR, 6.8MFD, 35V, 10%	5
38	C1 THRU C40, C43 THRU C100	CAPACITOR, 01MFD, 100V, 20% DISC	6
3	R2, R11, R13	RESISTOR, 150, 1/4W, 5%	7
4	R4, R5, R8, R9	RESISTOR, 330, 1/4W, 5%	8
10	R20 THRU R29	RESISTOR, 470, 1/4W, 5%	9
4	R3, R6, R7, R10	RESISTOR, 560, 1/4W, 5%	10
6	R15 THRU R19, R30	RESISTOR, 1K, 1/4W, 5%	11
12	E8, E11, E19, E21, E38, E37, E39, E52, E55, E62, E64, E93	I.C. DEC 74S00	12
1	E34	I.C. DEC 74S03	13
8	E3, E17, E30, E43, E88, E87, E97, E45	I.C. DEC 74S04	14
9	E28, E33, E38, E53, E58, E74, E95, E98, E100	I.C. DEC 74S10	15
16	E4, E6, E10, E22, E29, E46, E56, E59, E60, E71, E72, E75, E76, E78, E86, E89	I.C. DEC 74S11	16
6	E7, E9, E18, E87, E70, E96	I.C. DEC 74S20	17
1	E2	I.C. DEC 74S40	18
11	E1, E5, E6, E83, E77, E81, E82, E83, E84, E93, E42	I.C. DEC 74S64	19
5	E20, E54, E7, E85, E88	I.C. DEC 74S65	20
11	E13, E14, E15, E16, E23, E24, E25, E28, E73, E79, E94	I.C. DEC 74S74	21
4	E12, E31, E91, E92	I.C. DEC 74S153	22
2	E35, E40	I.C. DEC 74S157	23
3	E51, E80, E85	I.C. DEC 74H50	24
5	E27, E32, E48, E49, E50	I.C. DEC 8251-1	25
1	E47	I.C. DEC 8875	26
2	E44, E09	I.C. DEC 8885	27
1	E89	I.C. DEC 8598-AB	28
1	E90	I.C. DM 8598-AC	29
1		HANDLE MODULE	1210711-2
12		EYELET	9008732

IC TYPE	GND	+5V
IC DEC 8598AC	8	16
IC DEC 74S157	8	16
IC DEC 74S153	8	16
IC DEC 8598AB	8	16
IC DEC 8251-1	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS



CHK	CHANGE NO	REV

FIRST USED ON OPTION MODEL: 1170

ETCH BOARD REV: B

REVISIONS:

DRN	DATE
K. Constructions	11-26-71
...	...

TITLE: IR DECODE & COND CODES (IRC)

SIZE CODE: DCS M8132-0-1

NUMBER: G

REV: C

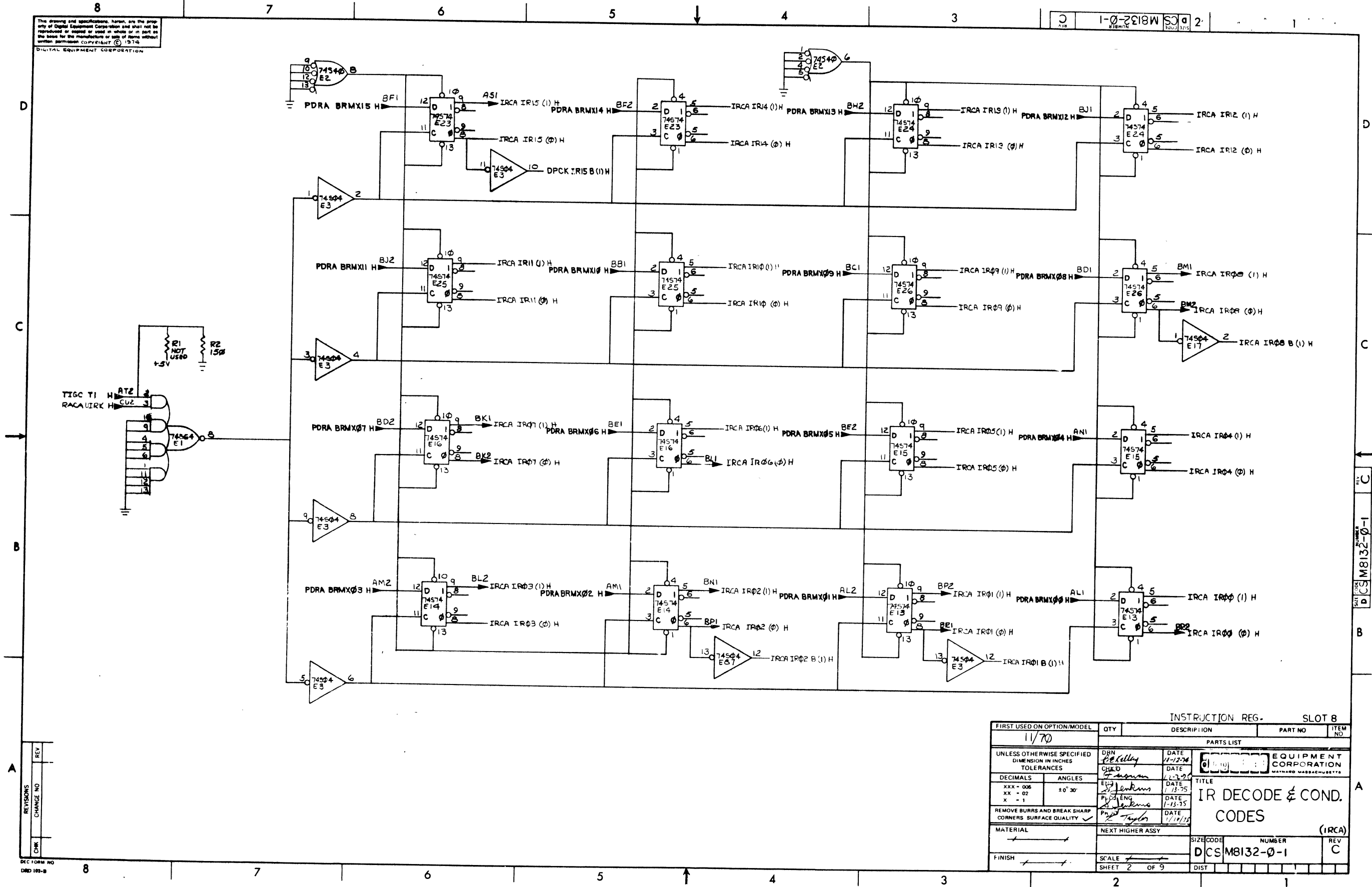
SCALE: 1 OF 9

SHEET: 1 OF 9

DIST: 1

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1-0-2218W CS 2

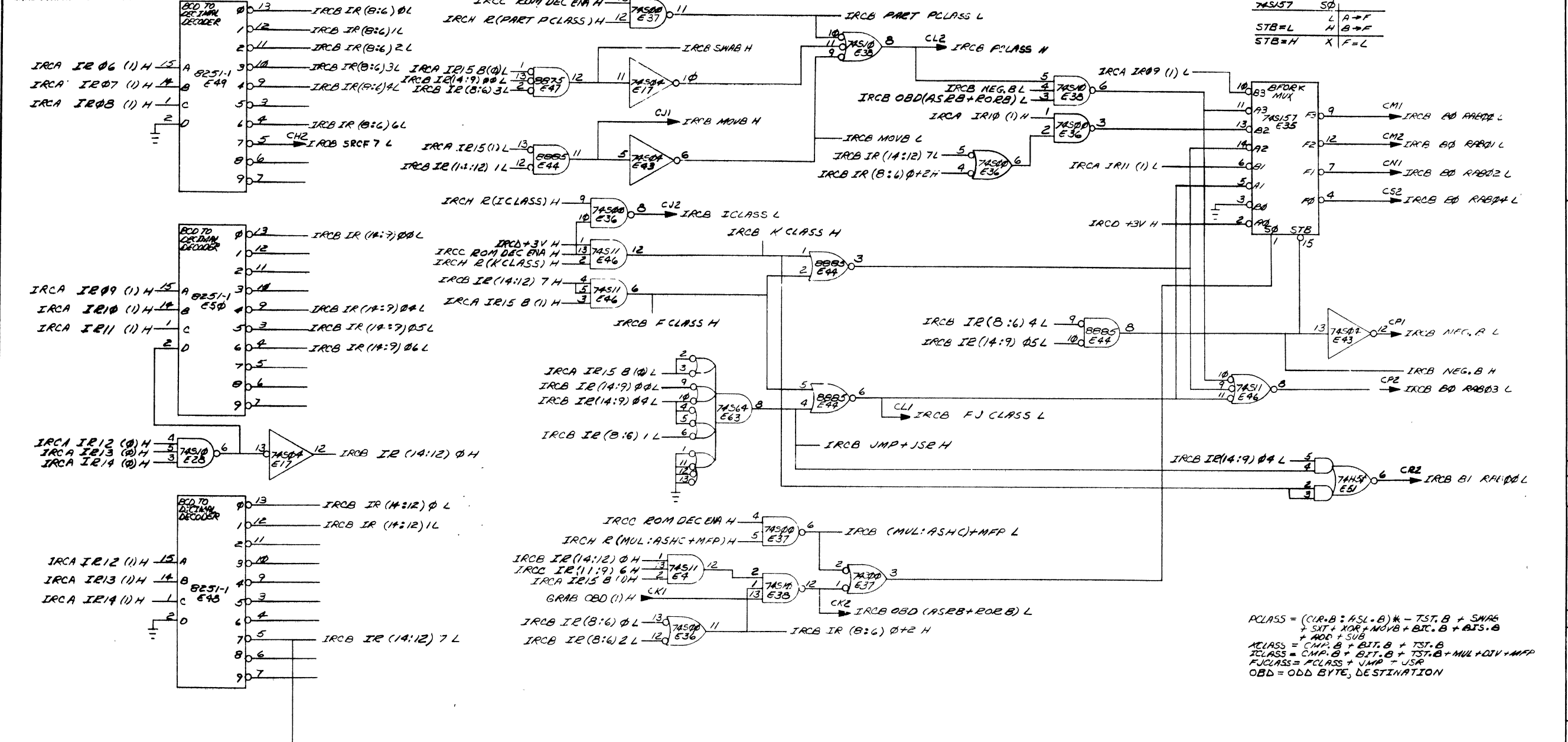


REV	NO	CHG	NO

FIRST USED ON OPTION/MODEL 11/70		QTY	INSTRUCTION REG. SLOT 8	
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		PARTS LIST		
DECIMALS ANGLES		EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS		
XXX - 006 XX - 02 X - 1	±0° 30'	DRN CHK D E13 P13 P13 P13	DATE 11-12-74 1-12-75 1-13-75 1/10/75	TITLE IR DECODE & COND. CODES
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		MATERIAL		
FINISH		NEXT HIGHER ASSY		
		SCALE	SHEET 2 OF 9	REV C
		DCS M8132-0-1		

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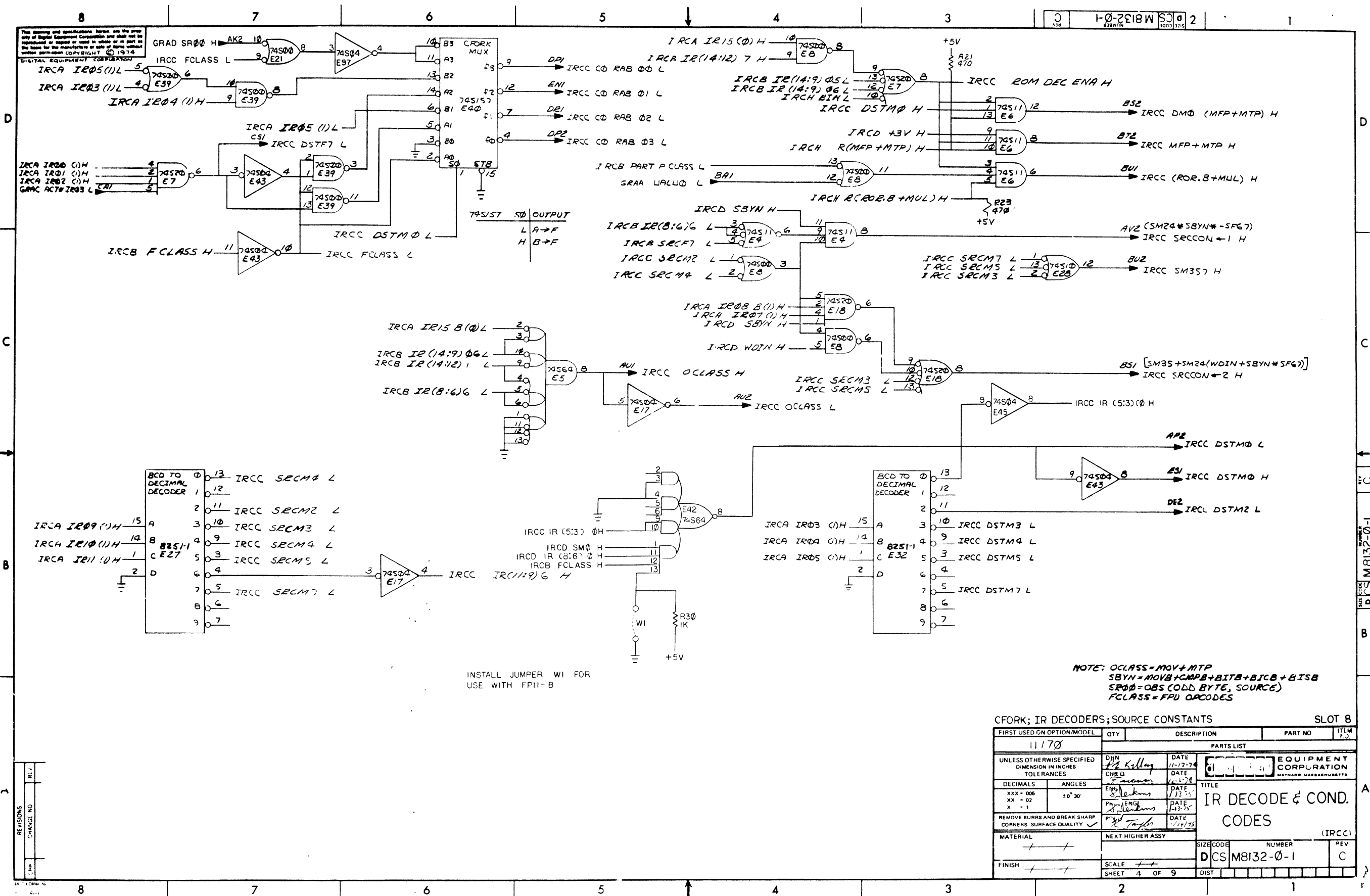
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$PCLASS = (CIR.B : ASL.B) * -TST.B + SWAB$
 $+ SXT + XOR + MOV.B + BIC.B + BJS.B$
 $+ ADD + SUB$
 $ACLASS = CMP.B + BIT.B + TST.B$
 $ICLASS = CMP.B + BIT.B + TST.B + MUL + DIV + MFP$
 $FJCLASS = PCLASS + JMP + USA$
 $OBD = ODD \text{ BYTE, DESTINATION}$

REV	CHANGE NO

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES				
XXX - 006	10° 30'				
X - 1					
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL		NEXT HIGHER ASSY		SIZE CODE NUMBER (IRCB)	
FINISH		SCALE		DCS M8132-0-1 C	
SHEET 3 OF 9		DIST			



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NOTE: OCLASS = MOV + MTP
 SBYN = MOV + CMP + BIT + BIC + BIS
 SR0 = ODS (ODD BYTE, SOURCE)
 FCLASS = FPU OPCODES

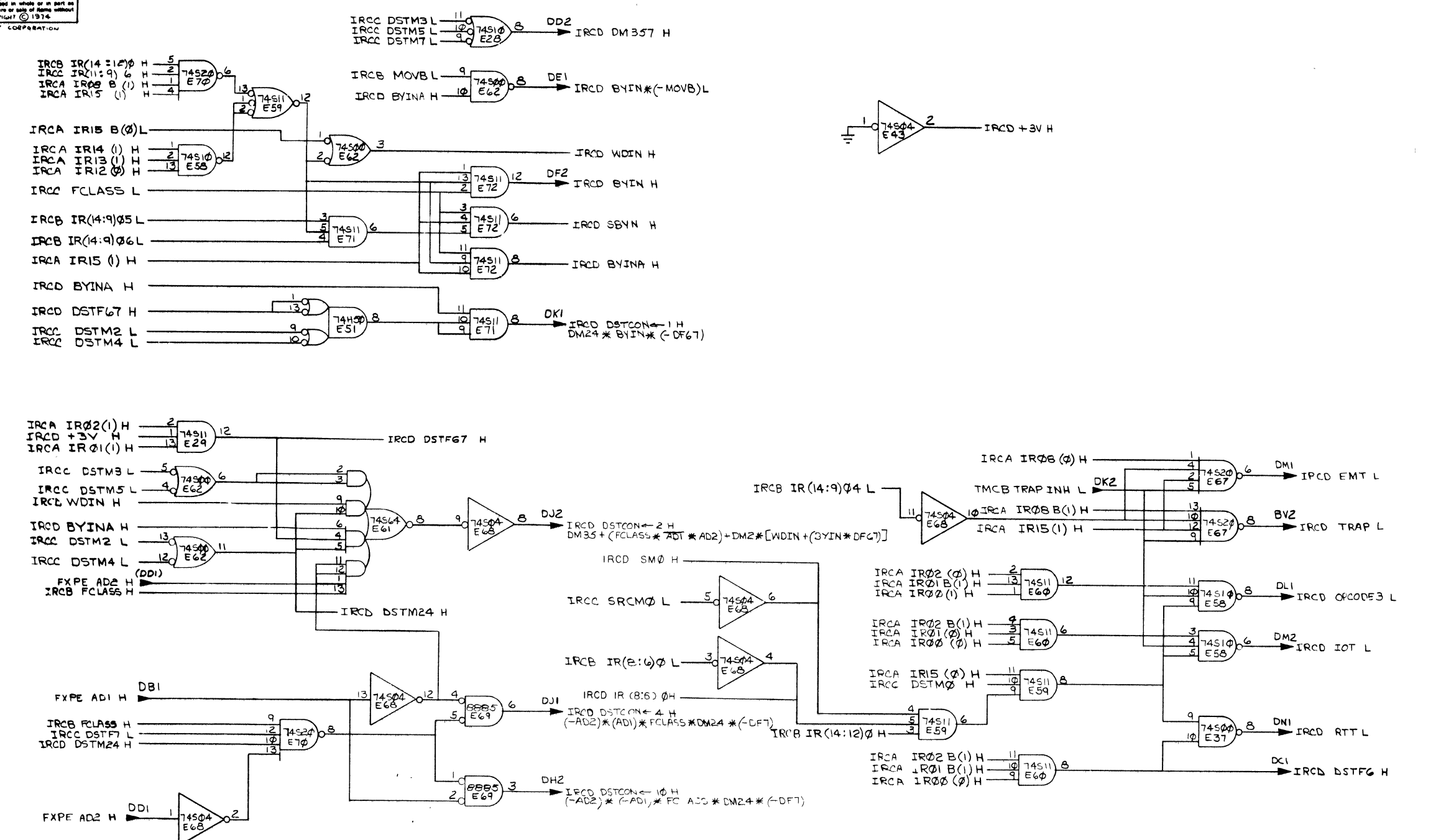
INSTALL JUMPER W1 FOR USE WITH FP11-B

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITLW
11170					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION		
DECIMALS ANGLES		DATE	MAYNARD MASSACHUSETTS		
XXX - 006 ±0° 30'		DATE	TITLE		
X - 1		DATE	IR DECODE & COND. CODES		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	(IRCC)		
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV	
FINISH	SCALE	DIST	DCS M8132-0-1		C
SHEET 4 OF 9					

REV	CHG	NO

DCS M8132-0-1

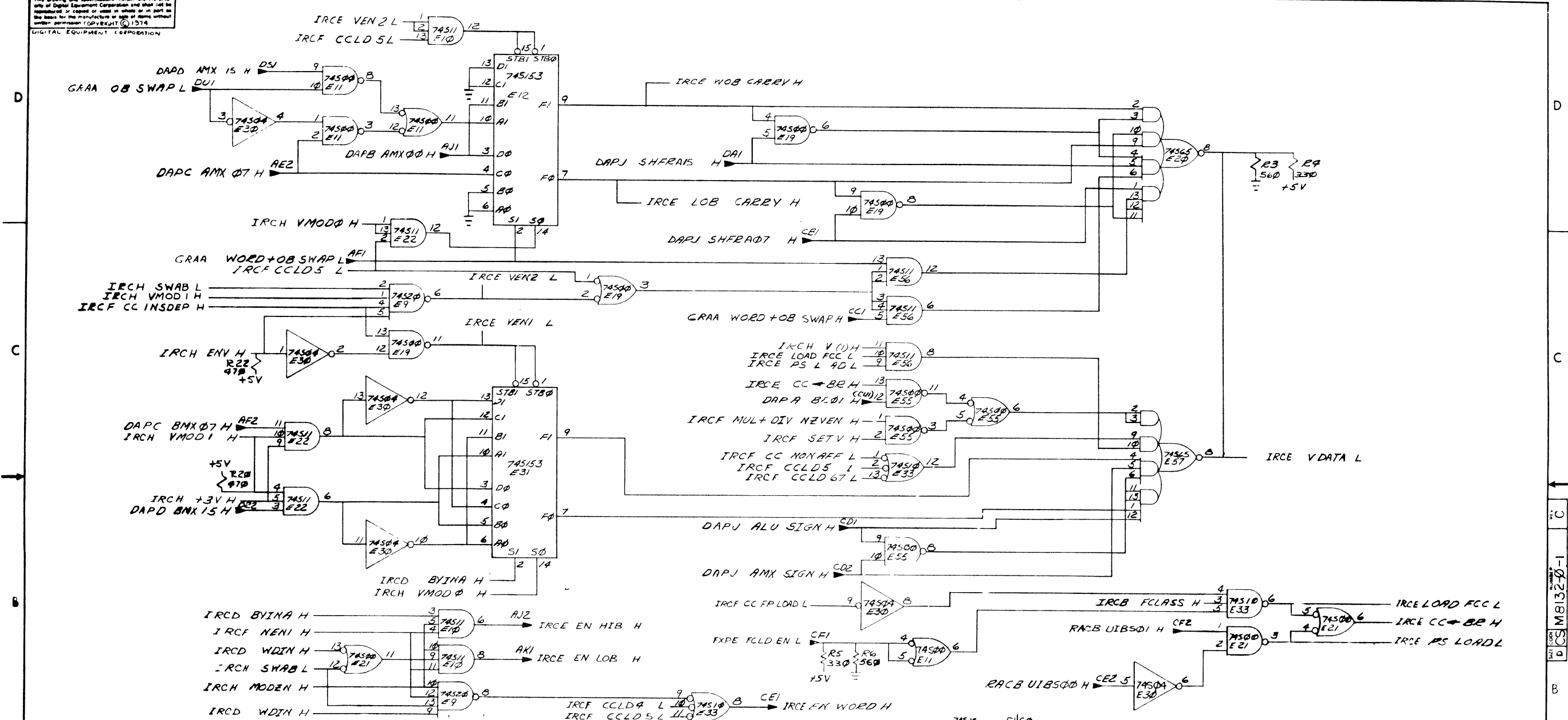
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REV	REVISIONS

FIRST USED OR OPTION/MODEL			QTY	DESCRIPTION	PART NO	ITEM NO
11/70						
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES			DRN <i>R. Kallay</i>	DATE 11-12-74	EQUIPMENT CORPORATION MILFORD MASSACHUSETTS	
DECIMALS	ANGLES			DATE 1-13-75	TITLE IR DECODE & COND. CODES	
XXX - 006	+0'30'			DATE 1-13-75		
XX - 02				DATE 1-13-75		
X - 1				DATE 1-13-75		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			PHC <i>J. Taylor</i>	DATE 1-13-75		
MATERIAL + + +	NEXT HIGHER ASSY	SIZE CODE		NUMBER	REV	
FINISH + + +	SCALE 1" = 1"	DCS M8132-0-1			C	
SHEET 5 OF 9		DIST				

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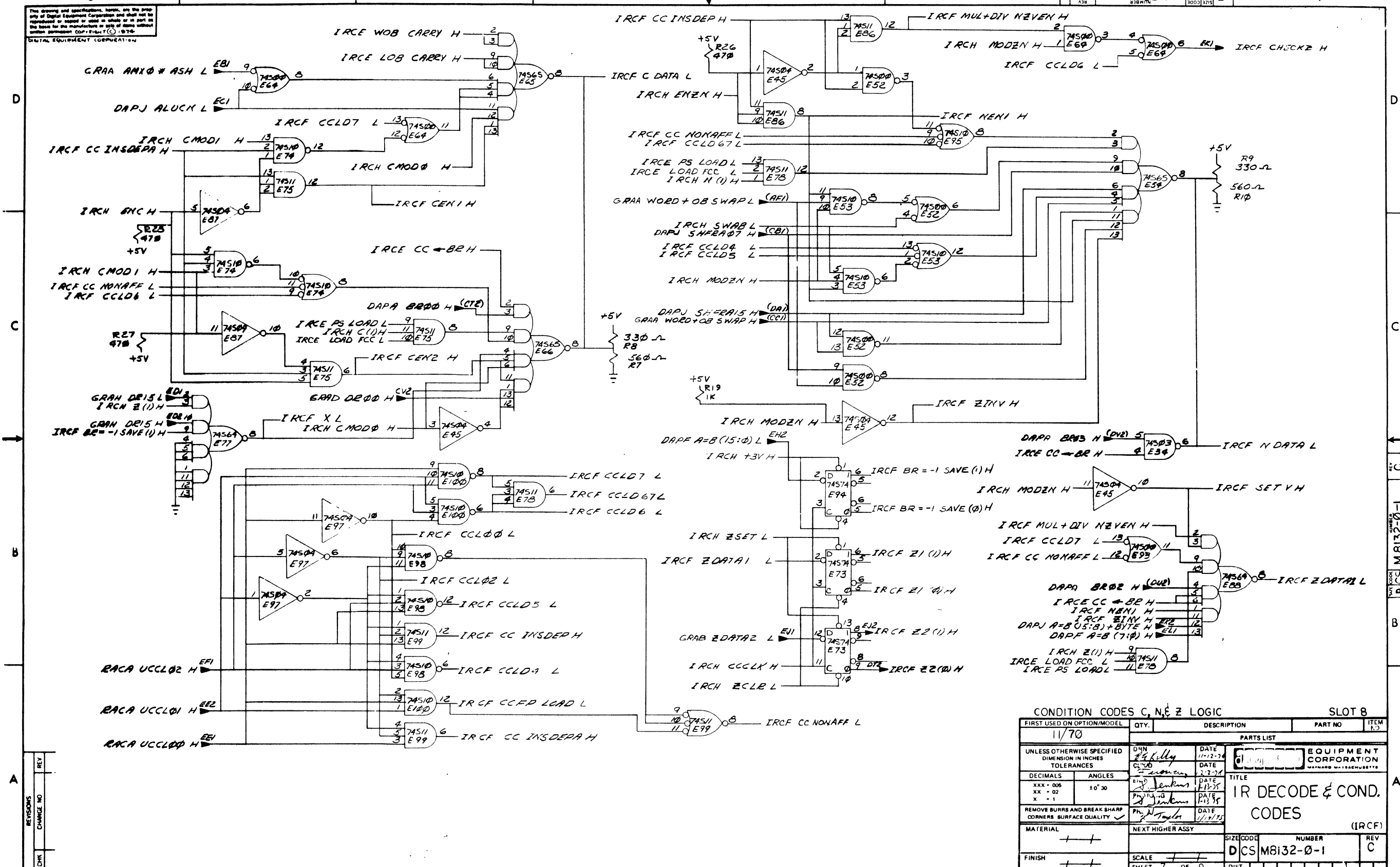


74515	S	S	D
	L	L	A → F
	L	H	B → F
STB L	H	L	C → F
	H	H	D → F
STB H	X	X	F = L

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		PARTS LIST			
DECIMALS	ANGLES	DATE	DATE	DATE	DATE
XXX - 006	10° 30'	11-12-70	1-2-71	1-23-71	1-15-75
XX - 02					
X - 1					
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL	NEXT HIGHER ASSY	TITLE			
++		IR DECODE & COND CODES (IRCE)			
FINISH	SCALE	SIZE CODE	NUMBER	REV	
++	SHEET 6 OF 9	DCS	M8132-0-1	C	

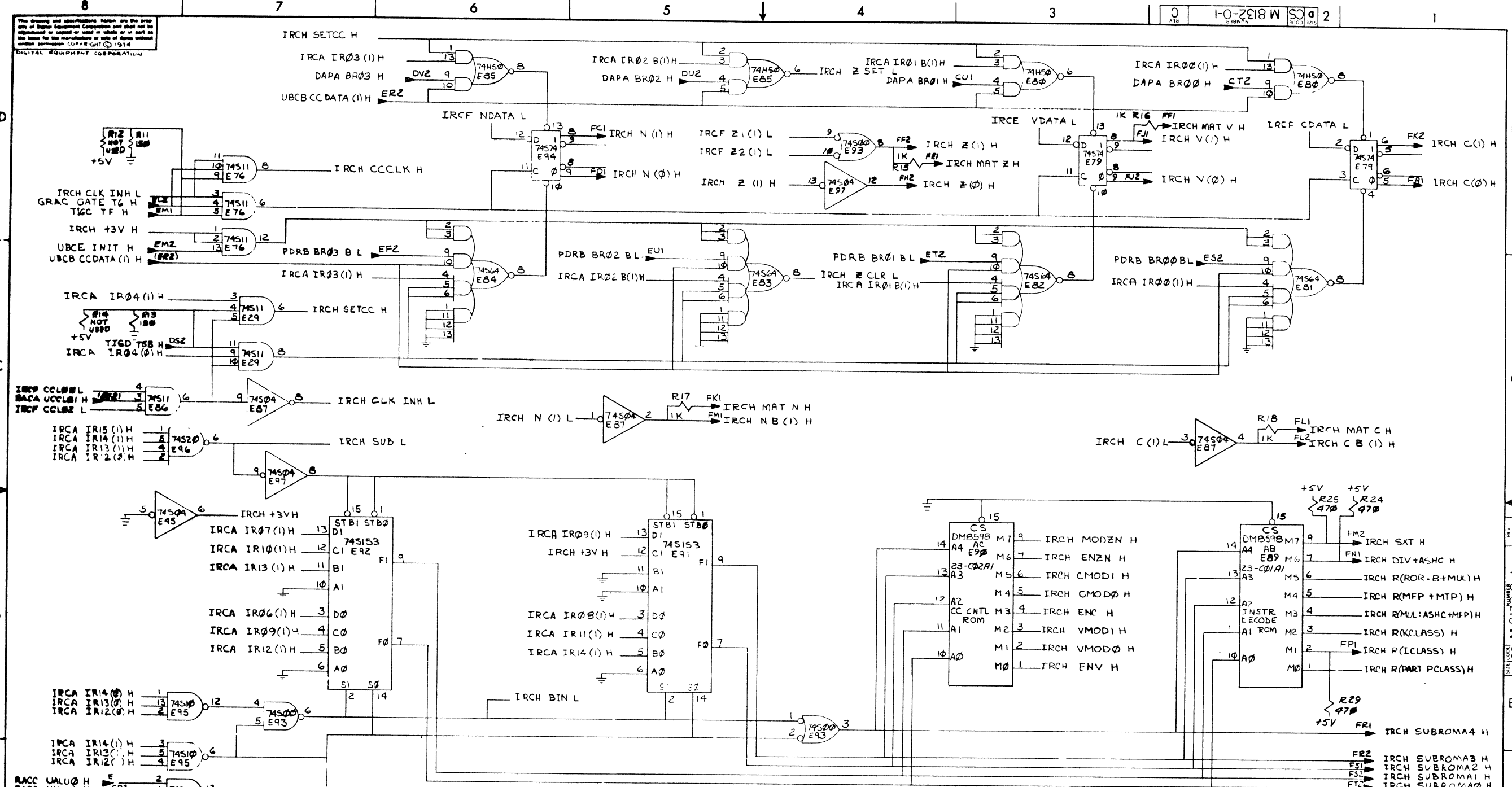
REV	NO	DATE	BY	CHK
CHG				

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CONDITION CODES C, N, Z LOGIC		SLOT B	
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.
11/70			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	D4N E. Kelly	DATE 11-12-70	EQUIPMENT CORPORATION
DECIMALS		DATE 2-2-74	
ANGLES		DATE 1-13-75	
XXX - 006		DATE 1-13-75	
XX - 02		DATE 1-13-75	
X - 1		DATE 1-13-75	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE 11/17/75	
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER
FINISH	SCALE	DICS M8132-0-1	REV C
	SHEET 7 OF 9		

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74S153 S1/S0
L L A → F
STB=L L H B → F
H L C → F
H H D → F
STB=H X X F=L

COND. CODE BITS; CC CNTL & INSTR DECODE ROMS		SLOT 8	
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO
11/70			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES			
DECIMALS	ANGLES	DATE	
XXX - 005	10° 30'	DATE	DATE
XY - 02		DATE	DATE
X - 1		DATE	DATE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			
MATERIAL	NEXT HIGHER ASSY	TITLE	
++		IR DECODE & COND CODES (IRCH)	
FINISH	SCALE	SIZE CODE	NUMBER
++	8 OF 9	D CS	M 8132-0-1
	SHEET	DIST	REV
			C

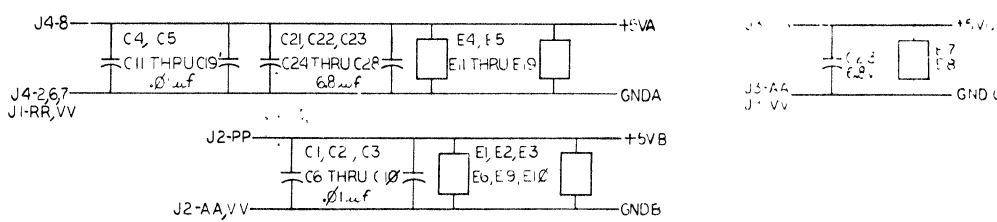
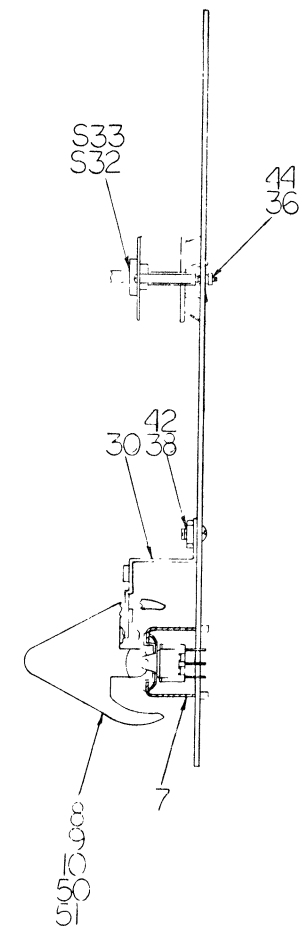
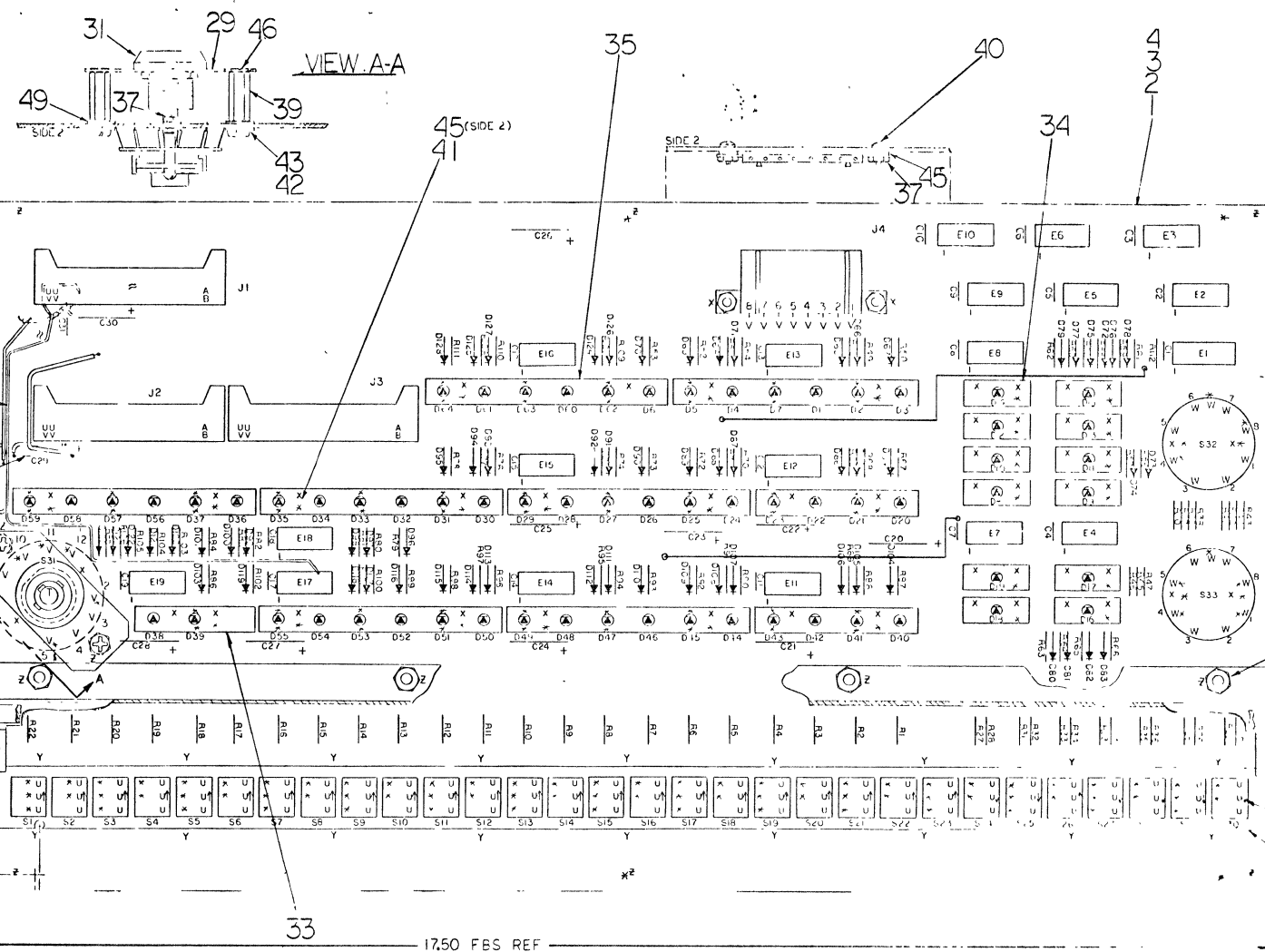
REV	CHANGE NO

REC FORM NO
DBO 166-B

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NOTES:

1. ARROW INDICATES DIRECTION TOGGLE MOVES WHEN ACTIVATED.
2. C29 IS OPTIONAL, DO NOT INSERT.



IC TYPE	8	16
DEC IC 9318	8	16
IC PIN LOCATIONS	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPT IONS ARE STATED ABOVE

SEE -B-PL-5411294-0-0

REV	DESCRIPTION	DATE
1	B MINOR	15 FEB 77
2	REVISED & REFORMAN	17 FEB 77
3	REVISED & REFORMAN	17 FEB 77
4	REVISED & REFORMAN	17 FEB 77
5	REVISED & REFORMAN	17 FEB 77
6	REVISED & REFORMAN	17 FEB 77
7	REVISED & REFORMAN	17 FEB 77
8	REVISED & REFORMAN	17 FEB 77
9	REVISED & REFORMAN	17 FEB 77
10	REVISED & REFORMAN	17 FEB 77

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
		PARTS LIST		
		ETCH BOARD REV. B		
		DRN. L. SUDMAN DATE 11/17/76		
		CHK'D. FURGUSON DATE 11/22/76		
		ENG. S. SMITH DATE 1/2/77		
		PROJ. ENGR. S. SMITH DATE 1/2/77		
		PROD. K. TAYLOR DATE 1/10/77		
		NEXT HIGHER ASSY		
DEC NO.	EIA NO.	DEC NO.	EIA NO.	
SEMICONDUCTOR CONVERSION CHART				
SCALE	#	SIZE CODE		NUMBER
SHEET	1 OF 5	D	CS	5411294-0-1
		DIST.		REV. D

digital

TITLE: CONSOLE BOARD

SIZE CODE: D CS 5411294-0-1

NUMBER: 5411294-0-1

REV. D

8 7 6 5 4 3 2 1

D D C C B B A A

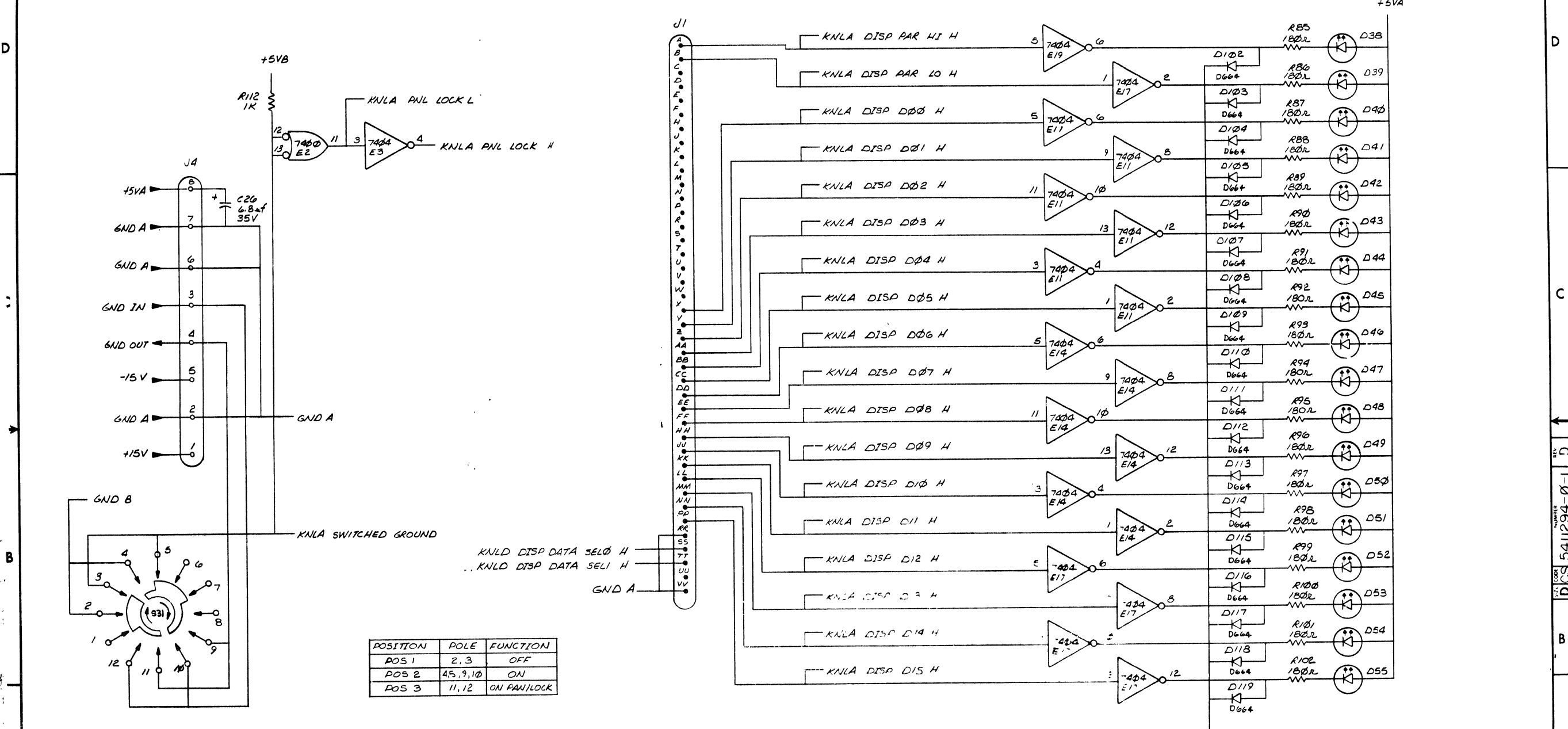
REV. D

NUMBER 5411294-0-1

SIZE CODE CS

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KNLA/PDR INTERFACE



POSITION	POLE	FUNCTION
POS 1	2, 3	OFF
POS 2	4, 5, 9, 10	ON
POS 3	11, 12	ON PAN/LOCK

- NOTES:
1. BC00R CABLES USED TO CONNECT CONSOLE TO PDR AND SCC BOARDS.
 2. CASE OF S31 = GND A

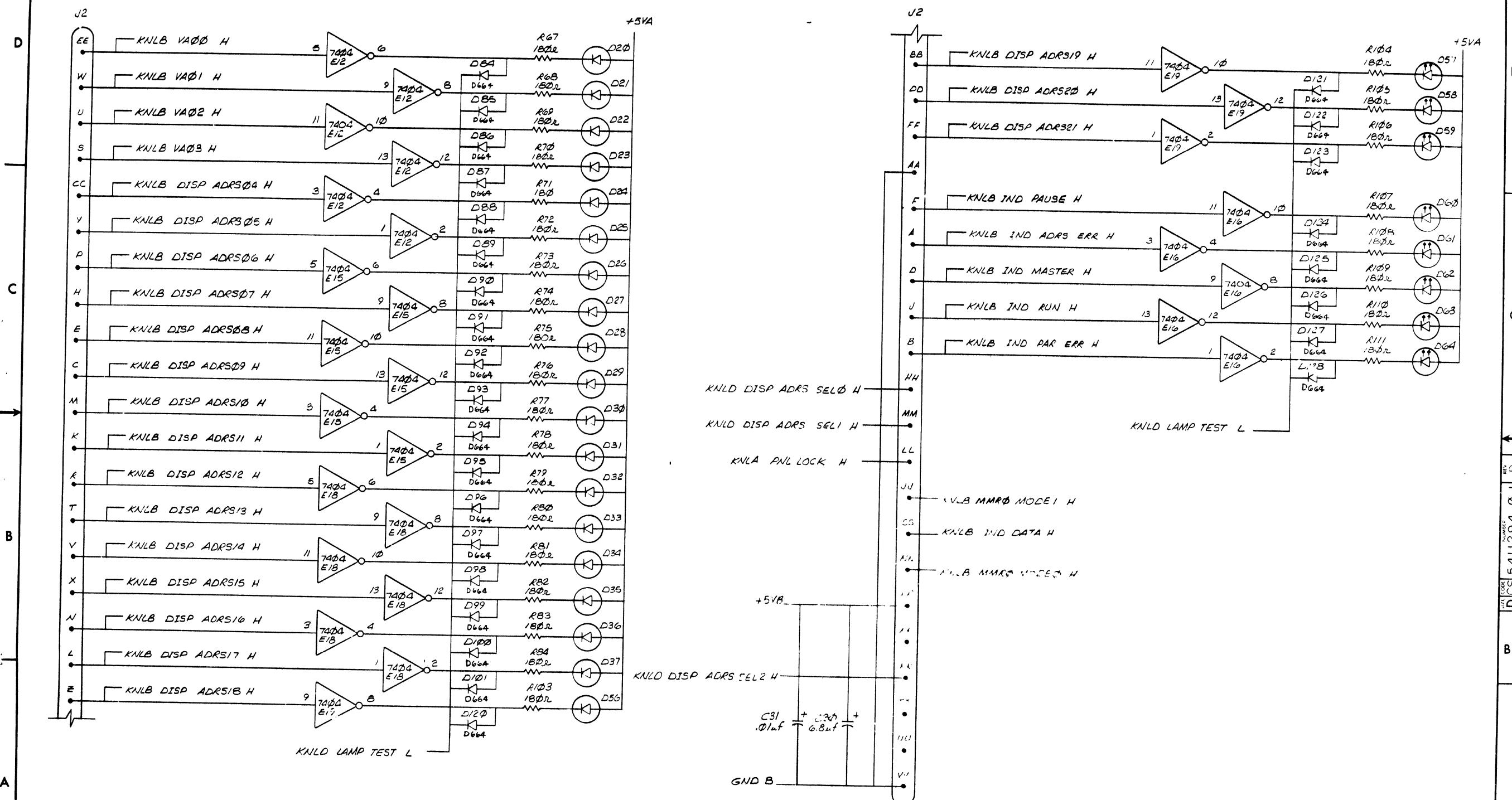
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE CONSOLE BOARD (KNLA)		SIZE CODE D CS	NUMBER 5411294-0-1	REV. D
SCALE #	SHEET 2	OF 5	DIST.	

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KNL/SCC INTERFACE

CS 5411294-0-1

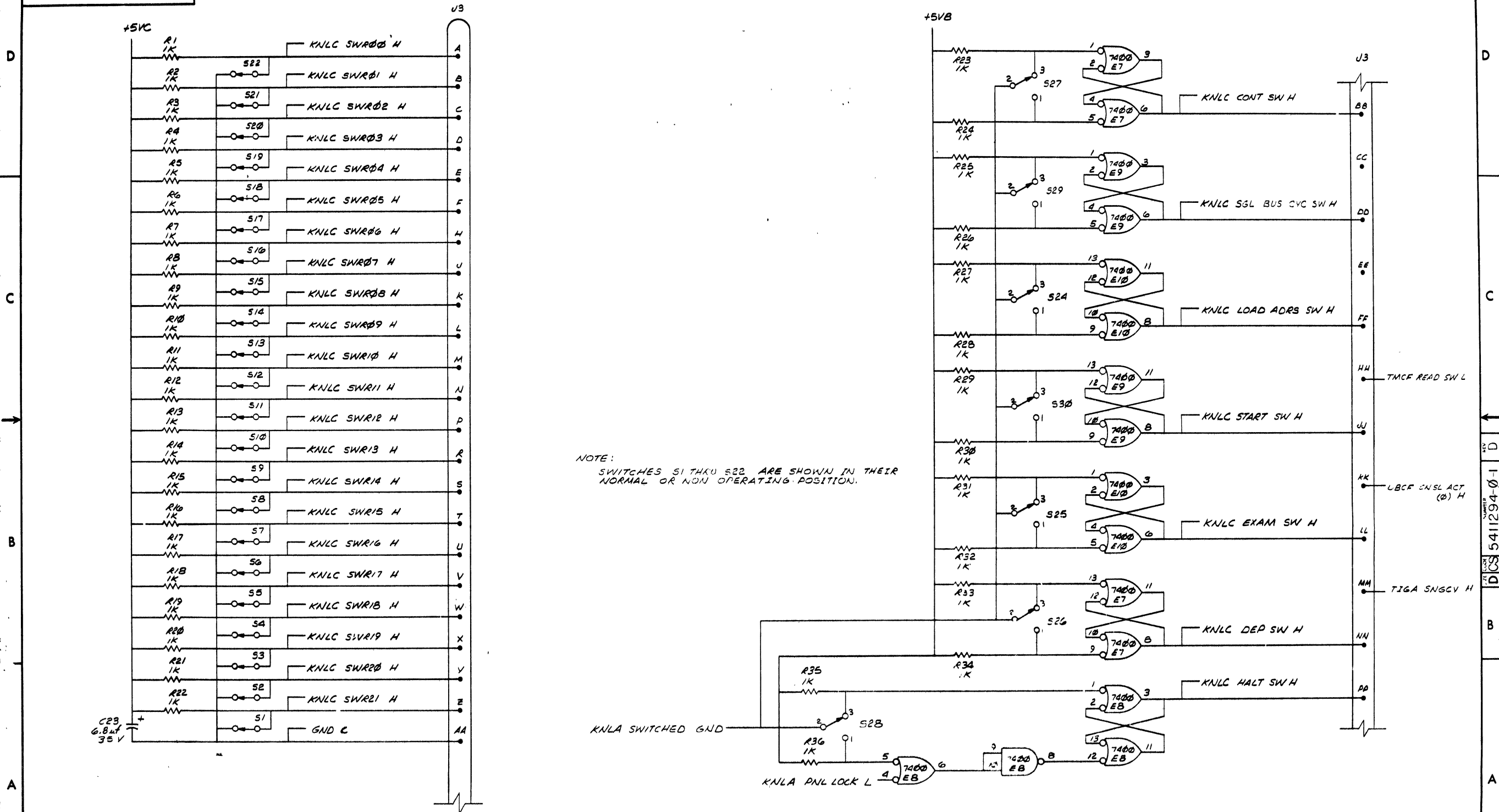


REVISIONS		
CHK	CHANGE NO	REV.

TITLE	SIZE CODE	NUMBER	REV
CONSOLE BOARD (KNLB)	D CS	5411294-0-1	D
SCALE	SHEET	3 OF 5	DIST.

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KNL / SCC INTERFACE



NOTE:
SWITCHES S1 THRU S22 ARE SHOWN IN THEIR
NORMAL OR NON OPERATING POSITION.

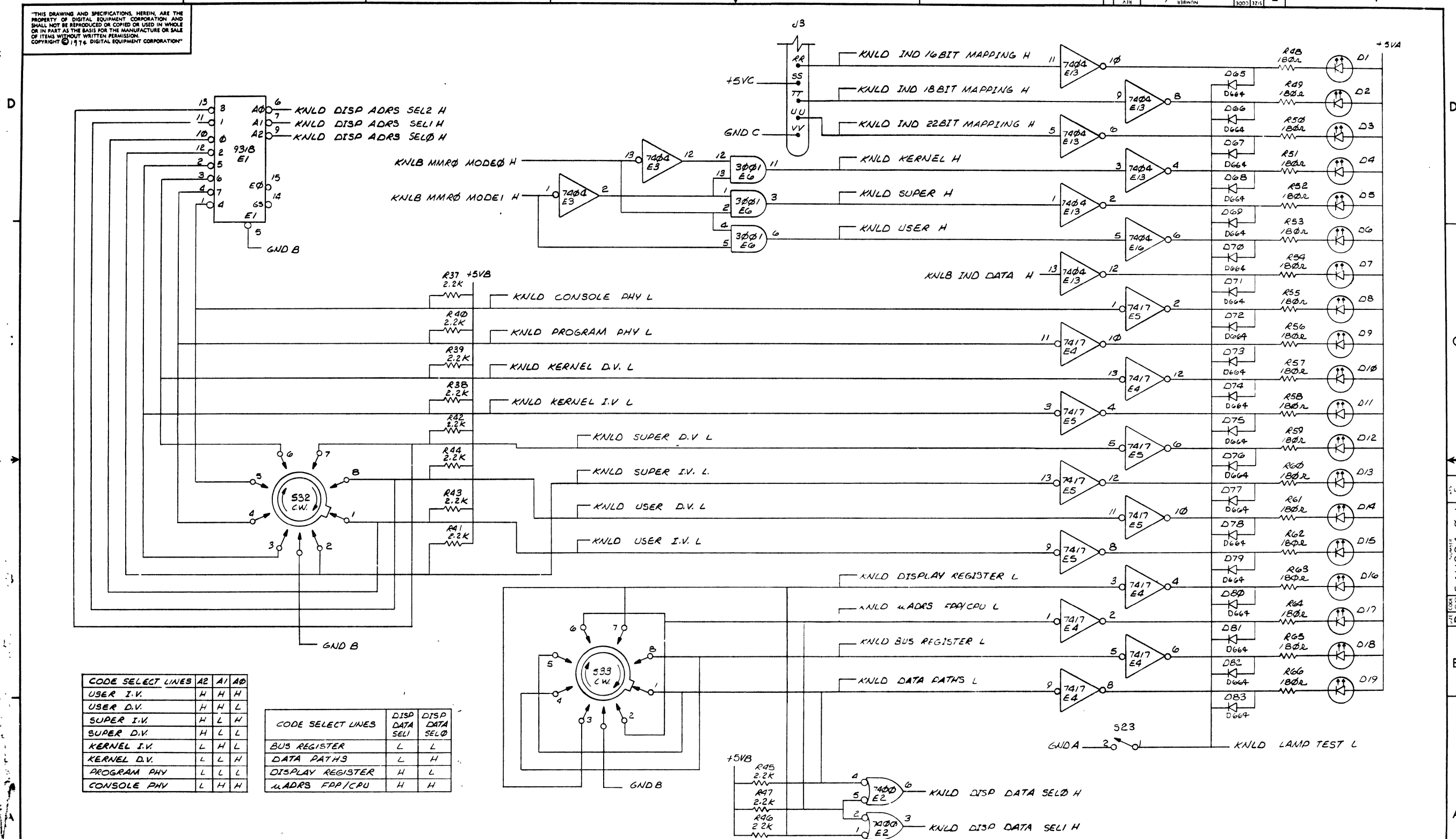
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMER	REV.
CONSOLE BOARD (KNLC)		D	CS	5411294-0-1	D
SCALE	SHEET	OF	DIST.		
	4	5			

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D CS 5411294-0-1



CODE SELECT LINES	A2	A1	A0
USER I.V.	H	H	H
USER D.V.	H	H	L
SUPER I.V.	H	L	H
SUPER D.V.	H	L	L
KERNEL I.V.	L	H	L
KERNEL D.V.	L	L	H
PROGRAM PHY	L	L	L
CONSOLE PHY	L	H	H

CODE SELECT LINES	DISP DATA SEL1	DISP DATA SEL0
BUS REGISTER	L	L
DATA PATHS	L	H
DISPLAY REGISTER	H	L
ADDRS FPP/CPU	H	H

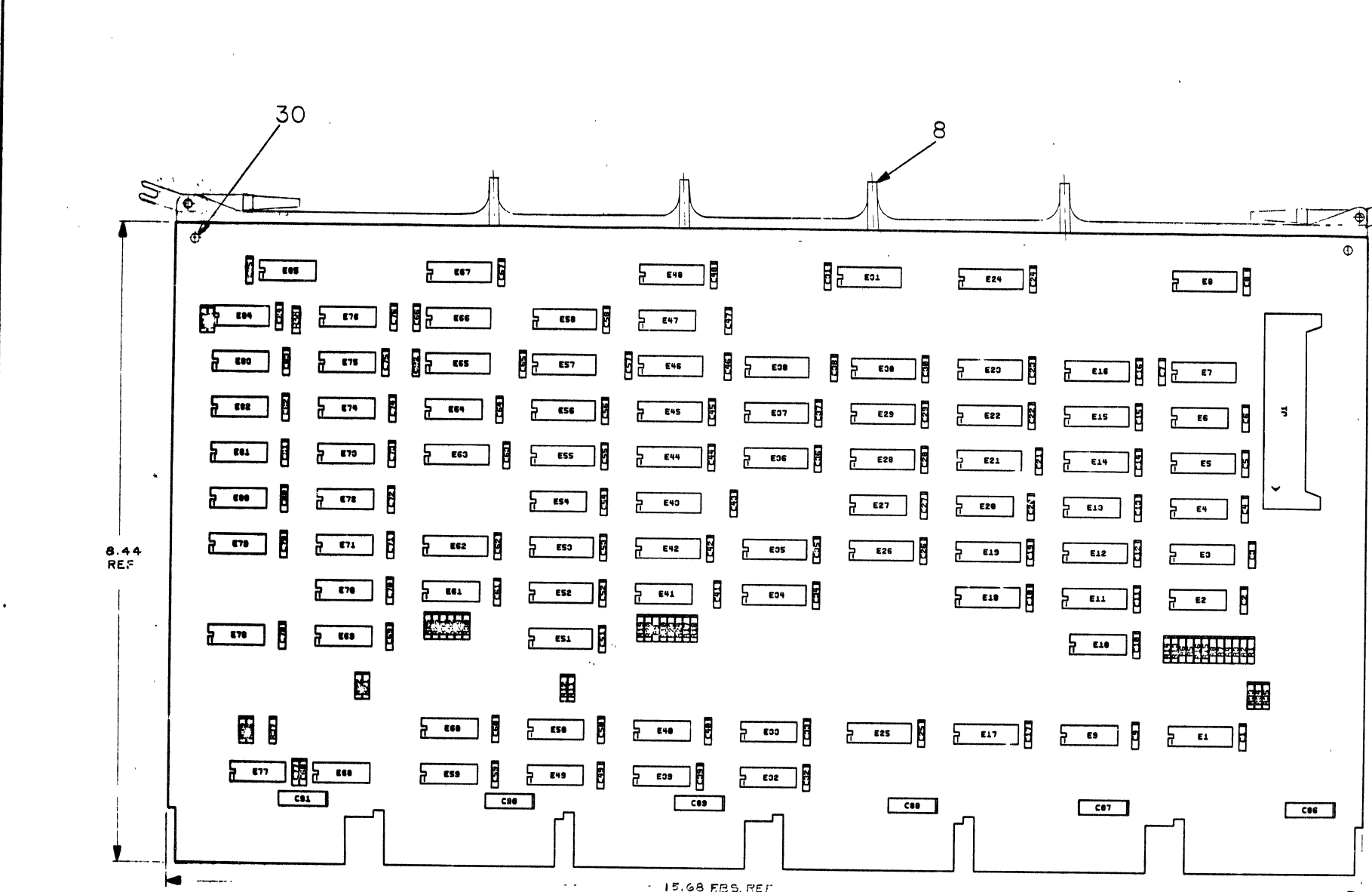
REVISIONS		
CHK	CHANGE NO	REV

TITLE: CONSOLE BOARD (KNLD) SIZE CODE: D CS 5411294-0-1 NUMBER: 1 REV: D
 SCALE: 1/1 SHEET: 5 OF 5 DIST:

D CS 5411294-0-1

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NOTES:
1. E31, E51 AND E84 ARE SPARE REFERENCE DESIGNATIONS



IC DEC 8640	1	8
IC DEC 74175	8	16
IC DEC 74S175	8	16
IC DEC 74S174	8	16
IC DEC 74S157	8	16
IC DEC 74S153	8	16
IC DEC 9318	8	16
IC DEC 7485	8	16
IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

DRN. 11/27/74
CHKD. 12/2/74
ENGR. 12/2/74
PROJ. ENG. 12/2/74
PROD. 12/2/74

REVISIONS
1. CHANGE NO. 1
2. CHANGE NO. 2

DATE 11/27/74
DATE 12/2/74
DATE 12/2/74
DATE 12/2/74

SCALE 1 OF 9

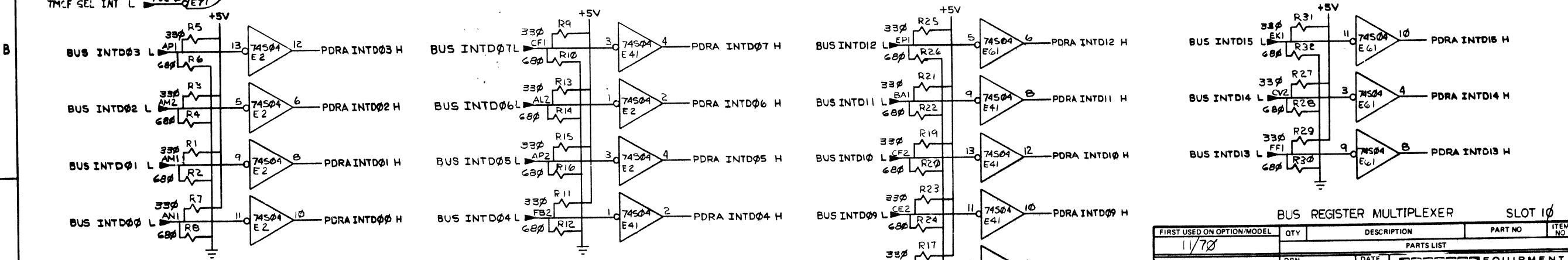
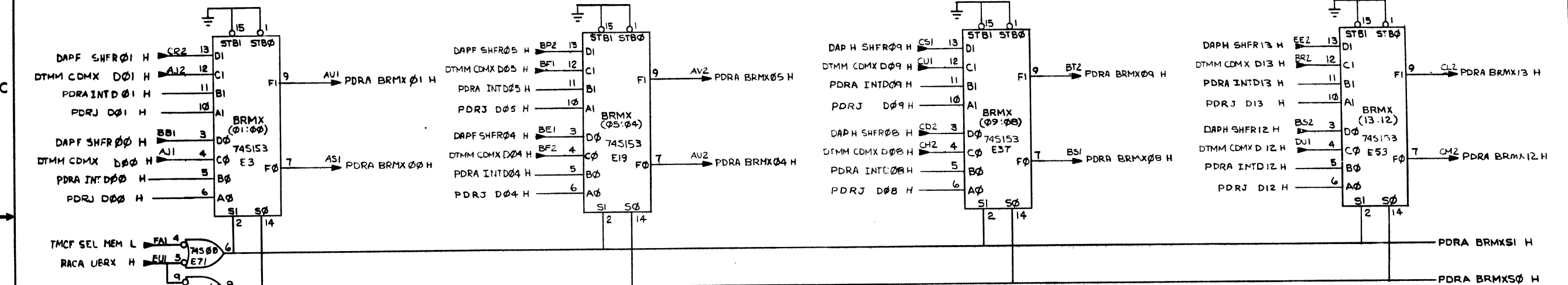
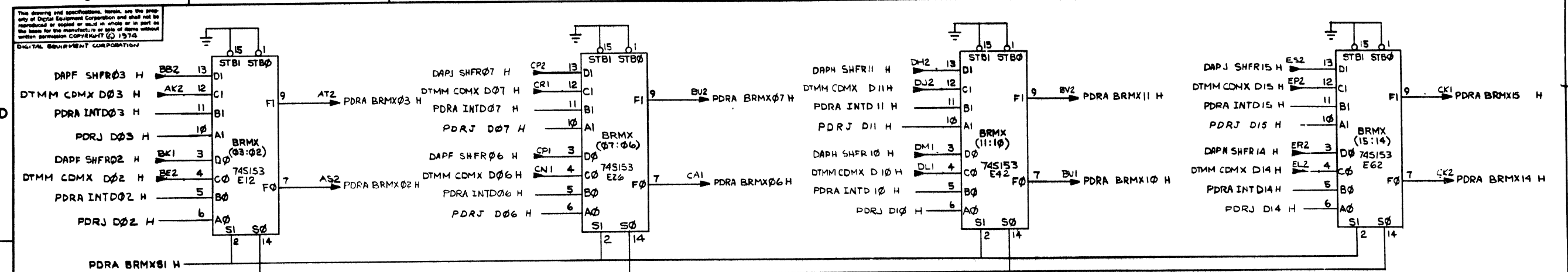
REF	DESCRIPTION	PART NO.	QTY
REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8134-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8134-0-5	2
REF	MODULE ECO HISTORY	B-MH-M8134-0-6	3
1	ETCHED CIRCUIT BOARD	5011357	4
88	C1 THRU C85, C92	CAPACITOR, .01uf, 100V, 20% DISC	1001010-01
8	C86 THRU C91	CAPACITOR, 8.8uf, 35V, 10%	1005308
1	CONN., 40 PIN	1209841-02	7
1	HANDLE ASSY	1210111-02	8
3	R35, R36, R38	RESISTOR, 150 OHM, 1/4W, 5%	1300250
16	R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31	RESISTOR, 330 OHM, 1/4W, 5%	1300295
18	R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32	RESISTOR, 560 OHM, 1/4W, 5%	1301424
2	R34, R33	RESISTOR, 560 OHM, 1/4W, 5%	1301890
1	E73	I.C. DEC 74H50	1909080
4	E32, E39, E49, E59	I.C. DEC 8081	1909705
4	E13, E77, E80, E83	I.C. DEC 74H01-1	1909849
4	E8, E24, E48, E87	I.C. DEC 7463	1910224
1	E37	I.C. DEC 9318	1910454
1	E71	I.C. DEC 74S00	1910532
9	E2, E4, E10, E27, E41, E54, E81, E84, E74	I.C. DEC 74S04	1910534
3	E69, E72, E85	I.C. DEC 74S10	1910536
1	E78	I.C. DEC 74S11	1910537
1	E70	I.C. DEC 74S20	1910539
2	E78, E75	I.C. DEC 74S40	1910541
8	E6, E9, E20, E47, E68, E79, E81, E82	I.C. DEC 74S74	1910544
24	E3, E5, E7, E12, E14, E16, E19, E21, E23, E28, E29, E30, E35, E36, E38, E42, E44, E46, E53, E55, E57, E82, E83, E85	I.C. DEC 74S153	1910547
1	E29	I.C. DEC 74S157	1910548
12	E1, E11, E15, E17, E18, E22, E25, E34, E43, E52, E56, E66	I.C. DEC 74S174	1910550
2	E45, E58	I.C. DEC 74175	1910851
4	E33, E40, E50, E80	I.C. DEC 8840	1911489
12	EYELET	0008732	30

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITL NO.
12		EYELET	0008732	30
1		CABLE STRAP		31
1		CABLE STRAP		32

SEMICONDUCTOR CONVERSION CHART

DCS M8134-C-1

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REVISIONS

REV	CHANGE NO

BUS REGISTER MULTIPLEXER SLOT 10

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/78				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	PARTS LIST		
XXX - .005	±0° 30'	DRN	DATE	
XX - .02		CHIS/D	11-12-74	
X - .1				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL		NEXT HIGHER ASSY		SIZE CODE
FINISH		SCALE		NUMBER
		SHEET 2 OF 9		DIST
TITLE				REV
PROCESSOR DATA & UNIBUS REGS (PORA)				D
DCS M8134-0-1				1

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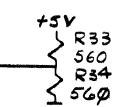
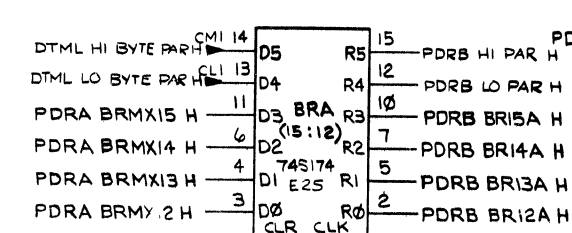
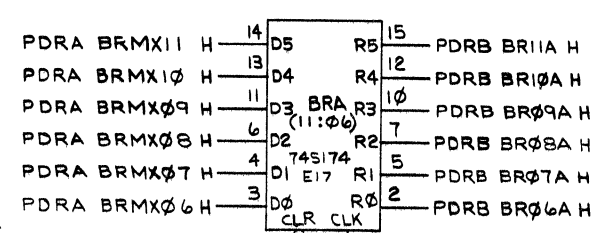
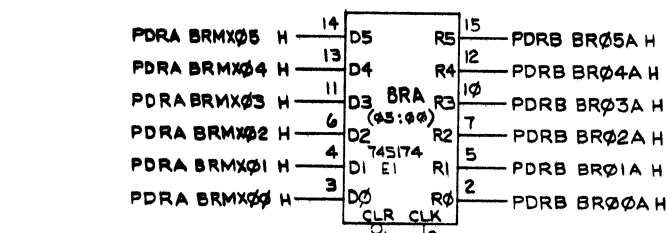
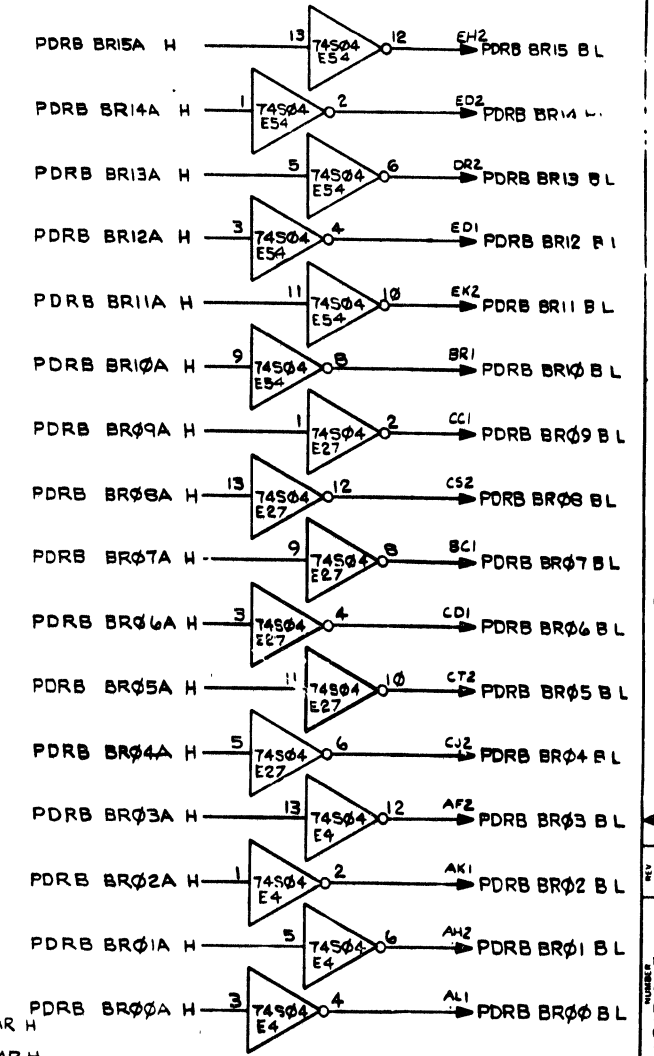
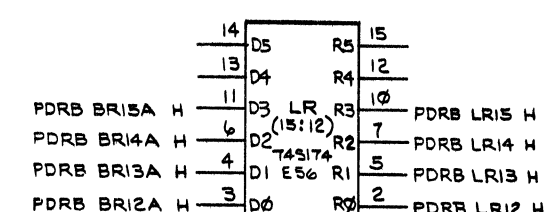
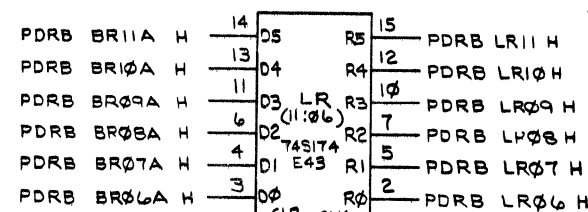
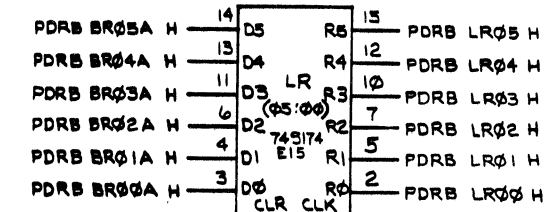
DCS M8134-0-1 2

D

C

B

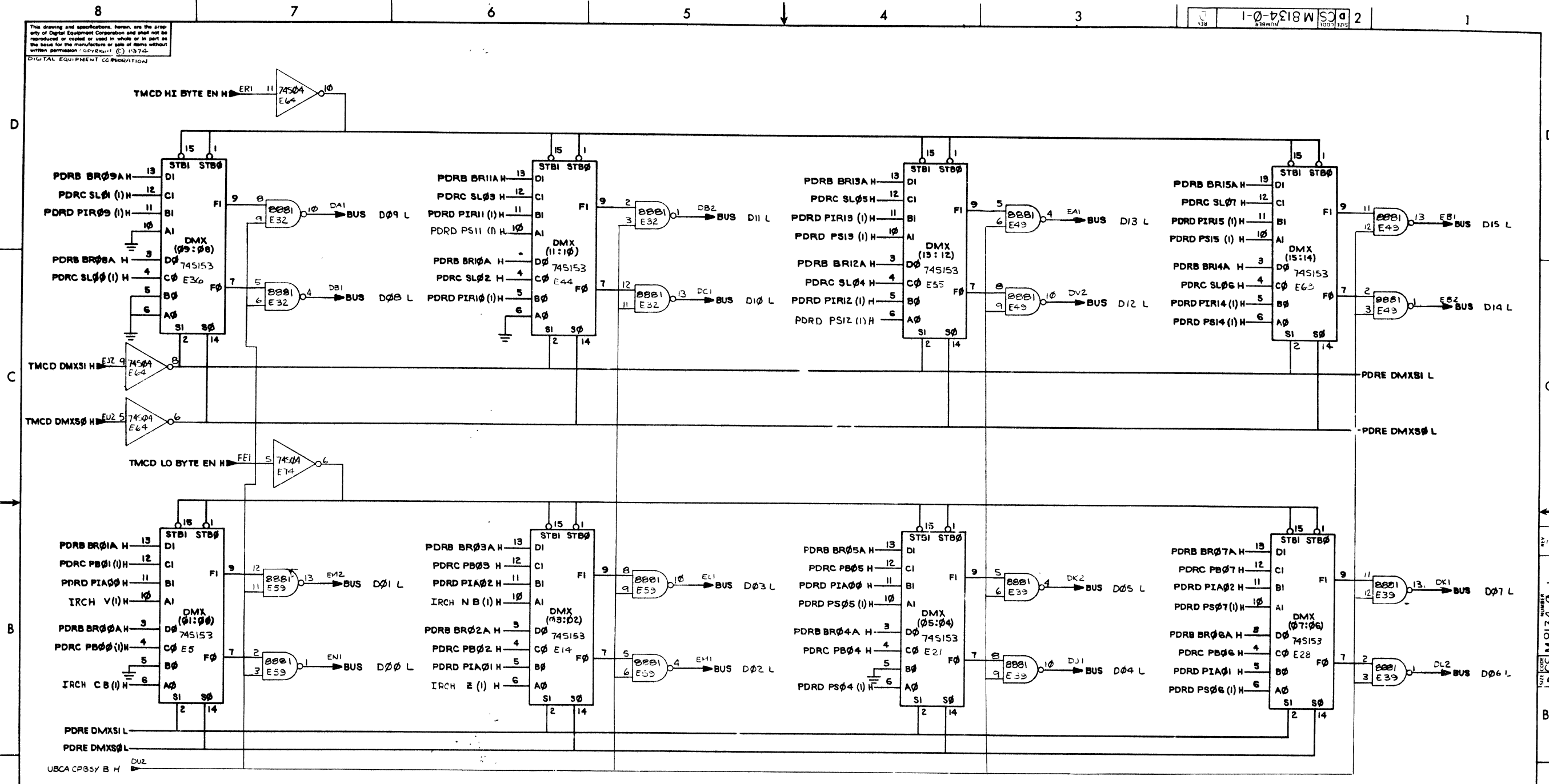
A



FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	PARTS LIST			
.XXX - .000	±0° 30'	EQUIPMENT CORPORATION			
.XX - .00		MAYNARD MASSACHUSETTS			
.X - .1		TITLE			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PROCESSOR DATA & UNIBUS REGS			
MATERIAL	NEXT HIGHER ASSY.	SIZE CODE	NUMBER	(PDRB) REV	
FINISH	SCALE	DCS M8134-0-1		D	
	SHEET 3 OF 9	DIST.			

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8 7 6 5 4 3 2 1



DMX	SI	S0	OUTPUT
L	L	L	STATUS
L	H	L	PIR; PIA
H	L	L	SL; PB
H	H	H	BR

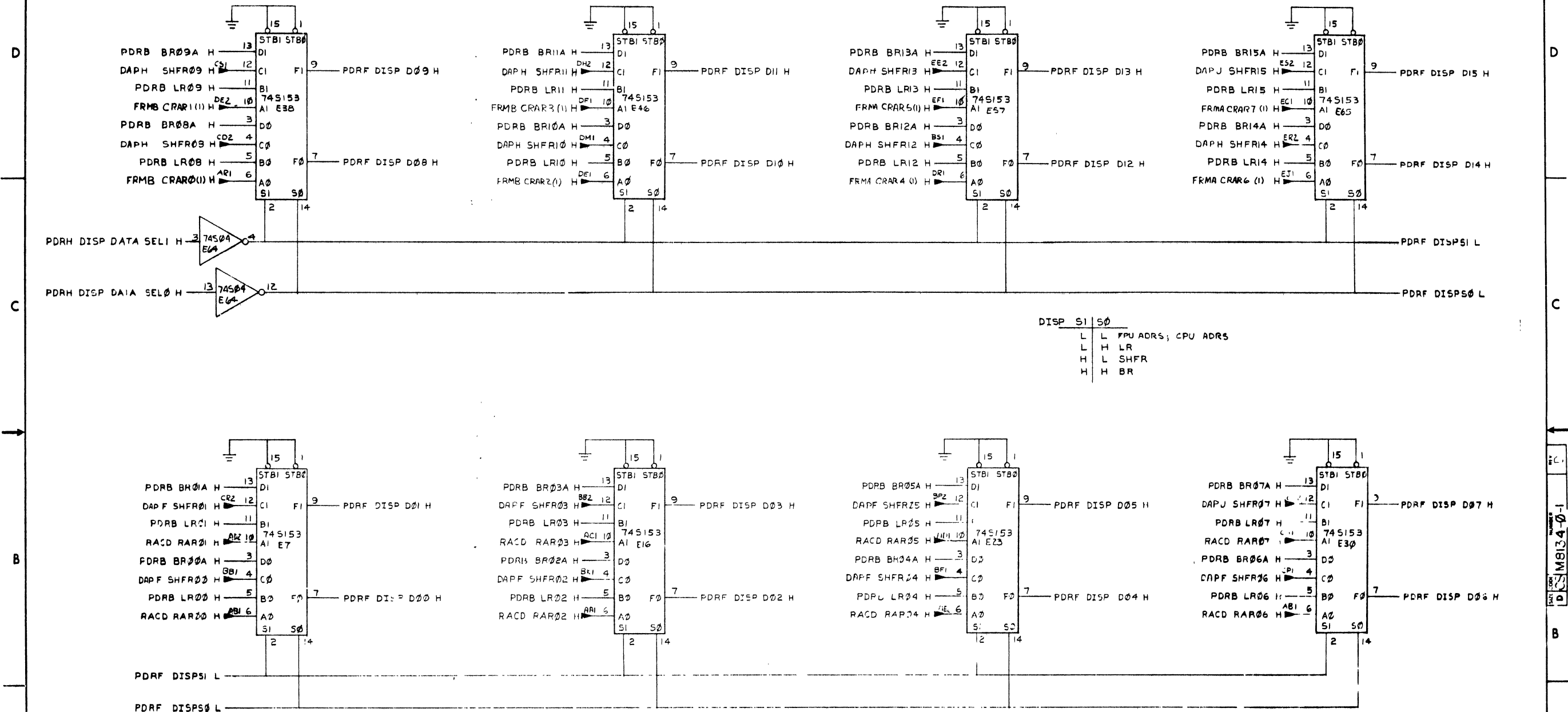
UNIBUS DATA MULTIPLEXER SLOT#

FIRST USED ON OPTION/MODEL 11/70	QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DATE 11-22-74	EQUIPMENT CORPORATION MILWAUKEE, WISCONSIN		
DECIMALS	ANGLES	TITLE PROCESSOR DATA & UNIBUS PEGS		
XXX - 005	± 0° 30'	DATE 11-22-74		
XX - 02		DATE 11-22-74		
X - 1		DATE 11-22-74		
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY		DATE 11-22-74		
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV
FINISH	SCALE	DCS M8134-0-1		D
	SHEET 6 OF 9	DIST		

REVISIONS	NO	DATE
CHANGE NO		
CHK		

DEC FORM NO 100-108-01
DRW 'B

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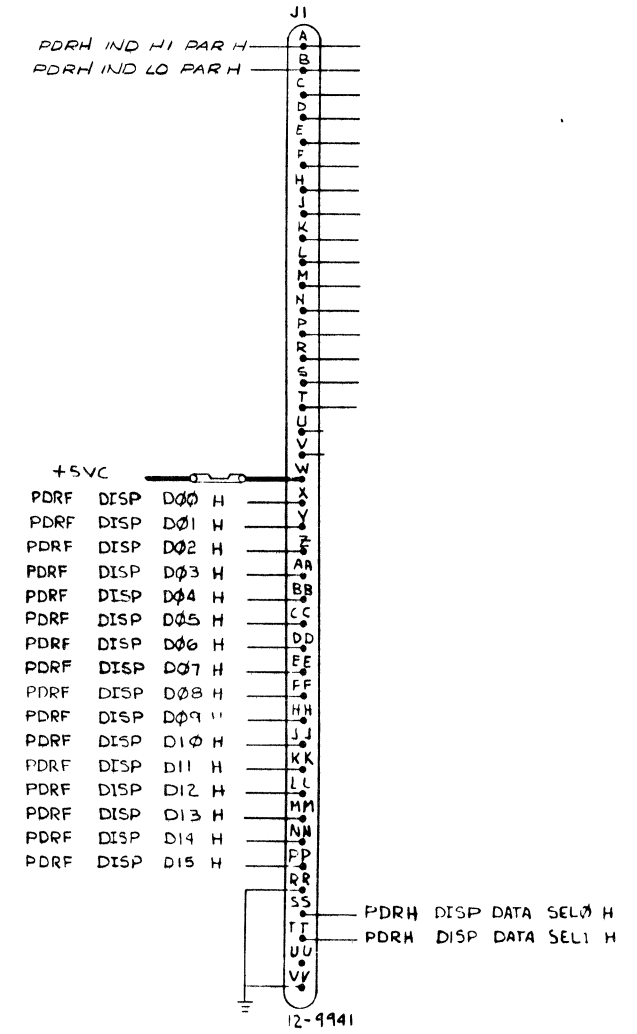
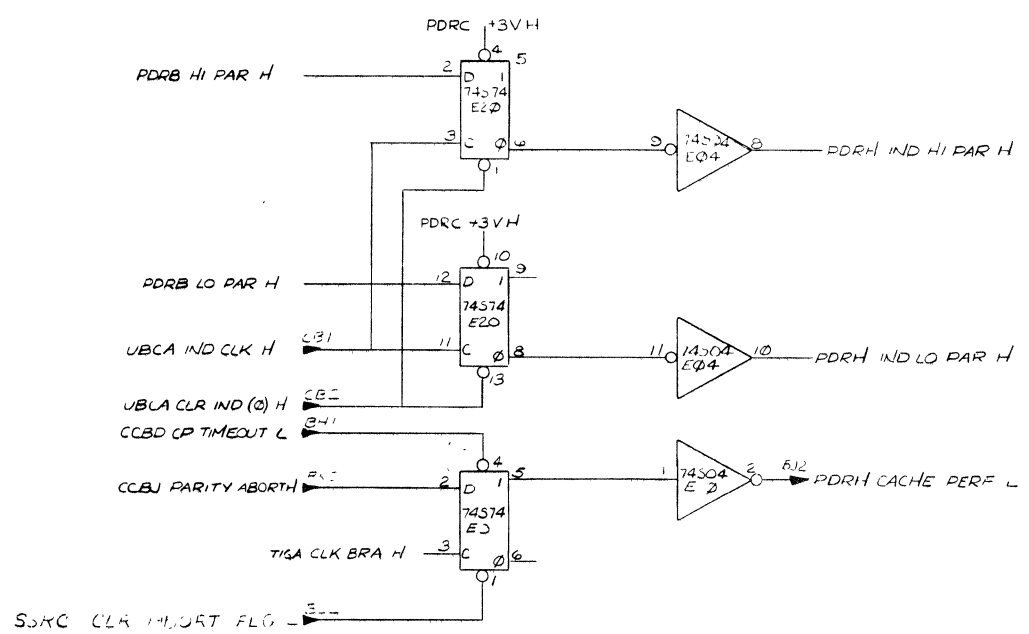
DISP S1 S0
 L L FPU ADRS; CPU ADRS
 L H LR
 H L SHFR
 H H BR

DATA DISPLAY MULTIPLEXER SLOT 10

FIRST USED ON OPTION MODEL 11/70	QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES	DATE 11-12-70 BY R. J. BARRY	DATE 11-12-70 BY R. J. BARRY	DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DIGITALS ANGLES XXX - 000 XX - 02 X - 1	DATE 11-12-70 BY R. J. BARRY	DATE 11-12-70 BY R. J. BARRY	TITLE PROCESSOR DATA & UNIBUS REGS (PDRF)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	DATE 11-12-70 BY R. J. BARRY	DATE 11-12-70 BY R. J. BARRY		
MATERIAL ++	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV 1
FINISH ++	SCALE SHEET 7 OF 8	DICS M8134-0-1		

62

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PDR/KNL INTERFACE
 SIGNALS TO CONSOLE SIGNALS FROM CONSOLE

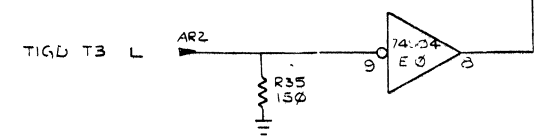
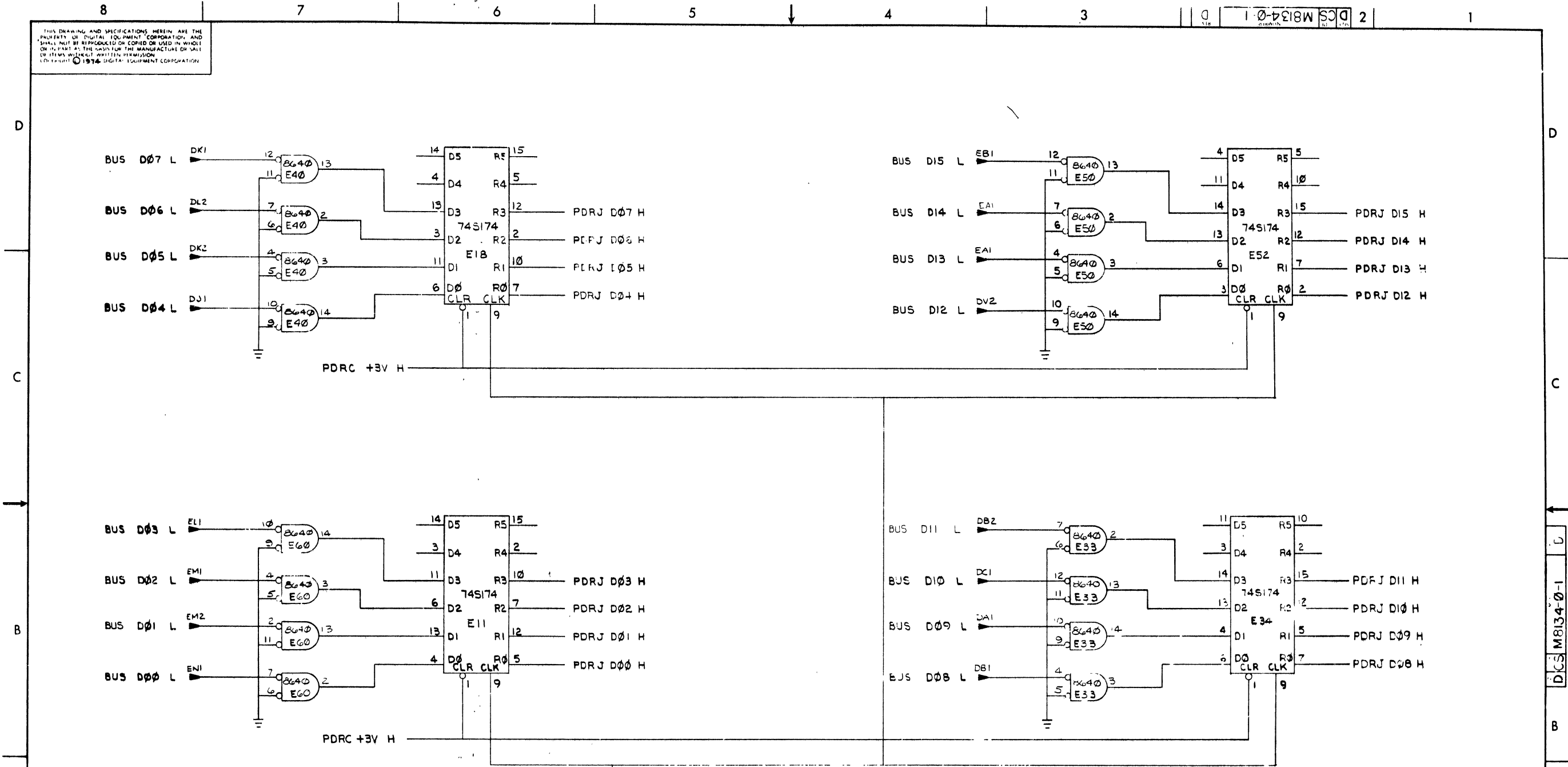
REV	
CHANGE NO	
CHK	

DEC 1974 NO
 DFD 102-B

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED		DATE		EQUIPMENT CORPORATION	
DIMENSION IN INCHES		11/74		MAYARD MASSACHUSETTS	
TOLERANCES		DATE			
DECIMALS	ANGLES	DATE		TITLE	
XXX - .005	10° 30'	11/74		PROCESSOR DATA	
XX - .02		DATE		UNIBUS REGS	
X - .1		DATE		(PDRH)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE		SIZE CODE	
		11/74		NUMBER	
MATERIAL		NEXT HIGHER ASSY		DCS M8134-0-1	
FINISH		SCALE		REV	
		SHEET 8 OF 9		0	

DATE 11/74
 NAME DCS M8134-0-1

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BJS BUFFER REG SLOT 10

FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	DATE 11/70	digital EQUIPMENT CORPORATION		
TOLERANCES	DATE			
DECIMALS ANGLES	DATE			
xxx - .005 .030	DATE			
xx - .02	DATE			
x - .1	DATE			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY 1	DATE			
MATERIAL	NEXT HIGH R ASSY.	SIZE CODE	NO. ABLT.	REV.
- / - /		D		D
FINISH	SCALE	SHEET	OF	
- / - /	1	9	9	

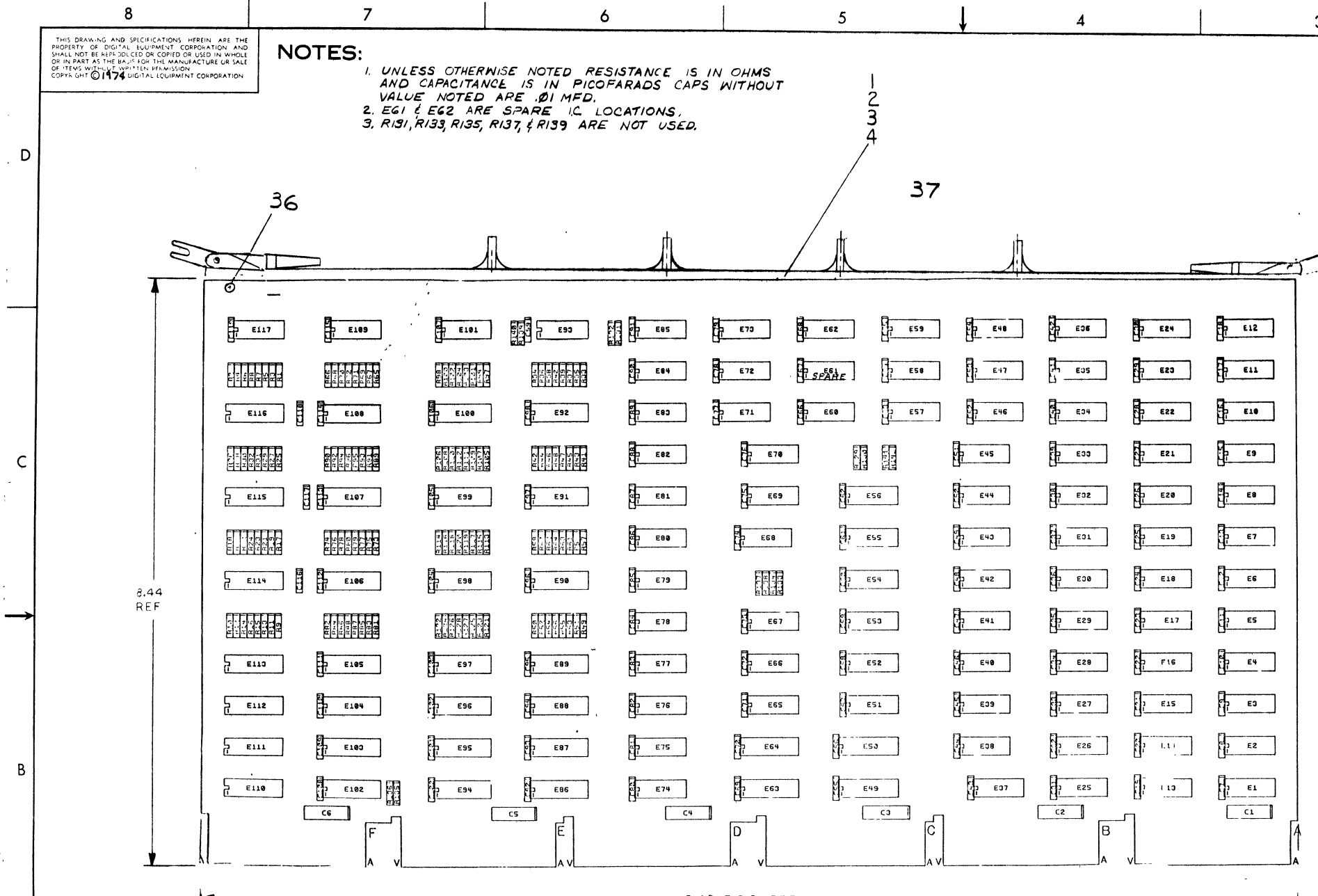
64

DCS M8134-0-1

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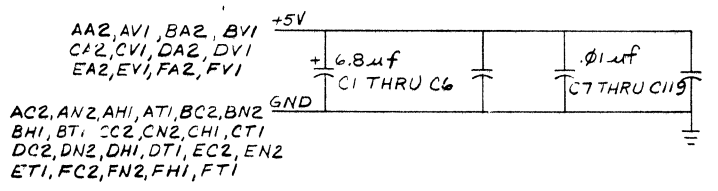
NOTES:

1. UNLESS OTHERWISE NOTED RESISTANCE IS IN OHMS AND CAPACITANCE IS IN PICOFARADS CAPS WITHOUT VALUE NOTED ARE .01 MFD.
2. E61 & E62 ARE SPARE I.C. LOCATIONS.
3. R131, R133, R135, R137, & R139 ARE NOT USED.



IC P/N	QTY	DESCRIPTION	REF	LOC
IC DEC 74S174	8	16		
IC DEC 74S153	8	16		
IC DEC 74187	8	16		
IC TYPE	GND	+5V		

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

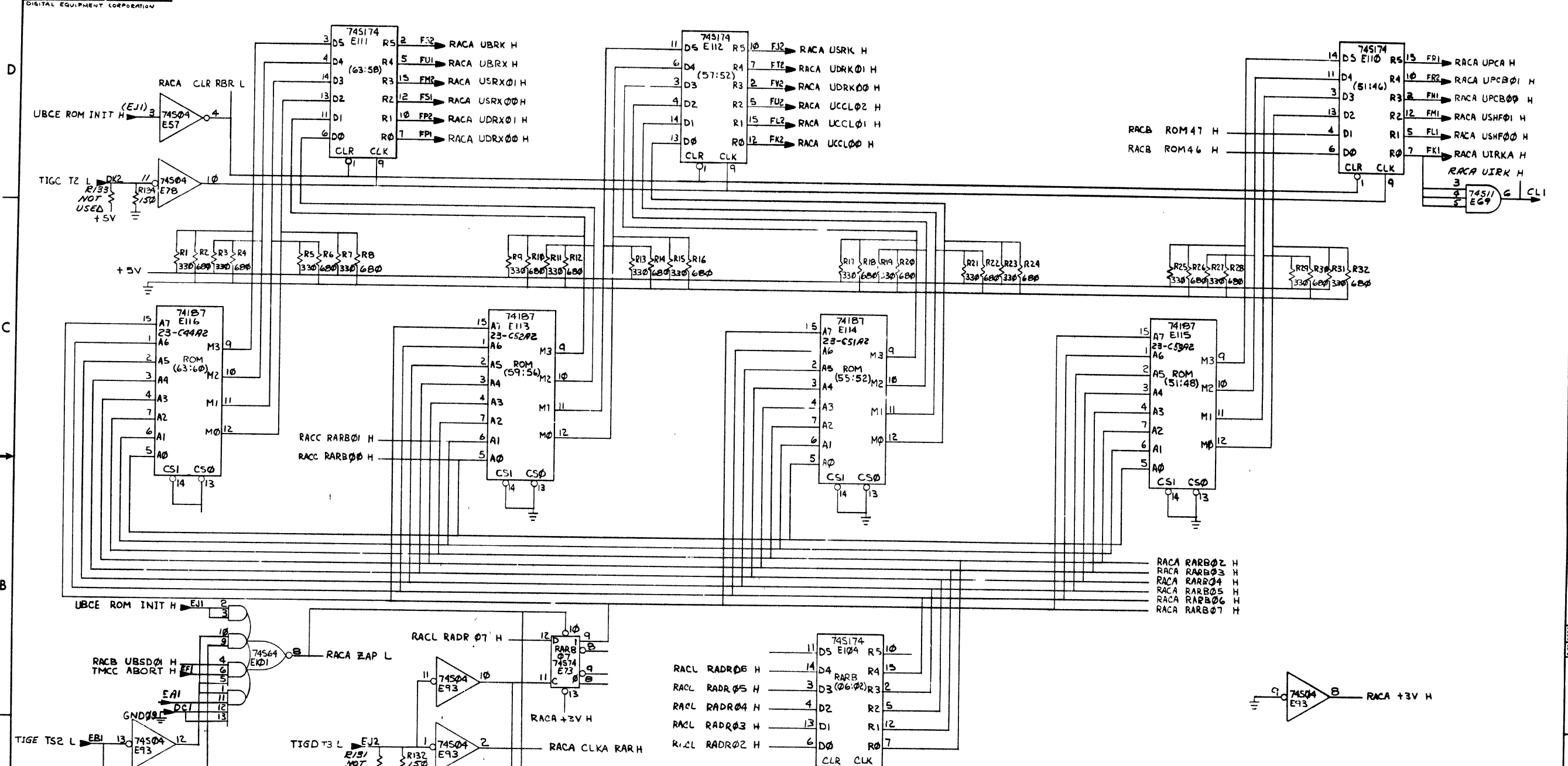


REF	DESIGNATION	DESCRIPTION	QTY	FART NO	REF	COORDINATE
REF		X-Y COORDINATE HOLE LOCATION			K CC M8133-Q-4	1
REF		ASSY DRILLING HOLE LAYOUT			D AM M8133-Q-5	2
REF		MODULE ECO HISTORY			B-MH M8133-Q-6	3
1		ETCHED CIRCUIT BOARD			5011348	4
113	C1 THRU C119	CAPACITOR 01uf, 100V, 20% DISC			1001810 Q1	5
8	C1 THRU C6	CAPACITOR, 6.8uf, 35V, 10% TANT			1005308	6
5	R132, R134, R136, R138, R140	RESISTOR, 150 OHM, 1/4W, 5%			1300250	7
66	R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85, R87, R89, R91, R93, R95, R97, R99, R101, R103, R105, R107, R109, R111, R113, R115, R117, R119, R121, R123, R125, R127, R129, R141	RESISTOR, 330 OHM, 1/4W, 5%			1300295	8
68	R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R96, R98, R100, R102, R104, R106, R108, R110, R112, R114, R116, R118, R120, R122, R124, R126, R128, R130, R142	RESISTOR, 680 OHM, 1/4W, 5%			1301424	9
4	E4, E31, E58, E39	I.C. DEC 74S09			1110532	10
11	E6, E27, E34, E52, E56, E57, E72, E78, E79, E84, E93	I.C. DEC 74S04			1910534	11
10	E3, E10, E28, E29, E40, E48, E53, E59, E60, E67	I.C. DEC 74S10			1910536	12
4	E55, E66, E69, E85	I.C. DEC 74S11			1910537	13
3	E16, E30, E41	I.C. DEC 74S20			1910539	14
1	E15	I.C. DEC 74S40			1910541	15
37	E5, E7, E8, E9, E11, E12, E17, E18, E19, E20, E21, E22, E23, E24, E33, E35, E42, E43, E44, E45, E46, E47, E51, E54, E65, E70, E71, E74, E75, E78, E77, E80, E81, E82, E83, E32, E101	I.C. DEC 74S64			1910542	16
4	E49, E50, E63, E64	I.C. DEC 74S153			1910547	17
12	E86, E88, E94, E95, E96, E102, E103, E104, E110, E111, E112, E87	I.C. DEC 74S174			1910550	18
13	E1, E2, E13, E14, E25, E26, E36, E37, E38, E73, E109, E117, E68	I.C. DEC 74S74			1910544	19
1	E90	I.C. DEC 74187 (or 3301)			23C82A2	20
1	E89	I.C. DEC 74187 (or 3311)			23C81A2	21
1	E91	I.C. DEC 74187 (or 3301)			23C88A2	22
1	E92	I.C. DEC 74187 (or 3301)			23C58A2	23
1	E97	I.C. DEC 74187 (or 3301)			23C59A2	24
1	E98	I.C. DEC 74187 (or 3301)			23C57A2	25
1	E99	I.C. DEC 74187 (or 3301)			23C56A2	26
1	E100	I.C. DEC 74187 (or 3301)			23C88A2	27
1	E107	I.C. DEC 74187 (or 3301)			23C89A2	28
1	E105	I.C. DEC 74187 (or 3301)			23C63A2	29
1	E106	I.C. DEC 74187 (or 3301)			23C55A2	30
1	E108	I.C. DEC 74187 (or 3301)			23C54A2	31
1	E115	I.C. DEC 74187 (or 3301)			23C53A2	32
1	E114	I.C. DEC 74187 (or 3301)			23C51A2	33
1	E113	I.C. DEC 74187 (or 3301)			23C52A2	34
1	E116	I.C. DEC 74187 (or 3301)			23C44A2	35
12		EYELET			9006732	36
1		HANDLE MODULE			1210711-2	37

REVISIONS

REV	DATE	DESCRIPTION
1	12-2-74	CONSTANTINOU
2	12-2-74	CHW
3	1-13-75	ENG
4	1-13-75	PHOTO ENG
5	1-14-75	PROD

DATE: 12-2-74
 TITLE: RCM & ROM CONTROL (RAC)
 SIZE CODE: DCS
 NUMBER: M8133-Q-1
 REV: B



ROM BITS (63:48) SLOT 9

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11170				

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS	ANGLES	DATE	TITLE
XXX - .006	± 0° 30'	11-17-74	ROM & ROM CONTROL (RACA)
.XX - .02		1-12-75	
X - 1		1-12-75	

MATERIAL: + + + NEXT HIGHER ASSY.

FINISH: + + + SCALE: + + + SHEET 2 OF 15

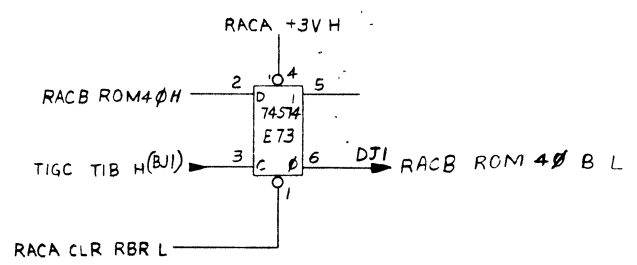
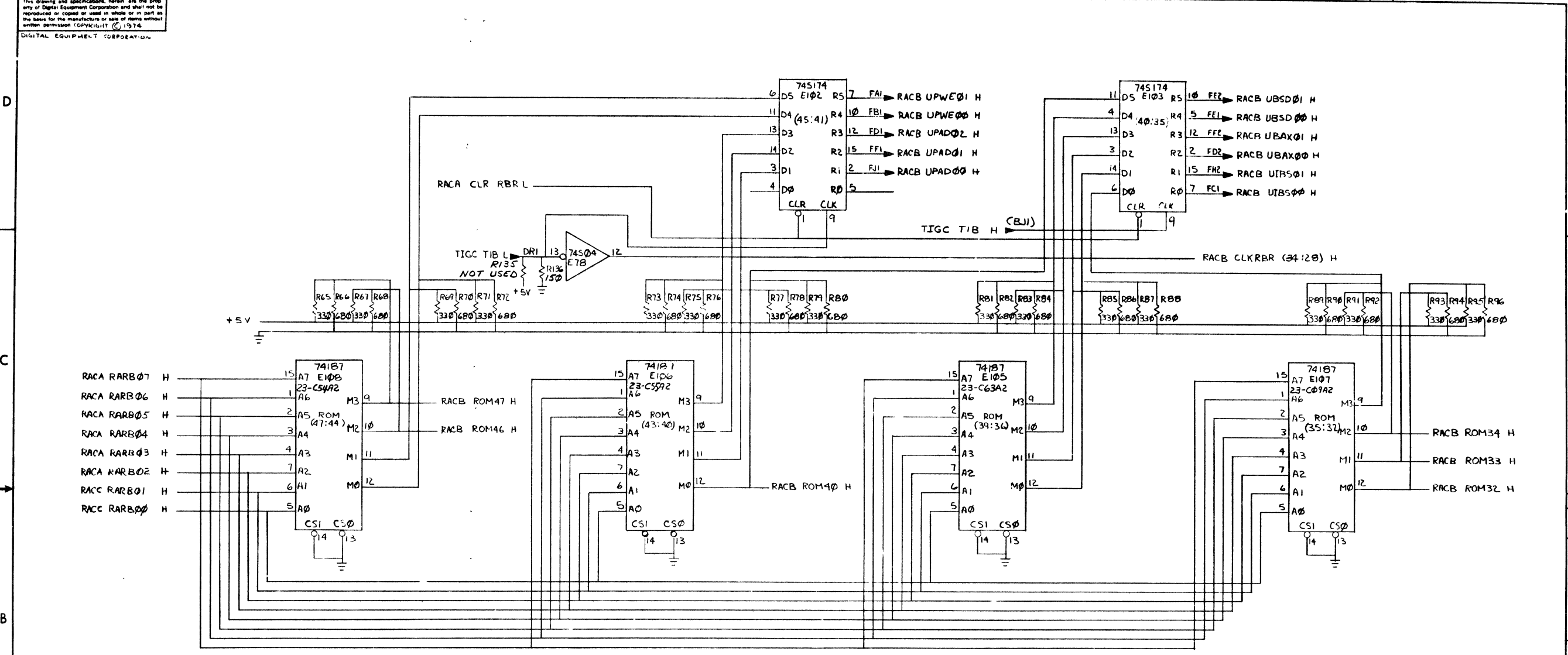
REVISIONS: CHANGE NO. REV. B

66

NUMBER M8133-0-1
 SIZE CODE DCS
 REV. B

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8 7 6 5 4 3 2 1
E 1-0-0818W SC 2



FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
1170					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION		
DECIMALS	ANGLES	DATE	MAYNARD MASSACHUSETTS		
XXX . 006	± 0° 30'	DATE	TITLE		
X = 1		DATE	ROM & ROM CONTROL		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	(RACB)		
MATERIAL		NEXT HIGHER ASSY		SIZE CODE	NUMBER
FINISH		SCALE		DCS	M8133-0-1
		SHEET 3 OF 15		DIST	REV B

REV	CHG	NO

DEC 1974 NO DCR 102-B

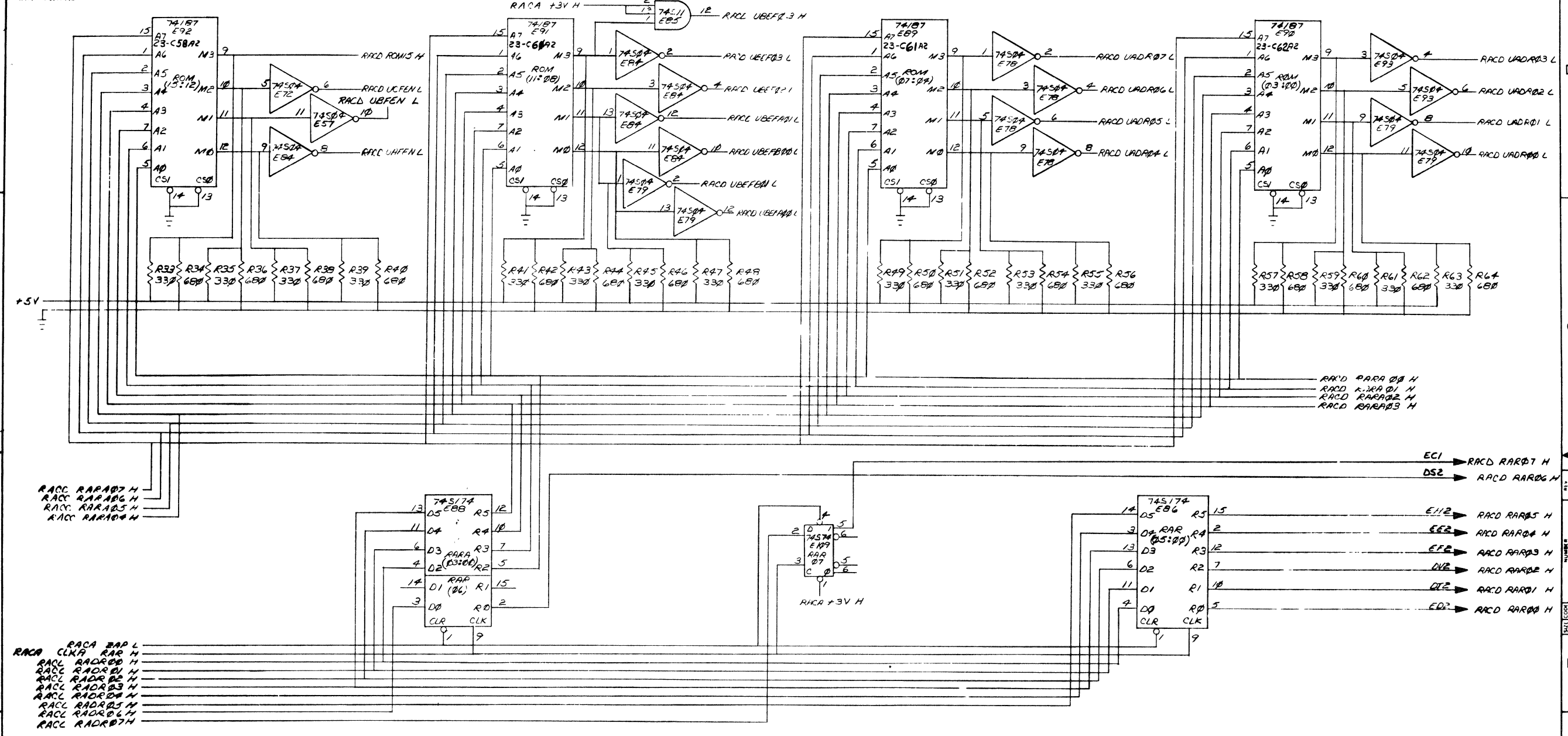
PART NUMBER M8133-0-1

SLOT 9

REV B

67

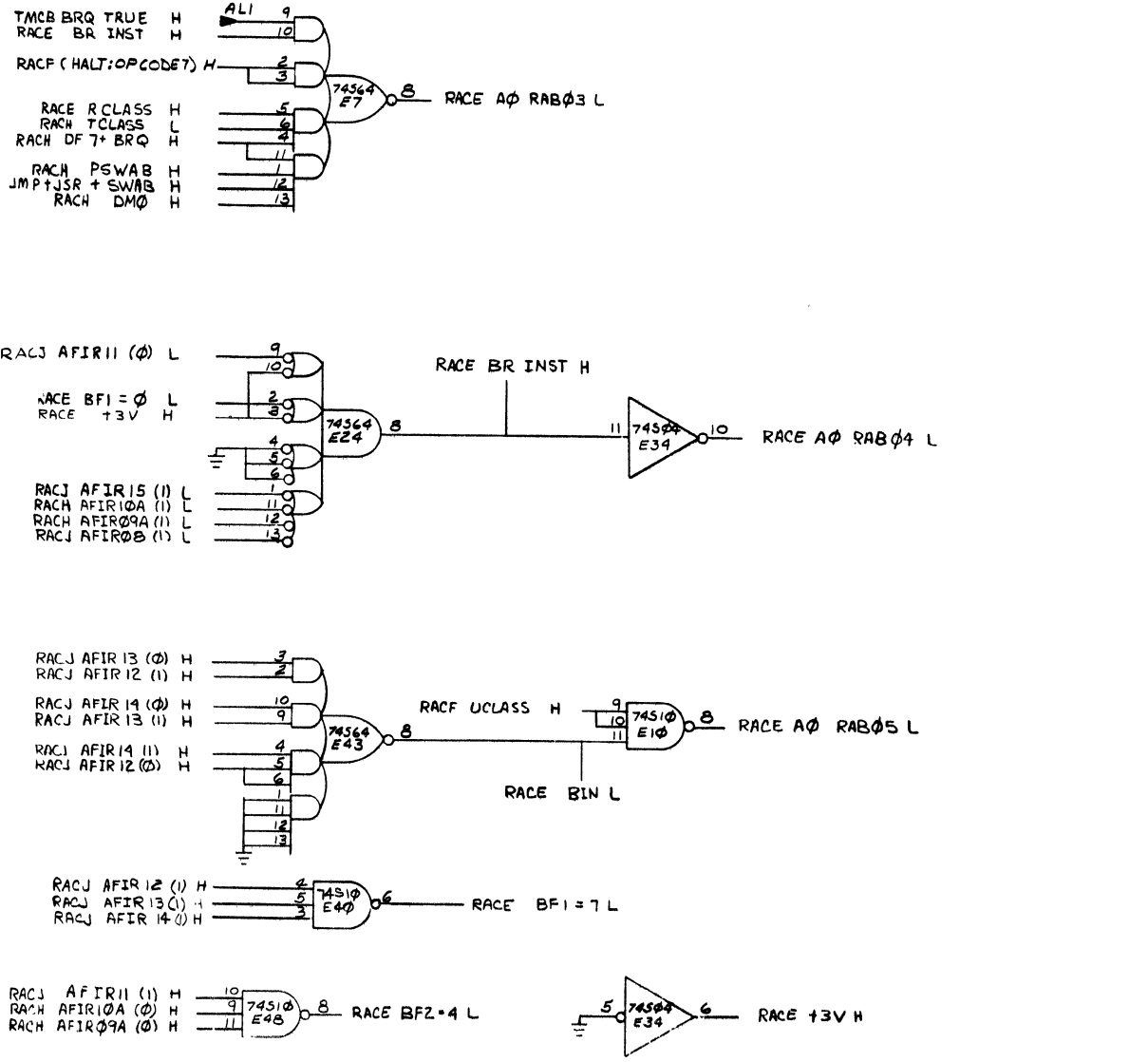
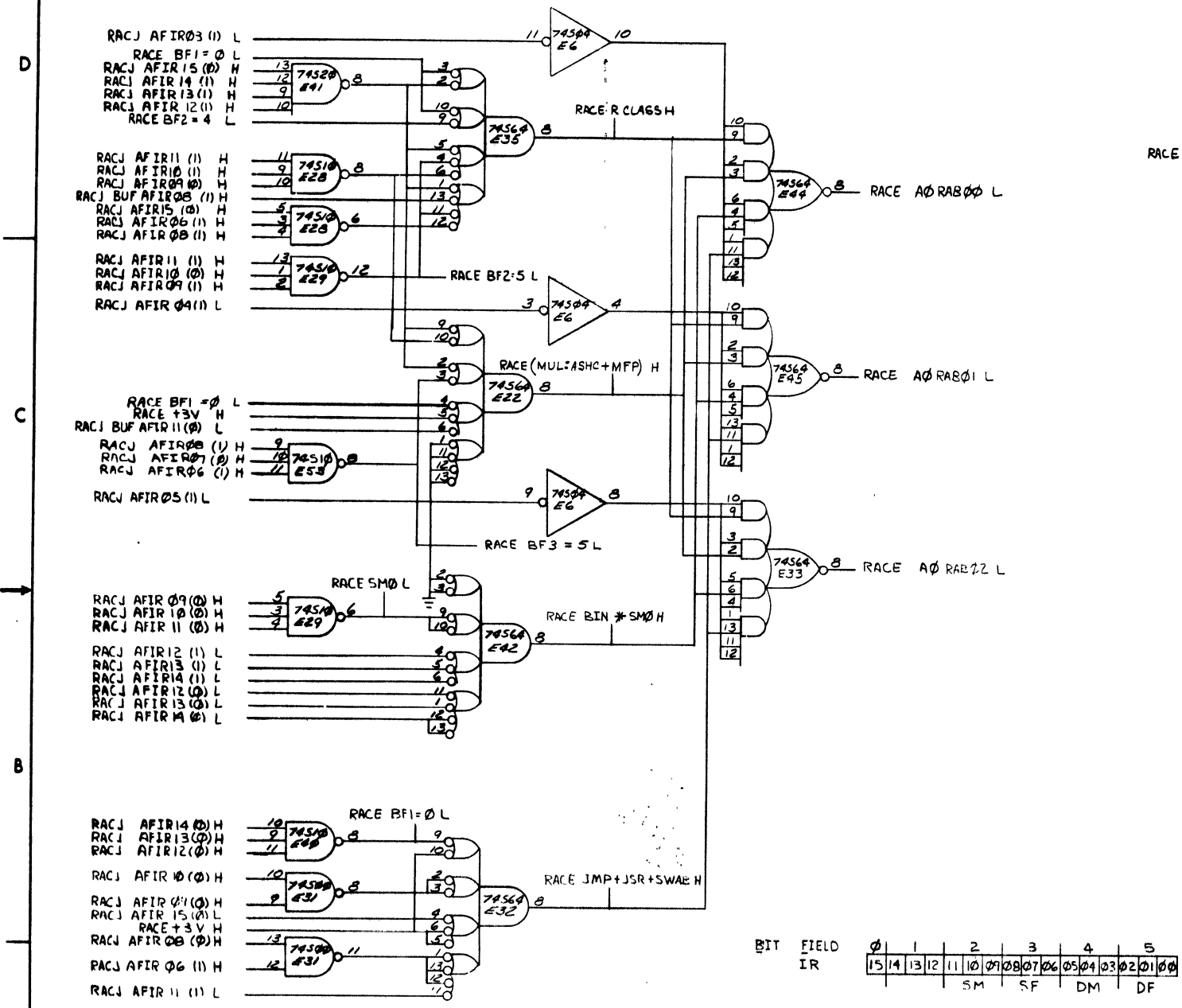
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REV	REVISIONS

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM N°
11170					
UNLESS OTHERWISE SPECIFIED					
DIMENSION IN INCHES		DATE	PARTS LIST		
TOLERANCES			DIGITAL EQUIPMENT CORPORATION		
DECIMALS	ANGLES		MAYNARD MASSACHUSETTS		
XXX - 005	± 0° 30'		TITLE		
XX - 02			ROM & ROM CONTROL		
X - 1			(RACD)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL		NEXT HIGHER ASSY		SIZE CODE	NUMBER
				DCS	M8133-0-1
FINISH		SCALE		SHEET	REV
		5 OF 15		5	B

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BIT FIELD IR

0	1	2	3	4	5
15	14	13	12	11	10
09	08	07	06	05	04
03	02	01	00		
	SM	SF	DM	DF	

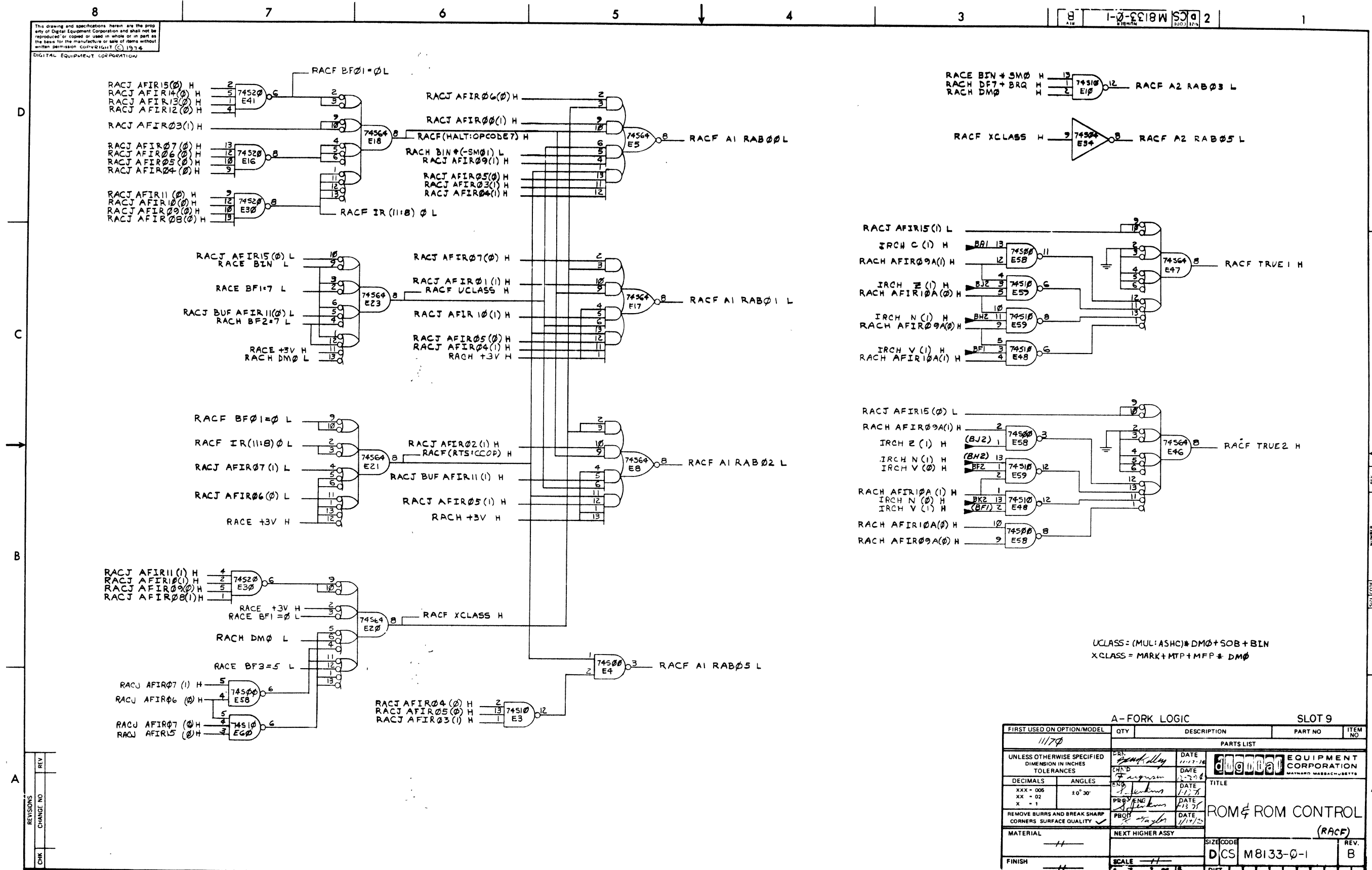
NOTE: UCLASS = (MUL:ASHC)*DM0+SOB+BIN
 RCLASS = (CLR.B:ASL.B)+MFP+SXT+XOR
 TCLASS EXCLUDES [MFP+NEG.B+(-DM0)] FROM RCLASS WHEN COMBINED

REV. NO. CHANGE NO. CHK

A-FORK LOGIC SLOT 9

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11170				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE	TITLE	
XXX - .006	± 0° 30'	DATE	ROM & ROM CONTROL (RACE)	
XX - .02		DATE	SIZE CODE	
X - .1		DATE	NUMBER	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROL	DATE	DCS M8133-0-1	
MATERIAL	NEXT HIGHER ASSY.	DATE	REV	
FINISH	SCALE	DATE	B	
	SHEET 6 OF 15	DIST		

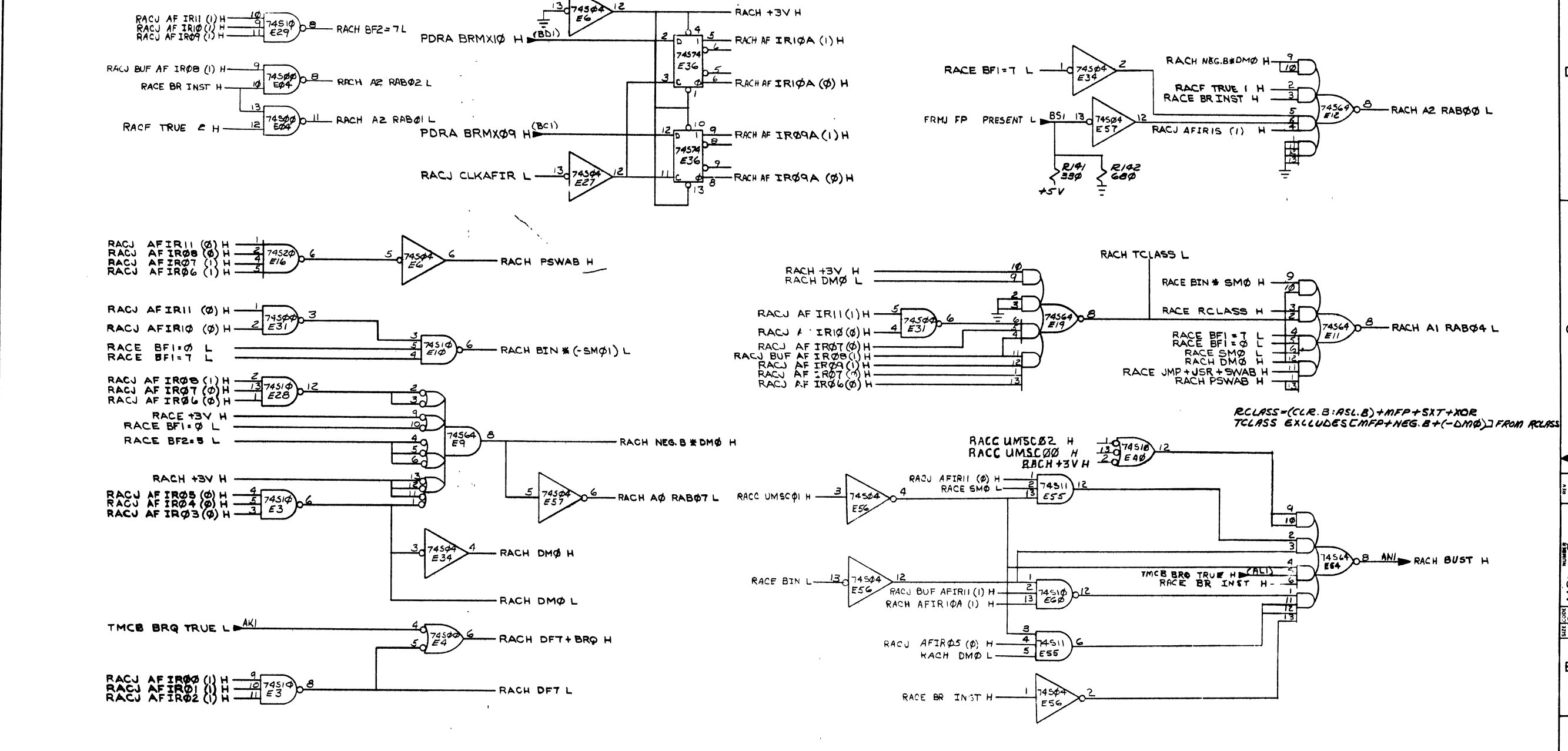
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REV	NO	DATE
CHK		

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
117Ø					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	ANGLES			TITLE	
XXX - 005	±0° 30'			ROM & ROM CONTROL	
XX - 02				(RACF)	
X - 1					
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL		NEXT HIGHER ASSY		SIZE CODE	REV.
FINISH		SCALE		DCS M8133-Ø-1	B
		S. 27 7 00 1974		DIST	

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RCLASS=(CLR.B:ASL.B)+MFP+SXT+XOR
TCLASS EXCLUDES CMFP+NEG.B+(-DM0) FROM RCLASS

REVISIONS
CHANGE NO
CHK

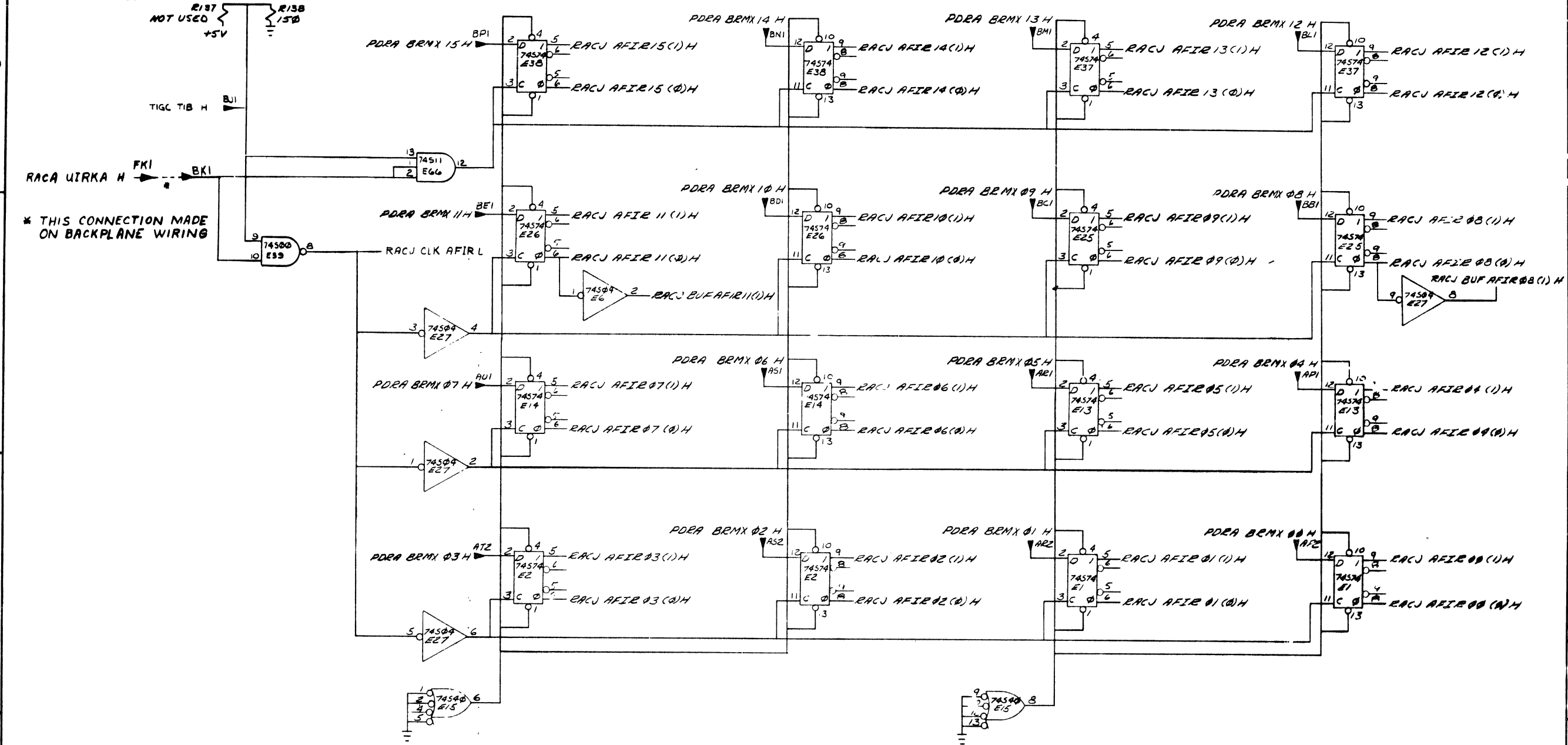
72

FIRST USED ON OPTION/MODEL 1170		QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		DATE	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS		
DECIMALS	ANGLES	DATE	TITLE		
XXX = .008	±0° 30'	DATE	ROM & ROM CONTROL		
XX = .02		DATE			
X = .1		DATE			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE			
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV	
		DCS	M8133-0-1	B	
FINISH	SCALE	SHEET	OF	DIST.	
		8	OF	5	

A-FORK LOGIC SLOT 9

REV B
NUMBER
DCS M8133-0-1
DATE

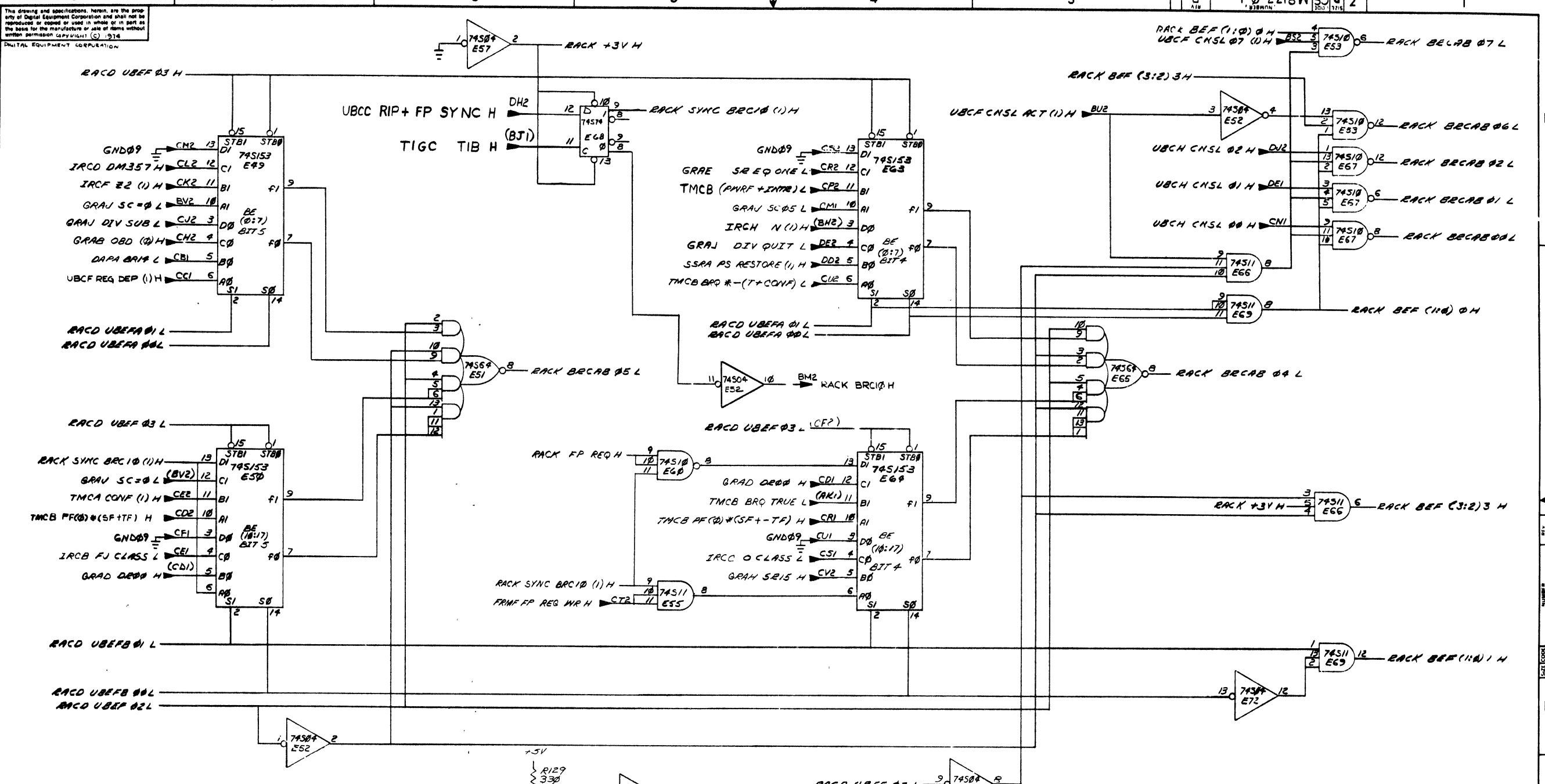
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REV	NO
1	1

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
1170					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE	DATE	TITLE	
XXX - 008	± 0° 30'	DATE	DATE	ROM & ROM CONTROL (RACJ)	
XX - 02		DATE	DATE	SIZE CODE NUMBER	
X - 1		DATE	DATE	DCS M8133-0-1	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	DATE	REV	
MATERIAL		NEXT HIGHER ASSY		B	
FINISH		SCALE		SHEET 9 OF 15	
		D157			

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REV	CHANGE NO

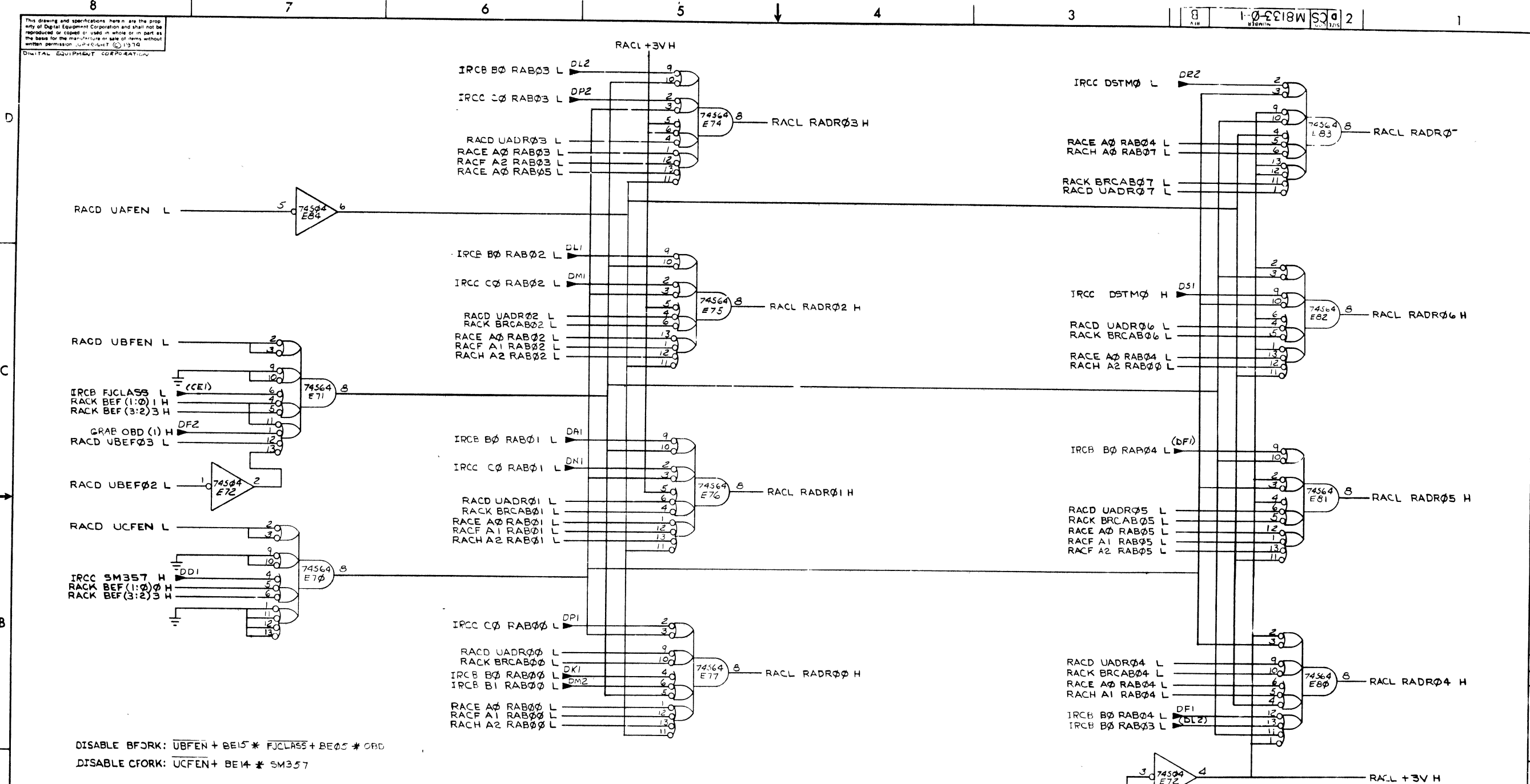
74S153		
SI	S0	OUTPUT
L	L	A=F
L	H	B=F
H	L	C=F
H	H	D=F
X	X	F=L

BRANCH CONDITIONS (ROM ADDRESS MODIFICATION) SLOT 9

FIRST USED ON OPTION/MODEL 11170	QTY.	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DHL RML	DATE 11-12-74	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
DECIMALS XXX - 006 XX - 02 X - 1	ANGLES ± 0° 30'	DATE 1-13-75	TITLE ROM & ROM CONTROL (RACK)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	DATE 1/14/75	MATERIAL NEXT HIGHER ASSY		
FINISH	SCALE	SHEET 10 OF 15	SIZE CODE DCS M8133-0-1	NUMBER REV B

74

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DISABLE BFORK: $\overline{UBFEN} + BE15 * \overline{FJCLASS} + BE05 * \overline{OBD}$
 DISABLE CFORK: $\overline{UCFEN} + BE14 * \overline{SM357}$

ROM ADDRESS SELECTION SLOT 9

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11170				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE	MAYNARD MASSACHUSETTS	
XXX - 005	± 0° 30'	DATE	TITLE	
XX - 02		DATE	ROM & ROM CONTROL	
X - 1		DATE	(RACL)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	REV B	
MATERIAL	NEXT HIGHER ASSY	SCALE	SIZE/CODF	NUM LTR
FINISH		SHEET	DICS	M8133-0-1
		OF 15	DIST	

REV	
CHANGE NO	
CHK	

FORM NO 109-B

75

46

FLWS STATE	ADR	BRK	BRX	SRX	DRX	SRK	DRK	CCL	PCA	PCB	SHF	IRK	PWE	PID	BSD	BAX	IBS	SHC	BCT	MSC	BSC	AMX	BHX	KHX	ALU	FEN	BEN	UAD
12 RSD,00	000	1	1	0	0	0	3	0	0	0	2	0	0	0	5	0	1	3	0	7	0	0	0	1	1	1	0	00 345
5 D12,00	001	1	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	0	0	0	7	6	2	0	0	2	0	15 115
5 D12,01	002	1	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	0	0	0	7	6	2	0	0	2	0	15 115
5 D30,00	003	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	0	0	0	7	0	0	2	0	0	0	00 221
6 D45,00	004	0	0	0	0	0	3	0	1	3	2	0	2	5	0	1	0	0	0	7	0	0	0	0	3	6	0	01 122
6 D45,01	005	0	0	0	0	0	3	0	1	3	2	0	2	5	0	1	0	0	0	7	0	0	0	0	3	6	0	01 122
6 D67,00	006	1	1	0	2	0	3	0	1	0	2	0	0	5	2	1	0	0	0	0	0	0	1	0	1	3	0	00 251
6 D67,01	007	1	1	0	2	0	3	0	1	0	2	0	0	5	2	1	0	0	0	0	0	0	1	0	1	3	0	00 251
3 HLT,00	010	1	1	0	1	1	3	0	0	0	1	0	0	6	0	1	3	0	0	7	0	0	0	0	0	0	0	00 327
3 HAT,00	011	0	0	0	1	0	3	0	0	0	2	0	0	6	0	1	0	0	0	7	0	0	0	0	0	2	0	12 244
2 RT1,00	012	0	0	1	0	1	0	0	0	0	2	0	0	7	0	1	0	0	0	7	0	0	3	0	0	2	0	00 196
12 TRP,01	013	1	1	0	0	0	3	0	0	0	2	0	0	0	0	1	3	0	0	7	0	0	0	1	1	1	0	00 354
12 TRP,02	014	1	1	0	0	0	3	0	0	0	2	0	0	0	0	1	3	0	0	7	0	0	0	1	1	1	0	00 354
3 RES,00	015	0	0	0	1	0	3	0	0	0	2	0	0	6	0	1	0	0	0	7	0	0	0	3	0	0	0	00 255
2 RT1,01	016	0	0	1	0	1	0	0	0	0	2	0	0	7	0	1	0	0	0	7	0	0	0	3	0	0	2	00 196
12 RSD,01	017	1	1	0	0	0	3	0	0	0	2	0	0	0	0	1	3	0	0	7	0	0	0	1	1	1	0	00 345
3 EXC,00	020	1	1	0	0	0	0	1	0	1	2	1	1	5	3	1	0	0	0	6	0	0	0	2	0	7	0	00 343
1 S13,00	021	0	0	0	0	0	0	0	1	2	2	0	2	0	0	2	0	0	0	7	1	2	0	2	3	0	0	00 027
1 S13,01	022	0	0	0	0	0	0	0	1	2	2	0	2	0	0	2	0	0	0	7	1	2	0	2	3	0	0	00 027
1 S45,10	023	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	7	1	0	0	0	0	0	0	00 027
1 S45,00	024	0	0	0	0	1	0	0	1	2	2	0	2	0	0	1	0	0	0	7	0	0	2	0	2	6	0	00 023
13 SVC,00	025	0	0	0	0	0	0	0	0	0	2	0	2	7	0	0	0	0	0	7	5	0	0	0	1	6	0	00 041
2 S67,00	026	1	1	2	2	1	3	0	0	0	1	0	0	1	2	1	0	0	0	0	0	0	1	0	1	3	0	00 054
1 S13,10	027	1	1	0	2	0	3	0	0	0	1	0	0	5	3	2	0	0	0	6	1	0	0	0	0	4	14	00 317
3 EXC,00	030	0	0	0	0	0	0	1	1	3	2	0	0	5	0	1	0	0	0	7	6	0	0	2	0	7	0	00 217
11 EXC,00	031	1	0	0	0	0	0	1	0	0	2	0	0	6	0	0	0	0	0	7	7	3	2	0	7	0	00 172	
11 JSR,00	032	0	0	0	0	0	0	0	1	1	0	2	0	2	0	0	0	0	2	6	5	0	0	0	0	0	00 217	
11 TST,10	033	0	0	0	0	0	0	1	0	0	2	0	0	5	0	1	0	0	0	7	0	3	2	0	7	0	00 240	
11 JSR,00	034	0	0	2	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	7	0	0	0	0	0	2	0	00 201
11 JMP,00	035	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	7	6	0	0	0	0	2	0	00 217
7 FOP,40	036	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	7	1	0	0	0	0	2	0	00 225
13 SVC,00	037	0	0	0	0	0	3	0	0	0	2	0	2	7	0	0	0	0	0	0	0	0	0	0	1	6	0	00 025

FLWS STATE	ADR	BRK	BRX	SRX	DRX	SRK	DRK	CCL	PCA	PCB	SHF	IRK	PWE	PID	BSD	BAX	IBS	SHC	BCT	MSC	BSC	AMX	BHX	KHX	ALU	FEN	BEN	UAD
2 RTS,00	040	0	0	1	0	1	0	0	1	1	2	0	0	7	0	1	0	0	7	0	0	0	0	0	2	0	00 223	
13 SVC,00	041	1	0	0	1	0	3	0	0	0	2	0	0	7	3	0	0	0	0	5	2	0	0	0	2	0	00 222	
12 RSD,02	042	1	1	0	0	0	0	0	0	0	2	0	0	0	0	1	3	0	0	0	0	0	1	1	1	0	00 345	
3 SFL,00	043	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	7	4	0	3	0	0	2	0	00 361	
3 CCP,00	044	0	0	0	0	0	0	2	0	0	2	0	0	0	0	1	0	0	7	6	0	3	0	0	2	0	00 217	
1 MFP,00	045	0	0	0	0	0	0	0	0	0	2	0	2	7	0	1	0	0	7	0	0	2	0	1	3	0	00 191	
11 MFP,00	046	0	0	0	2	0	0	0	0	0	1	0	1	5	0	1	0	0	7	0	0	0	0	0	0	0	00 304	
2 MRK,00	047	0	0	1	0	1	3	0	0	0	2	0	0	2	0	1	0	0	7	0	0	1	1	2	3	0	00 292	
3 MUL,00	050	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	3	0	0	0	0	0	0	2	0	00 102	
3 DVS,00	051	1	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	7	0	0	0	0	0	2	0	00 061	
7 ASH,10	052	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	2	7	0	0	2	0	0	2	0	00 305	
7 ASC,10	053	0	0	0	1	0	3	0	0	0	2	0	0	4	0	1	0	2	7	0	0	2	0	0	2	0	00 306	
2 S67,10	054	0	0	0	0	1	0	0	0	1	2	0	0	0	0	1	0	0	0	0	0	0	2	3	0	0	00 141	
9 DVN,40	055	0	0	0	0	0	3	4	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0	6	00 056	
9 DVN,50	056	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	00 306	
2 SOB,00	057	1	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	7	6	0	1	1	2	6	0	01 242	
8 MUL,00	060	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0	00 102	
9 DIV,00	061	0	0	0	1	1	3	4	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	00 294	
7 ASH,00	062	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	00 052	
7 ASC,00	063	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	00 093	
11 SHR,00	064	1	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	7	00 123	
13 SVC,10	065	0	0	0	3	1	0	0	0	1	1	0	0	6	0	0	0	0	7	2	0	0	0	0	0	0	00 397	
11 MFP,00	066	0	0	1	0	1	0	1	0	0	2	0	0	7	0	0	0	0	0	0	0	0	3	0	0	2	00 250	
11 NEG,00	067	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	7	00 271	
14 EXP,10	070	0	0	0	0	0	0	0	0	0	0	0	0	6	0	2	0	0	7	0	0	0	0	0	0	0	00 153	
14 EXN,00	071	0	0	0	0	1	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2	0	1	3	00 070	
14 RED,00	072	0	0	0	7	0	0	0	0	0	2	1	0	0	0	2	0	0	0	0	0	0	2	0	0	2	00 337	
14 DEP,10	073	0	0	0	0	0	0	0	0	0	2	0	0	6	0	2	0	0	0	7	5	3	0	0	2	0	00 303	
14 DEP,00	074	0	0	0	0	1	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2	0	1	3	00 073	
14 RED,10	075	0	0	0	0	1	0	0	0	0	2	1	0	0	0	2	0	0	0	0	0	0	2	0	0	3	00 337	
14 KST,00	076	0	0	0	0	0	0	0	0	1	2	0	0	0	0	2	0	0	6									

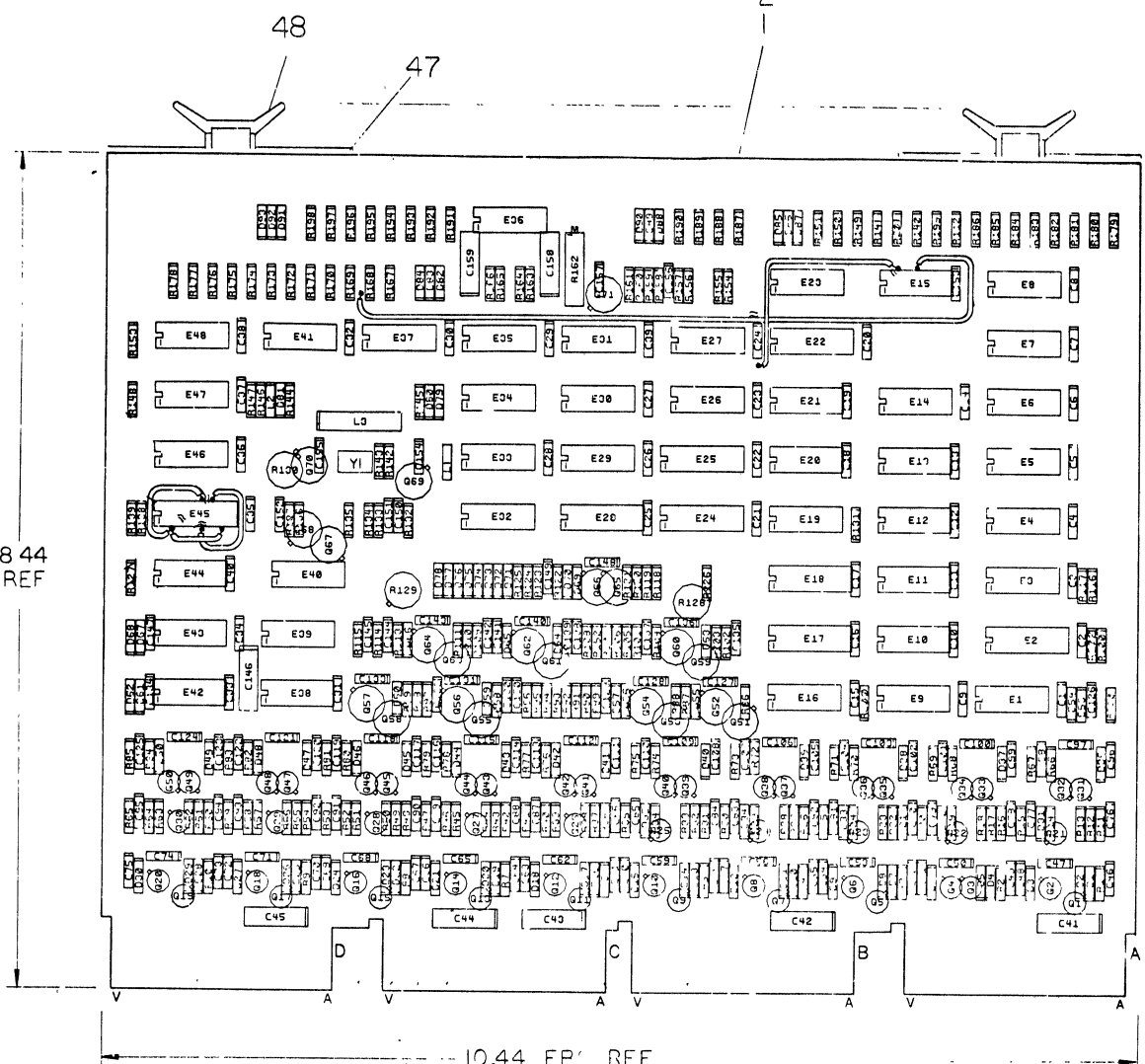
FLWS STATE	ADR	BRK	BRX	SRX	DRX	SRK	DRK	CCL	PCA	PCB	SHF	IRK	PHE	PAD	BSD	BAX	IBS	SHC	BCT	MSC	BSC	AMX	BHX	KMX	ALU	PEN	BEN	UAD
12 PUP,00	100	0	0	0	0	0	3	0	0	0	2	0	0	0	0	1	0	0	6	0	0	0	1	0	1	0	00	347
2 FOP,00	101	0	0	0	0	1	0	0	1	1	2	0	0	0	0	1	0	0	7	1	0	1	0	1	6	0	00	133
8 MUL,10	102	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3	3	0	6	0	11	246
9 DVP,10	103	0	0	0	1	0	3	0	0	0	2	0	0	4	0	2	0	3	0	0	0	0	0	0	2	0	00	147
9 DVN,10	104	0	0	0	0	0	0	0	0	0	2	0	2	4	0	0	0	0	0	0	0	0	0	2	0	6	00	105
9 DVN,20	105	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	6	0	00	106
9 DVN,30	106	0	0	1	0	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	00	055	
9 DVN,70	107	0	0	0	1	0	3	4	0	0	2	0	0	4	0	0	0	3	0	0	0	0	0	0	0	00	147	
5 D12,90	110	0	0	0	0	1	0	3	0	0	0	0	0	5	0	0	0	0	7	6	3	0	0	2	0	15	135	
5 D12,80	111	0	0	0	0	1	0	3	0	0	2	0	0	5	0	0	0	0	7	6	3	0	0	2	0	15	115	
5 D32,92	112	0	0	0	0	1	0	3	0	0	0	0	0	5	0	0	0	0	7	0	3	0	0	2	0	00	221	
5 D32,82	113	0	0	0	0	1	0	3	0	0	2	0	0	5	0	0	0	0	7	0	3	0	0	2	0	00	221	
6 D45,90	114	0	0	0	0	0	3	3	1	3	2	0	2	5	0	0	0	0	6	0	0	0	3	6	0	01	131	
6 D45,80	115	0	0	0	0	0	3	3	1	3	2	0	2	5	0	0	0	0	6	0	0	0	3	6	0	01	121	
6 D67,90	116	0	0	0	0	1	0	3	0	0	0	0	0	6	3	1	0	0	7	0	3	0	0	2	0	00	006	
6 D67,80	117	0	0	0	0	1	0	3	0	0	2	0	0	6	0	1	0	0	7	0	3	0	0	2	0	00	006	
12 BRK,20	120	1	1	0	0	0	0	0	0	0	2	0	0	0	0	1	3	0	6	0	0	0	0	2	0	02	152	
6 D40,20	121	0	0	0	0	1	0	0	0	0	2	0	0	5	0	0	0	0	7	6	0	0	0	2	2	15	157	
6 D10,30	122	1	0	0	0	0	0	0	0	0	2	0	0	5	0	0	0	0	7	6	2	0	0	2	2	15	157	
11 SHR,10	123	1	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	7	7	3	0	0	2	0	00	132	
12 TRP,02	124	1	1	0	0	0	3	0	0	0	2	0	0	0	0	1	3	0	7	0	0	0	1	1	1	0	00	354
10 DVC,00	125	0	0	0	0	0	0	0	0	0	2	0	2	4	0	0	0	0	0	0	0	3	0	2	0	16	216	
1 FET,05	126	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	3	7	0	2	2	0	6	0	12	240
3 WAT,30	127	0	0	0	0	0	0	0	0	0	2	0	0	3	0	1	0	0	0	0	0	3	0	2	0	02	253	
12 BRK,10	130	0	0	0	0	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	2	0	13	100	
6 D40,30	131	0	0	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0	7	6	3	0	0	2	2	15	177	
11 EXC,10	132	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	6	7	3	0	0	2	0	00	217	
2 FCP,10	133	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	3	0	2	0	07	154
14 EXM,30	134	0	0	0	0	0	3	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	2	0	00	230	
5 D12,70	135	0	0	0	0	0	0	1	3	2	0	2	5	0	0	0	0	7	6	0	0	0	3	3	2	00	137	
7 ASC,61	136	0	0	0	0	0	0	6	0	0	2	0	2	4	0	1	0	0	0	7	0	0	0	2	0	12	246	
5 D12,30	137	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	2	00	377	

FLWS STATE	ADR	BRK	BRX	SRX	DRX	SRK	DRK	CCL	PCA	PCB	SHF	IRK	PHE	PAD	BSD	BAX	IBS	SHC	BCT	MSC	BSC	AMX	BHX	KMX	ALU	PEN	BEN	UAD	
12 BRK,80	140	1	1	0	0	0	3	0	0	0	2	0	0	0	0	1	3	0	0	0	0	0	1	1	1	0	00	152	
2 S67,20	141	0	0	0	0	0	0	0	0	0	1	0	0	6	0	2	0	0	0	7	1	0	0	0	0	0	00	142	
2 S67,30	142	1	1	0	0	0	0	0	0	0	1	0	0	0	3	2	0	0	0	6	1	0	0	0	1	4	14	317	
2 S13,30	143	0	0	0	0	0	0	0	0	0	1	0	0	6	0	2	0	0	0	7	3	0	0	0	0	0	00	146	
10 DVC,20	144	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	04	353		
9 DVE,20	145	0	0	0	0	0	0	7	0	0	2	0	0	0	0	2	0	0	6	0	0	0	0	2	0	00	164		
2 S13,40	146	1	1	0	0	0	0	0	0	0	1	0	0	0	3	2	0	0	6	3	0	0	0	0	4	00	377		
9 DIV,30	147	1	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	3	0	7	0	16	346
12 FSV,10	150	1	1	0	0	0	3	0	0	0	2	0	0	0	3	0	0	0	1	4	0	0	1	3	0	00	225		
1 MTP,10	151	0	0	0	2	0	3	0	0	0	1	0	0	5	0	2	0	0	0	7	3	0	0	0	0	00	146		
12 BRK,30	152	0	0	0	0	0	0	0	1	0	2	0	0	6	0	0	0	0	6	7	2	3	0	0	2	0	00	355	
14 EXM,20	153	1	1	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	00	134	
12 BRK,00	154	0	1	0	0	1	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	0	1	0	0	2	0	12	130
5 D12,60	155	0	0	0	0	0	0	1	3	2	0	2	5	3	0	0	0	0	6	6	0	0	3	3	0	00	312		
2 RT1,10	156	0	0	0	0	0	0	0	0	0	2	0	0	7	0	2	0	0	7	0	3	0	0	2	0	00	212		
6 D10,40	157	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	0	6	6	3	0	0	2	0	00	331		
12 SER,00	160	0	0	0	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	00	344	
6 D50,20	161	0	0	0	0	1	0	0	0	0	2	0	0	5	0	0	0	0	7	0	3	0	0	2	0	00	231		
6 D10,00	162	0	0	0	0	0	0	0	0	0	1	0	0	5	0	0	0	0	7	0	0	0	0	0	0	00	231		
11 NEG,20	163	0	0	0	0	0	0	0	0	0	2	0	0	5	0	0	0	0	7	7	3	0	0	2	0	00	132		
1 FET,04	154	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	3	7	0	2	2	0	6	0	12	240	
9 DIV,70	165	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	7	0	04	323	
7 ASH,41	166	0	0	0	0	1	0	5	0	0	2	0	2	0	0	1	0	1	0	6	0	2	0	0	5	0	03	126	
14 CON,01	167	1	1	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0	0	0	0	0	0	0	2	0	14	070	
14 CON,00	170	1	1	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0	0	0	0	0	0	0	2	0	14	070	
6 D50,30	171	0	0	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0	7	0	3	0	0	2	0	00	231		
2 RT1,60	172	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	6	0	0	0	0	0	00	217		
2 FOP,30	173	1	1	0	0	0	0	1	1	2	0	0	0	0	3	0	0	1	0	0	1	0	1	3	4	00	377		
2 FOP,20	174	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	6	0	3	0	0	2	0	00	10	133	
5 D12,10	175	1	1	0	0	0	0	1	3	2	0	2	5	2	0	0	0	0	6	6	0	0	3	3	2	00	137		
7 ASC,31	176	0	0	0	0	1	2	5	0	0	2	0	2	0	0	0	1	0	6	0	2	0	0	7	0	03	136		
6 D10,60	177	1	1	0	0	0	0	0	0	0	2	0	0	0	2	0													

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NOTES:

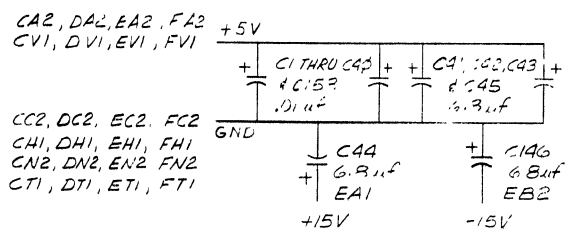
- E3, E27, E36, E40, E44, AND E49 ARE SPARE I.C. LOCATIONS.
- R202 IS A SPARE RESISTOR LOCATION.
- PIN DESIGNATIONS ON CIRCUIT SCHEMATICS REFER TO MODULE POSITION IN 11/70 BACKPLANE.



PIN NOMENCLATURE
 MODULE BACKPLANE
 PIN PIN
 A C
 B D
 C E
 D F

REF	DESCRIPTION	PART NO	ITEM NO
REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8139 0-4	1
REF	ASSY DRILLING HOLE LAYOUT	D-AH-M8139 0-5	2
REF	MODULE ECO HISTORY	B-MH-M8139 0-6	3
1	ETCHED CIRCUIT BOARD	5011344	4
44	C1 THRU C40, C155, C156, C157, C158, C159	CAP, 0.1uf, 100V	5
8	C41, C42, C43, C44, C45, C146, C15A, C15B	CAP, 6.8uf, 35V, 10%	6
96	C46 THRU C97, C99, C100, C102, C103, C105, C106, C108, C109, C111, C114, C115, C117, C118, C120, C121, C123, C124, C126 THRU C145, C147, C148, C149, C151, C152, C160, C112	CAP, .22uf, 50V, 80-20%	7
10	C98, C101, C104, C107, C110, C113, C116, C119, C122, C125	CAP, 33pf, 100V, 5%	8
1	C157	CAP, 47pf, 100V, 5%	9
1	C154	CAP, 100pf, 100V, 5%	10
52	D1, D3, D4, D8, D7, D9, D10, D12, D13, D15, D18, D19, D19, D21, D22, D24, D25, D27, D28, D30, THRU D50, D57, D58, D61, D62, D64, D65, D67, D68, D69, D70, D53, D54	DIODE DEC 777	11
39	D2, D5, D6, D11, D14, D17, D20, D23, D26, D29, D55, D56, D59, D50, D63, D66, D71 THRU D93	DIODE D662	12
17	R6 THRU R10, R40, R46, R52, R59, R64, R67, R71, R73, R75, R99, R113, R69	RESISTOR, 4.7K, 1/4W, 5%	13
6	R11, R16, R21, R26, R31, R143	RESISTOR, 1.5K, 1/4W, 5%	14
5	R12, R17, R22, R27, R32	RESISTOR, 15K, 1/4W, 5%	15
26	R13, R15, R18, R20, R23, R25, R28, R30, R33, R35, R38, R41, R47, R50, R53, R56, R59, R62, R65, R102, R104, R114, R115, R132, R158, R144	RESISTOR, 10 OHM, 1/4W, 5%	16
11	R14, R19, R24, R29, R34, R39, R45, R51, R57, R63, R121	RESISTOR, 100 OHM, 1/4W, 5%	17
76	R36, R37, R42, R43, R48, R49, R54, R55, R60, R61, R69 THRU R96, R101, R105 THRU R112, R123, R124, R126, R138, R139, R140, R141, R148 THRU R171, R177 THRU R200, R122, R201	RESISTOR, 1K, 1/4W, 5%	18
13	R66, R68, R70, R72, R76, R74, R78, R80, R82, R84, R119, R119, R120	RESISTOR, 1.2K, 1/4W, 5%	19
12	R77, R79, R81, R83, R85, R86, R103, R1 THRU R5	RESISTOR, 3K, 1/4W, 5%	20
7	R87, R88, R97, R98, R134, R135, R144	RESISTOR, 47 OHM, 1/4W, 5%	21
6	R100, R125, R127, R131, R154, R155	RESISTOR, 150 OHM, 1/4W, 5%	22
8	R116, R146, R156, R159, R160, R161, R164, R165	RESISTOR, 330 OHM, 1/4W, 5%	23
5	R117, R147, R157, R163, R166	RESISTOR, 680 OHM, 1/4W, 5%	24
2	R128, R129	RESISTOR, 2K, 1/2W, 10%, POT	25
1	R130	RESISTOR, 100 OHM, 1/2W, 10%, POT	26
2	R133, R137	RESISTOR, 68 OHM, 1/4W, 5%	27
1	R142	RESISTOR, 750 OHM, 1/4W, 5%	28
1	R145	RESISTOR, 220 OHM, 1/4W, 5%	29
1	R162	RESISTOR, 1K, 3/4W, POT	30
35	Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q17, Q19, Q21 THRU Q25, Q31 THRU Q40, Q51, Q54, Q56, Q58, Q59, Q63, Q65, Q66, Q69, Q70, Q10	TRANSISTOR DEC 4258	31

IC	TYPE	GND	+5V
IC DEC 74S112	B	16	
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.			
IC PIN LOCATIONS			



Ray Doucette
 11/70
 DEC-M-139-00002
 11/70
 A - TELETYPE

FIRST USED ON OPTION MODEL 11/70

ETCH BOARD REV B

REVISIONS

CHANGE NO. REV.

DEC NO. EIA NO. DEC NO. EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. DATE 12/9/74

CHKD. DATE

ENG. DATE 1-25-75

PHYS. ENG. DATE

PROD. DATE 11/7/75

NEXT HIGHER ASSY B-DD-KB11-0

digital EQUIPMENT CORPORATION

TITLE TIMING GENERATOR

SIZE CODE NUMBER REV. D.C. M8139 0-1 C

SHEET OF

8

7

6

5

4

3

DCSM8139-0-1

2

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NOTES:

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
36	Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16, Q18, Q20, Q26 THRU Q30, Q41 THRU Q50, Q52, Q53, Q55, Q57, Q60, Q61, Q62, Q64, Q67, Q68, Q71	TRANSISTOR DEC 30098	1503100	32
1	L1	INDUCTOR 22 UH	1611600	33
1	L2	INDUCTOR 47 UH	1610990	34
1	L3	INDUCTOR 33 MH	1601759	35
6	E1, E9, E14, E16, E38, E42	IC 74S110	1910541	36
8	E2, E17, E18, E22, E24, E25, E28, E45	IC DEC 74S112	1910545	37
5	E4, E7, E21, E46, E30	IC 74S04	1910534	38
7	E5, E8, E19, E26, E29, E33, E6	IC 74S74	1910544	39
5	E10, E15, E31, E37, E43	IC 74S00	1910532	40
2	E11, E12	IC 74S65	1910543	41
4	E20, E23, E32, E13	IC 74S64	1910542	42
2	E34, E48	IC 74S11	1910537	43
2	E35, E39	IC 74S110	1910546	44
2	E41, E47	IC 74S20	1910539	45
1	Y1	CRYSTAL 33 333 UHZ	1810694-01	46
8		EYELET	9006732	47
4		HANDLE FLIP CHIP MAGENTA	9008337-08	48
A/R		TAPE, 2 SIDED	9007834	49
12"		WIRE, #30 AWG BUSS (RETROFIT)	9105740-55	50
A/R		PERMA-BOND	9009157	51
1	R136	RESISTOR 120 OHM 1/4W 5%	1300147	52
1	R203	RESISTOR 33 OHM 1/4W 5%	1300197	53

D

D

C

C

B

B

A

A

DCSM8139-0-1

IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

FIRST USE DUN OTECON MODEL
 11-70

PARTS LIST

CHK	CHANGE NO	REV

DRN	DATE	2/7/74
CHK'D	DATE	2/7/74
ENGR	DATE	2/7/74
PIV. ENGR	DATE	2/7/74
PR	DATE	2/7/74
NEXT HIGHER ASSY B-DD-KB11-0		
SCALE	//	
SHEET	2 OF 7	

digital EQUIPMENT CORPORATION

TITLE
TIMING GENERATOR

SIZE CODE NUMBER REV.
DCS M8139-0-1 C

SEMICONDUCTOR CONVERSION CHART

8

7

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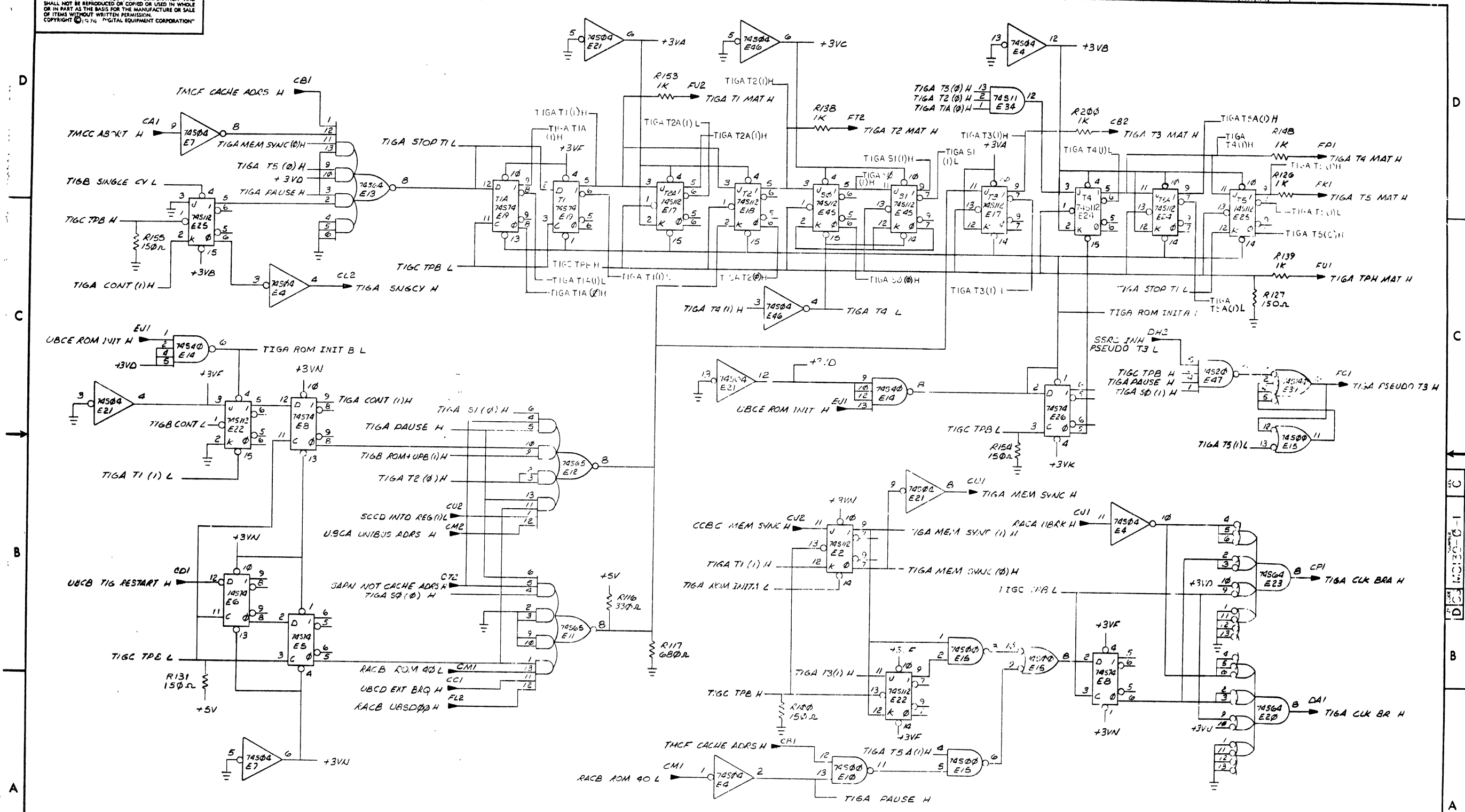
3

2

1

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1-0-6618W 2



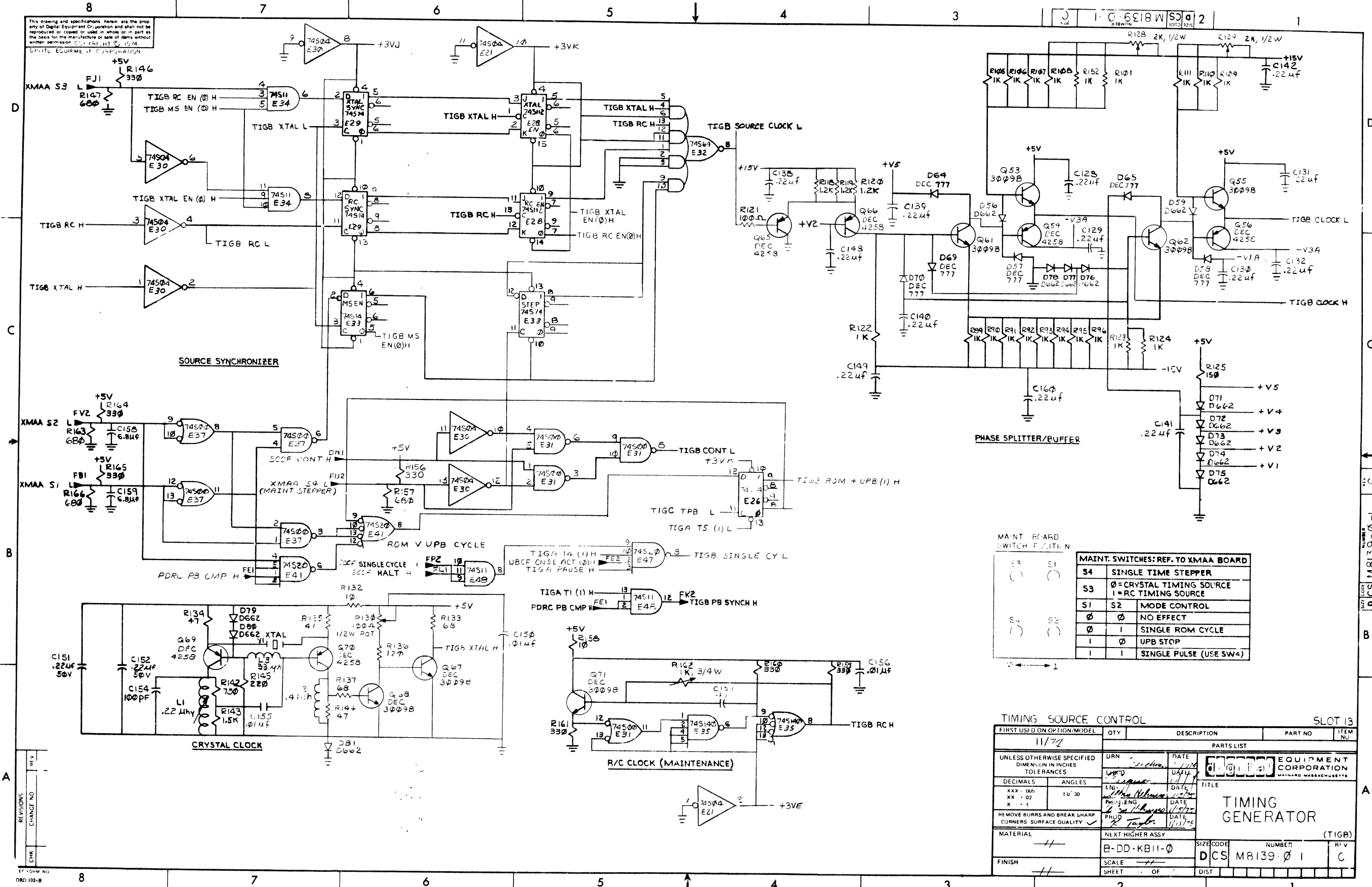
TIMING CONTROL SLOT 13

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV.
TIMING GENERATOR (TIGA)	D CS	M 8139-0-1	G
SCALE	SHEET	OF	DIST.
1/1	8	7	

DEC FORM NO. 880 118

82



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DIGITAL EQUIPMENT CORPORATION

REV. NO. 11/74

REV.	CHANGE NO.

CHK

MAINT. BOARD SWITCH POSITION

S1	S1
()	()
S2	S2
()	()

MAINT. SWITCHES: REF. TO XMAA BOARD

S4	SINGLE TIME STEPPER
S3	Ø = CRYSTAL TIMING SOURCE 1 = RC TIMING SOURCE
S1	S2 MODE CONTROL
Ø	Ø NO EFFECT
Ø	1 SINGLE ROM CYCLE
1	Ø UPB STOP
1	1 SINGLE PULSE (USE SW4)

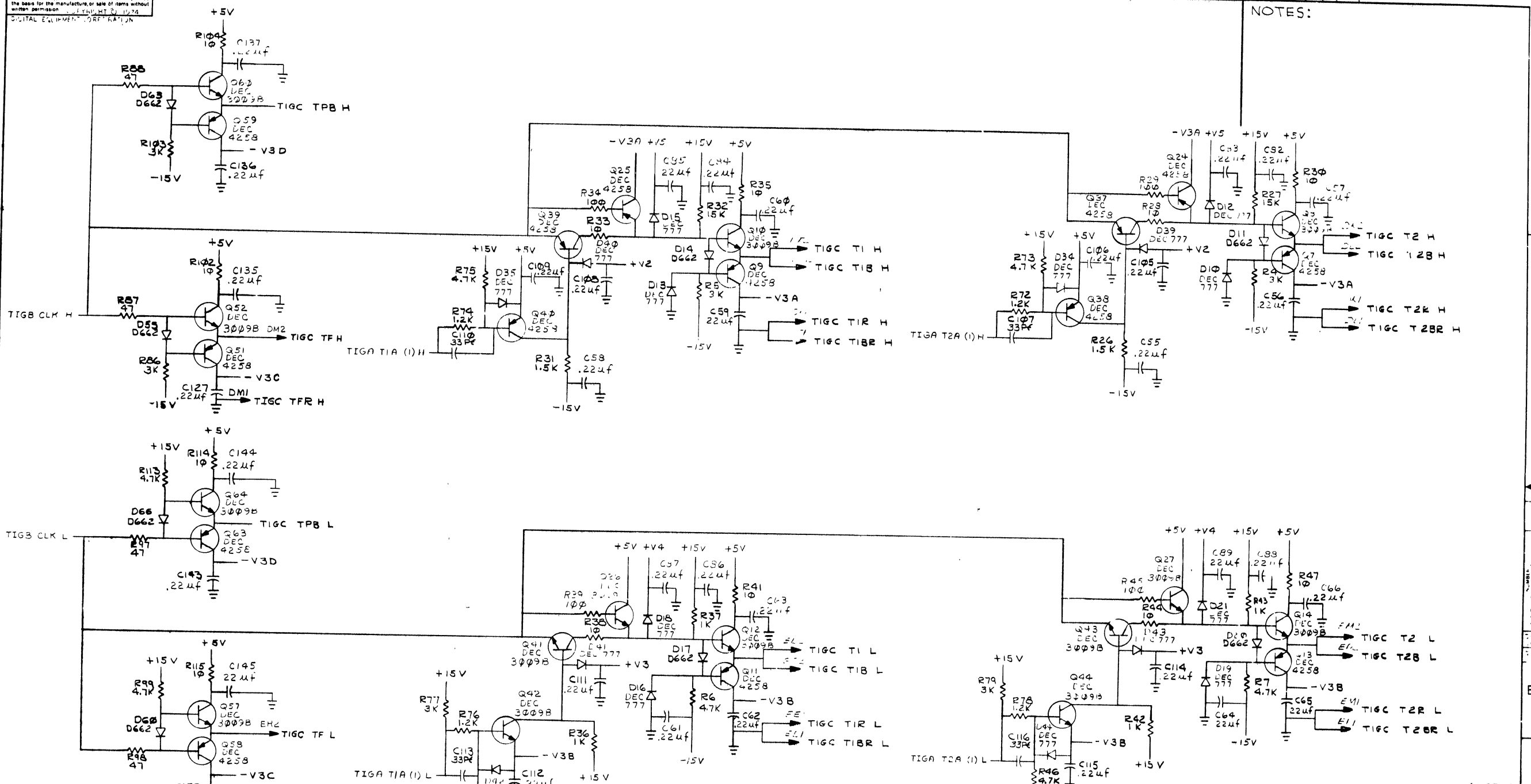
TIMING SOURCE CONTROL SLOT 13

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
11/74				

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE	EQUIPMENT CORPORATION
DECIMALS			
ANGLES			
XXX - 005			
XX - 02			
X - 1			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PHD	DATE	TITLE
		11/13/75	TIMING GENERATOR
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER
		B-DD-KB11-Ø	DCS M8139-Ø 1
FINISH	SCALE	SHEET	DIST

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NOTES:

REV.	CHG.	NO.	DATE

FIRST USED ON: 11/76		QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	DATE: 11/76			
XXX - 006	10° 30'	DATE: 11/76			
XX - 02		DATE: 11/76			
X - 1		DATE: 11/76			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL: NE KT HIGH LEAD AS5Y					
FINISH: + / -					
SCALE: + / -		SHEET: OF		DIST: OF	

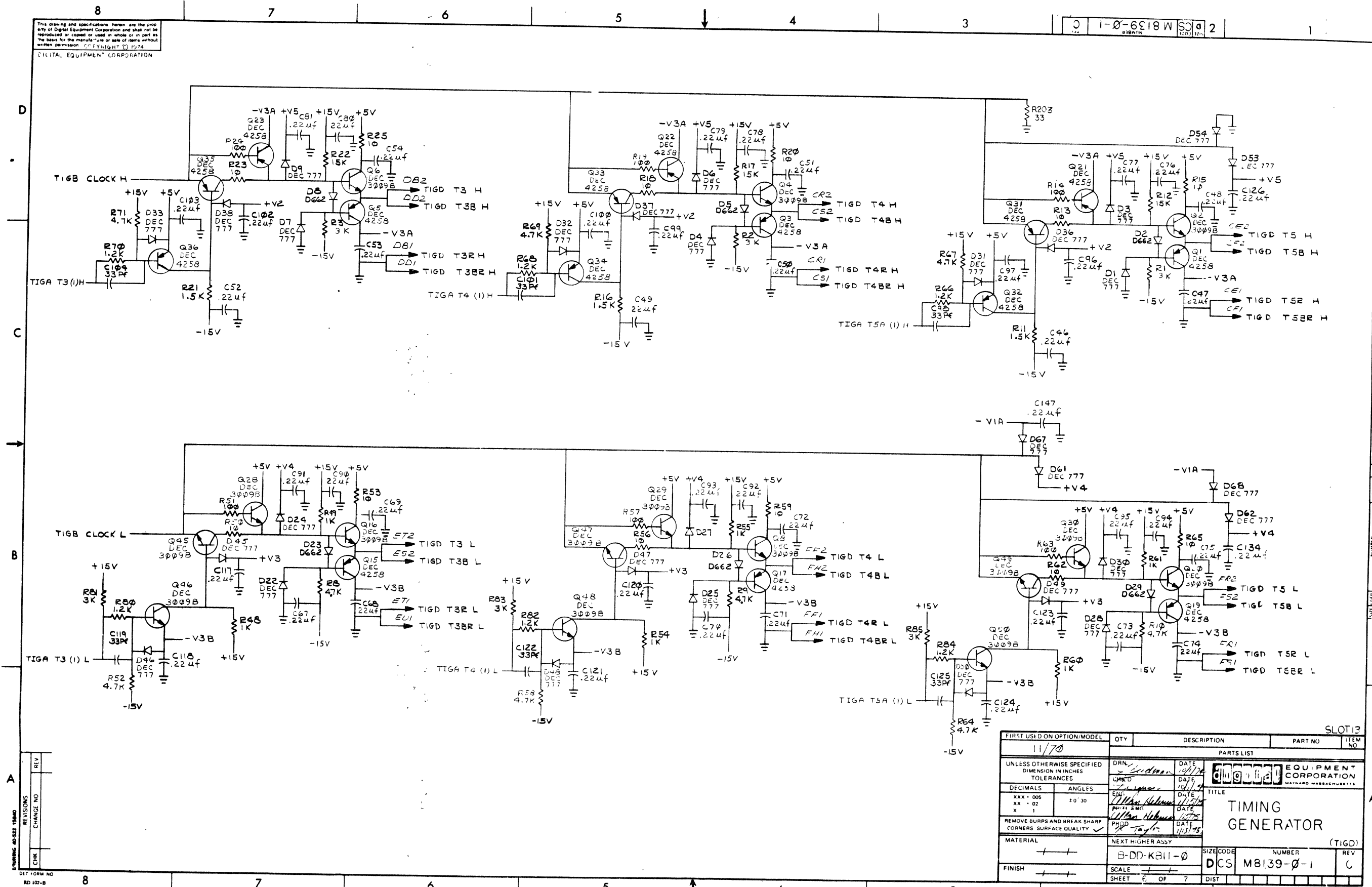
EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
TIMING GENERATOR (TIGC)

SIZE CODE: B DD KB11-0
NUMBER: DCS M8139 0-1
REV: C

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DIGITAL EQUIPMENT CORPORATION



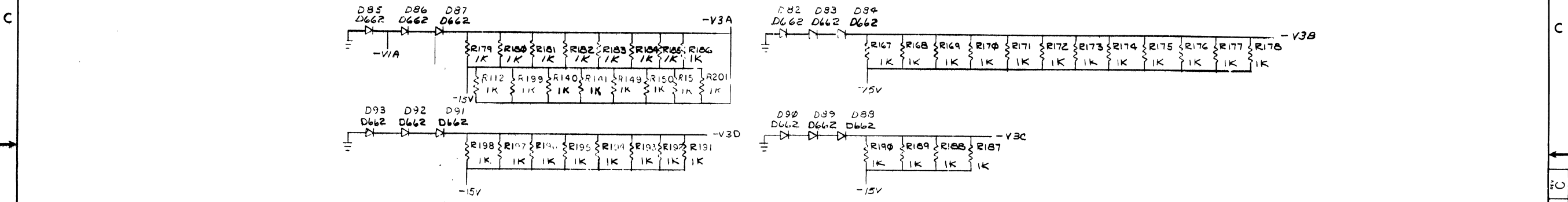
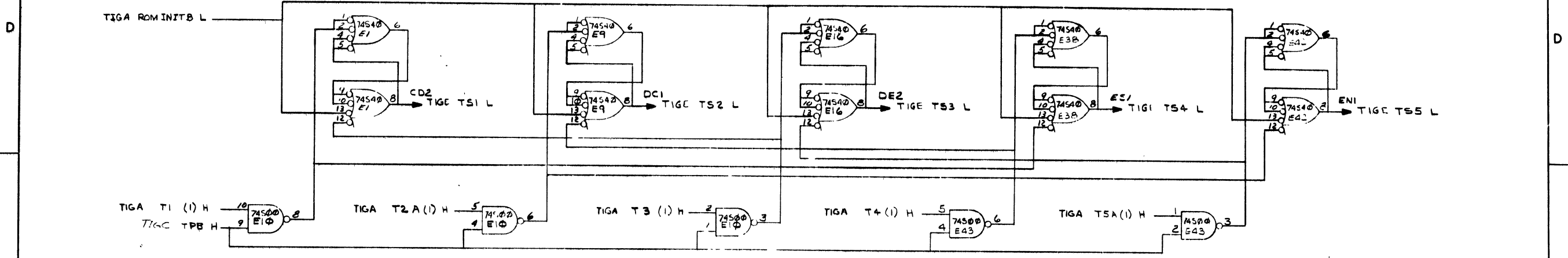
REV	
CHG	
NO	
DATE	
BY	
CHK	
NO	
DATE	
BY	

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	DRN	DATE	PARTS LIST	
XXX - 005	10' 30	CHK'D	10/17/70	DIGITAL EQUIPMENT CORPORATION	
XX - 02		ENGR	10/17/70	WATERS MASSACHUSETTS	
X - 1		PHYS	10/17/70	TITLE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL					
NEXT HIGHER ASSY					
FINISH					
SCALE		SHEET		REV	
6 OF 7		E		C	
DCS M8139-0-1			TIMING GENERATOR (TIGD)		

PART NUMBER M8139-0-1

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CS M8139-0-1 2



TIMING STATE DRIVERS		SLOT 13	
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO
11/7			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN LWK	DATE 10/1/74	 DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
DECIMALS	ANGLES	DATE 1/1/75	
XXX - 006 XX - 02 X - 1	±0° 30'	DATE 11/5/75	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PHUD Taylor	DATE 11/1/75	
MATERIAL	NEXT HIGHER ASSY	TITLE TIMING GENERATOR (TIGE)	
FINISH	B-DD-KB11-0	SIZE CODE D CS	NUMBER M 8139 0-1
	SCALE	DIST	REV C
	SHEET 7 OF 1		

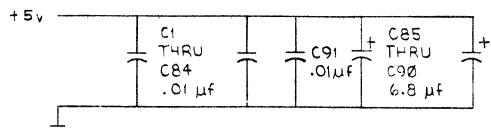
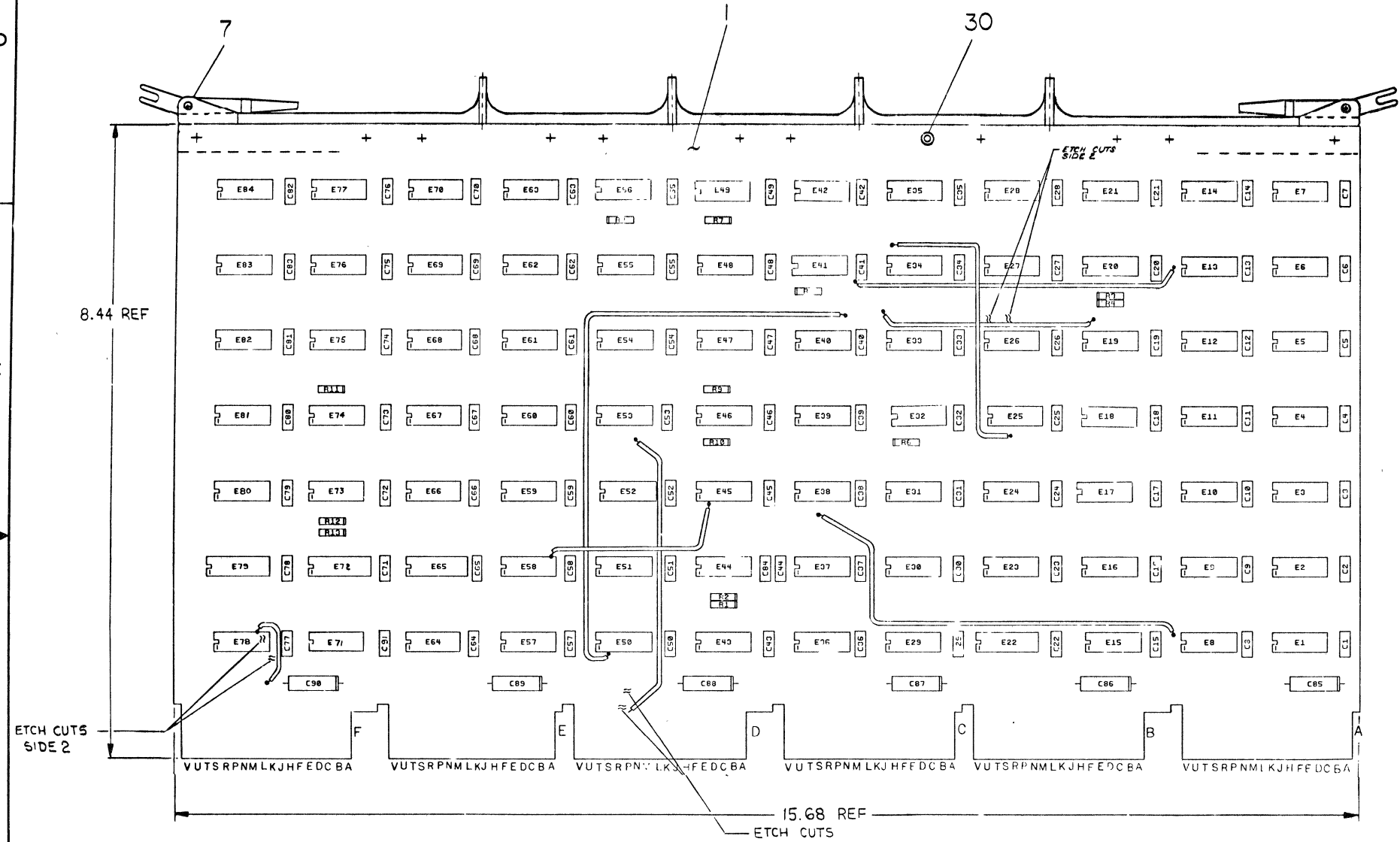
REVISIONS	REC
CHANGE NO	
CHK	

DEC FORM NO. 109-B

86

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- NOTES:**
- R4 IS OPTIONAL
 - REFERENCE DESIGNATIONS E42, E49, E56 ARE SPARES.



REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8135-0-4	1	
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8135-0-5	2	
REF	MODULE ECO HISTORY	B-MH-M8135-0-6	3	
1	ETCHED CIRCUIT BOARD	5011321	4	
85	C1 THRU C84, C91	CAPACITOR, 01uf, 100V DISC	5	
8	C85 THRU C90	CAPACITOR, 8 uf, 35V, 10%	8	
1	HANDLE HEX MODULE	1210711-2	7	
2	R5, R8	RESISTOR, 120 OHM, 1/4W, 5%	1300247	8
1	R3	RESISTOR, 150 OHM, 1/4W, 5%	1300250	9
1	R7	RESISTOR, 180 OHM, 1/4W, 5%	1301322	10
2	R1, R13	RESISTOR, 330 OHM, 1/4W, 5%	1300295	11
1	R8	RESISTOR, 390 OHM, 1/4W, 5%	1300309	12
2	R2, R12	RESISTOR, 680, 1/4W, 5%	1301424	13
3	R9, R10, R11	RESISTOR, 1K, 1/4W, 5%	1300385	14
8	E21, E30, E45, E57, E84, E85	I C DEC 74S80	1910532	15
12	E1, E3, E12, E19, E27, E28, E29, E47, E55, E68, E73, E80	I C DEC 74S84	1910534	16
7	E11, E14, E23, E24, E37, E54, E68	I C DEC 74S10	1910536	17
19	E2, E8, E10, E13, E15, E20, E25, E26, E33, E35, E43, E51, E87, E68, E74, E75, E81, E82, E71	I C DEC 74S11	1910537	18
9	E8, E16, E60, E69, E76, E77, E83, E84	I C DEC 74S20	1910538	19
4	E53, E62, E83, E70	I C DEC 74H30	1909059	20
2	E9, E34	I C DEC 74S40	1910541	21
4	E44, E46, E50, E59	I C DEC 74H50	1909060	22
4	E7, E31, E36, E38	I C DEC 74S64	1910542	23
4	E4, E39, E40, E58	I C DEC 74S74	1910544	24
4	E17, E18, E32, E41	I C DEC 74S112	1910545	25
1	E22	I C DEC 74S153	1910547	26
3	E65, E72, E79	I C DEC 74S174	1910550	27
1	E78	I C DEC 8640	1911469	28
2	E48, E52	I C DEC 8885	1910649	29
12	EYELET	9006732	30	
35	WIRE #30 AWG BUSS (RETROFIT)	9105740-55	31	

IC TYPE	GND	+5V
I.C. DEC 8640	1	8
I.C. DEC 74S174	8	16
I.C. DEC 74S153	8	16
I.C. DEC 74S172	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
1	ETCH BOARD REV	A		

FIRST USED ON OPTION MODEL		PARTS LIST	
11/70			

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PHOJ ENG
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DATE
DATE

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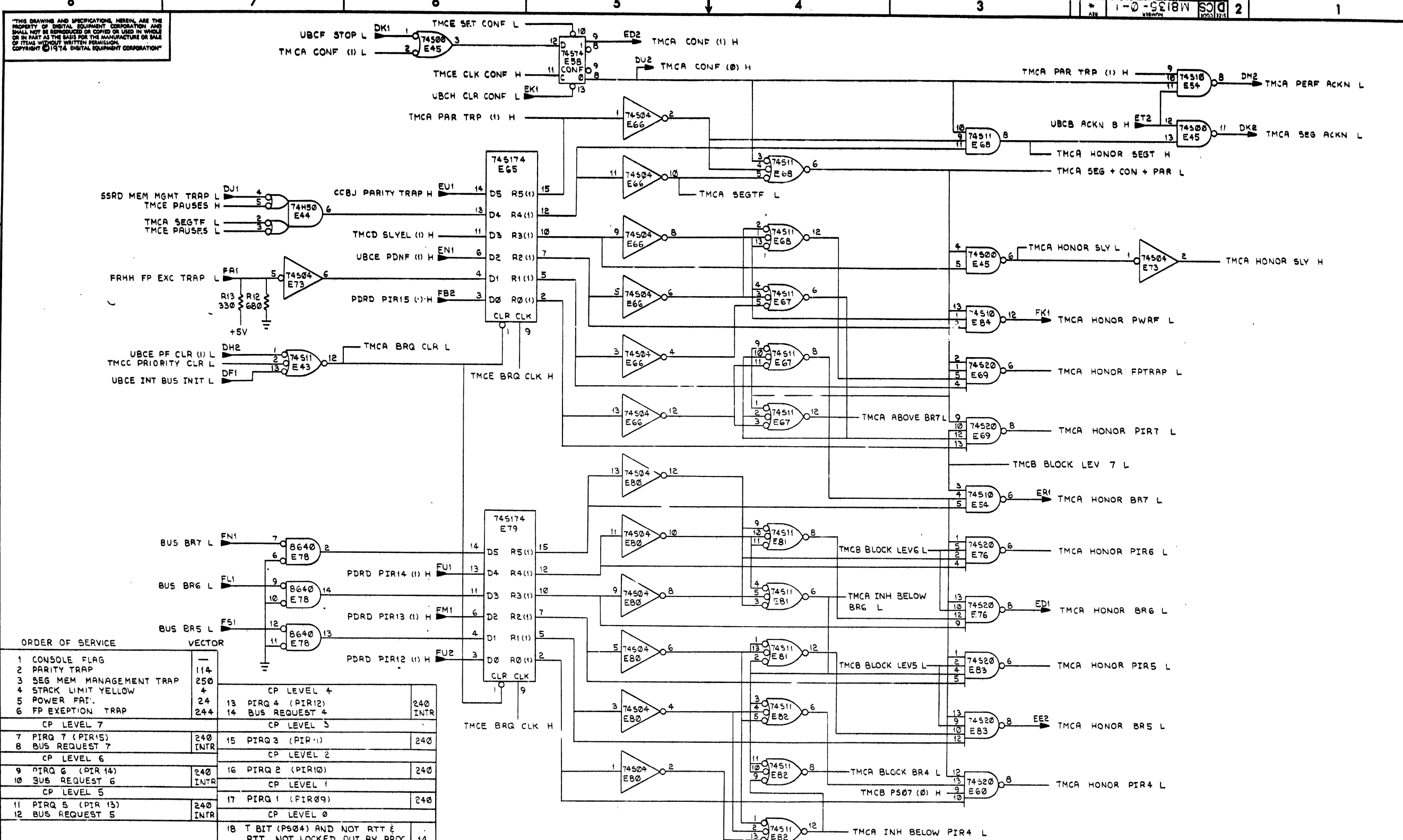
TITLE
TRAP & MSC CONTROL

SIZE/CODE
DICS M8135-0-1

NUMBER
REV
*

SEMICONDUCTOR CONVERSION CHART			
DEC NO	EIA NO	DEC NO	EIA NO

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ORDER OF SERVICE		VECTOR	
1	CONSOLE FLAG	114	-
2	PARITY TRAP	250	-
3	SEG MEM MANAGEMENT TRAP	4	-
4	STACK LIMIT YELLOW	24	-
5	POWER FAI.	244	-
6	FP EXCEPTION TRAP	240	-
CP LEVEL 7		CP LEVEL 4	
7	PIRQ 7 (PIR15)	13	PIRQ 4 (PIR12)
8	BUS REQUEST 7	14	BUS REQUEST 4
CP LEVEL 6		CP LEVEL 3	
9	PIRQ 6 (PIR14)	15	PIRQ 3 (PIR11)
10	BUS REQUEST 6	16	PIRQ 2 (PIR10)
CP LEVEL 5		CP LEVEL 2	
11	PIRQ 5 (PIR13)	17	PIRQ 1 (PIR09)
12	BUS REQUEST 5	18	T BIT (PS04) AND NOT RTT & RTT NOT LOCKED OUT BY PROC STATUS LEVELS BUT SERVICED LAST
CP LEVEL 4		CP LEVEL 1	
CP LEVEL 3		CP LEVEL 0	

REVISIONS		
CHK	CHANGE NO.	REV.

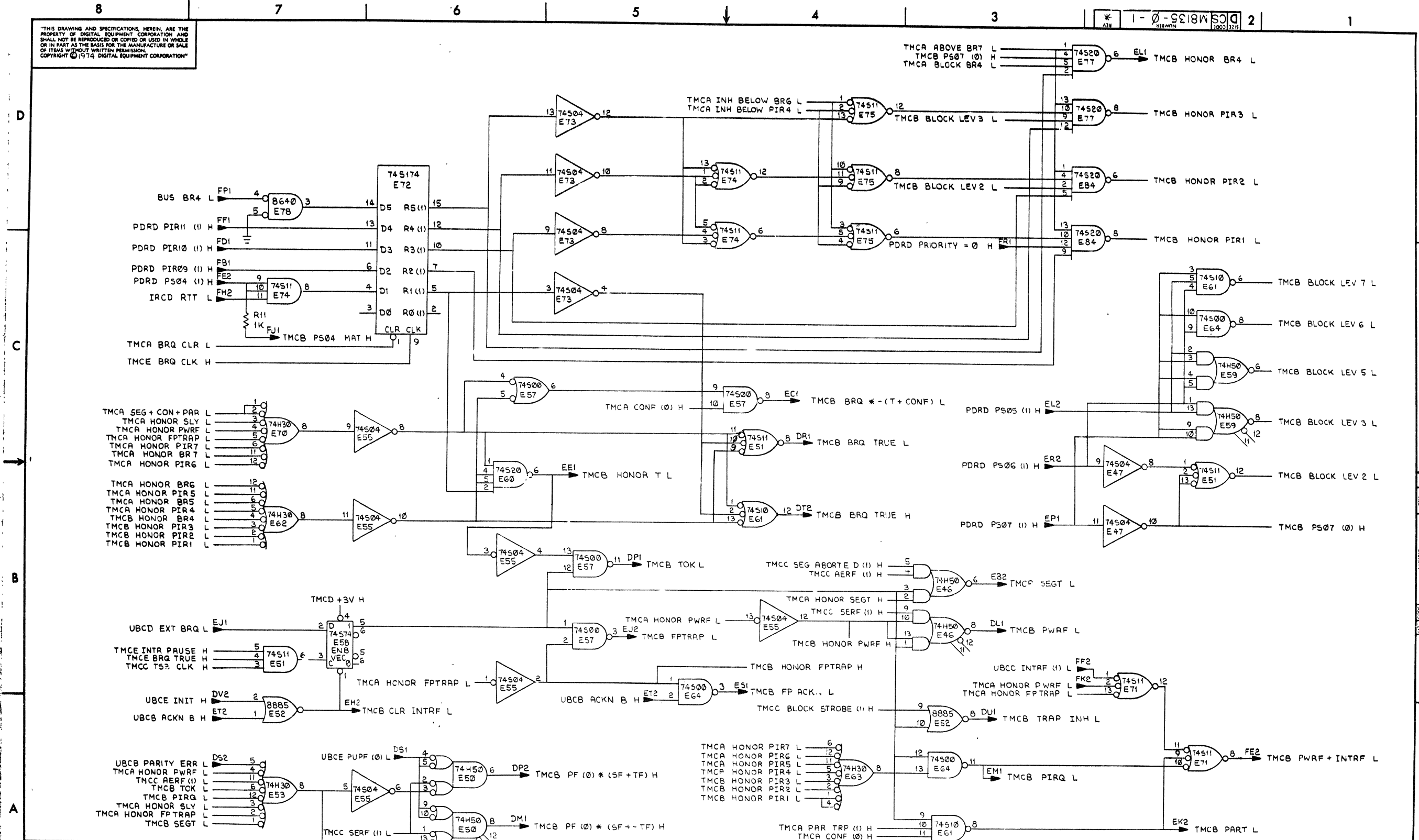
(PRIORITY ARBITRATION) SLOT II
 TITLE TRAP & MSC CONTROL (TMCA)
 SIZE CODE DCS
 NUMBER M8135-0-1
 REV. -X-
 SCALE SHEET 2 OF 7 DIST.

REV. NUMBER M8135-0-1

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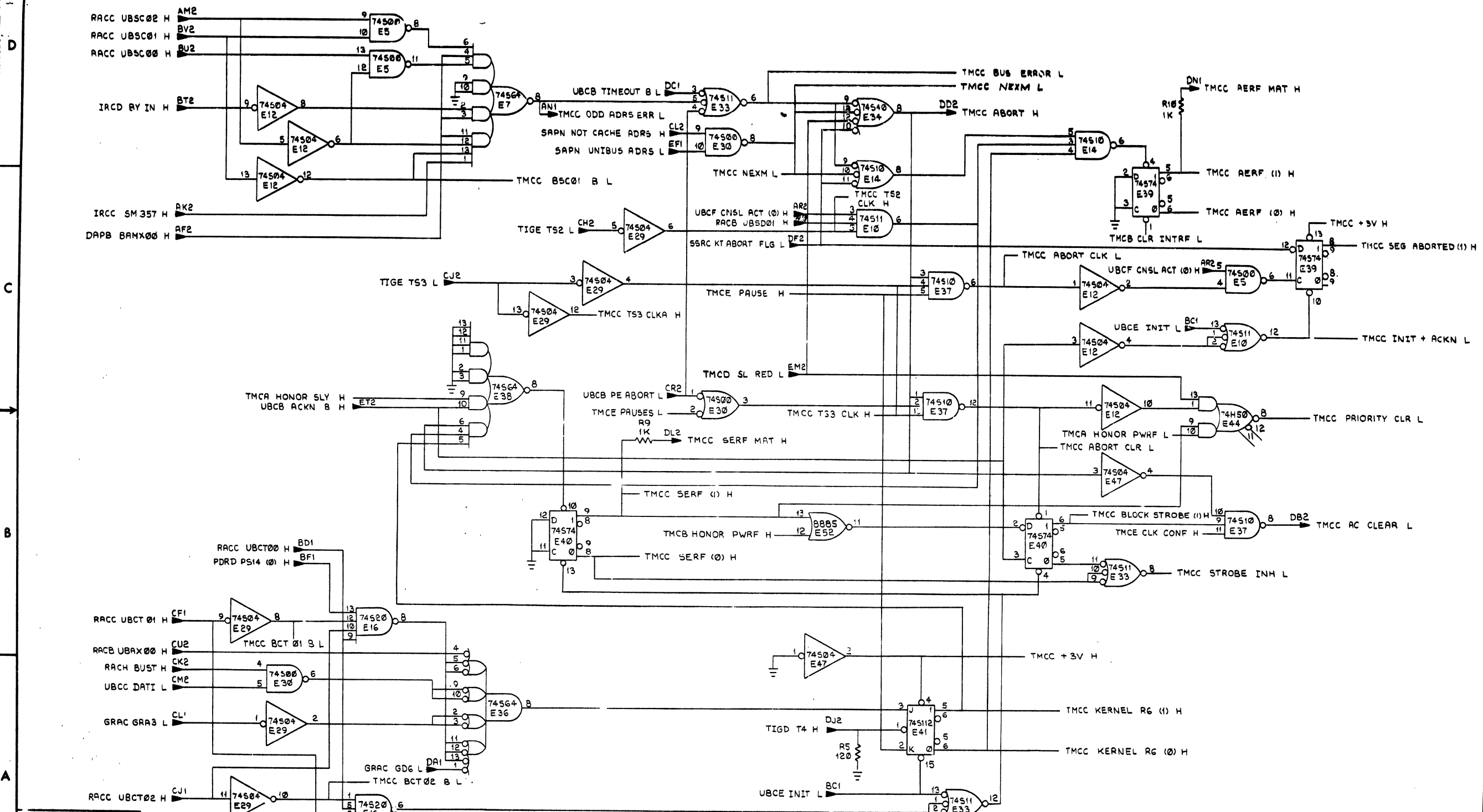
1-0-9818M SC 2



REVISIONS		
CHK	CHANGE NO	REV

(PRIORITY ARBITRATION; TRAP VECTORS) SLOT II
 TITLE TRAP & MSC CONTROL (TMCB) SIZE CODE D CS NUMBER M8135-0-1 REV. *
 SCALE SHEET 3 OF 7 DIST.

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CHK	CHANGE NO.	REV.

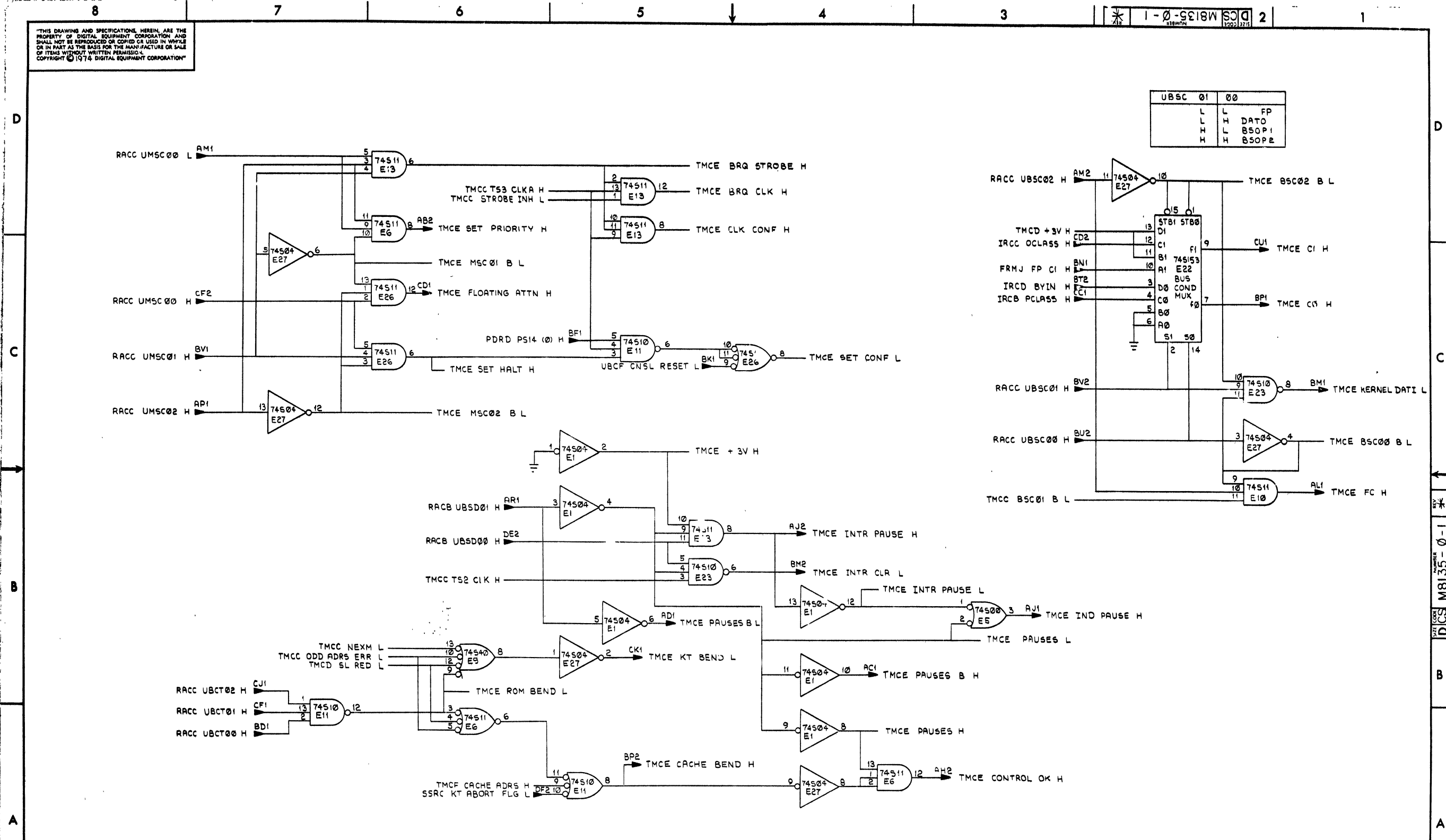
(AERF, SERF, ODD ADDRESS) SLCT II

TITLE	TRAP & MSC CONTROL (TMCC)	SIZE	CODE	NUMBER	REV.
SCALE		SHEET	4 OF 7	DIST.	
DCS M8135-0-1					

90

REV *
NUMBER
DCS M8135-0-1

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L	L	FP
L	H	DATO
H	L	B5OP1
H	H	B5OPE

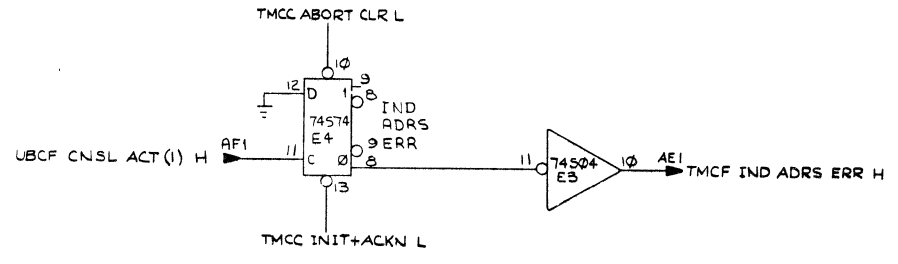
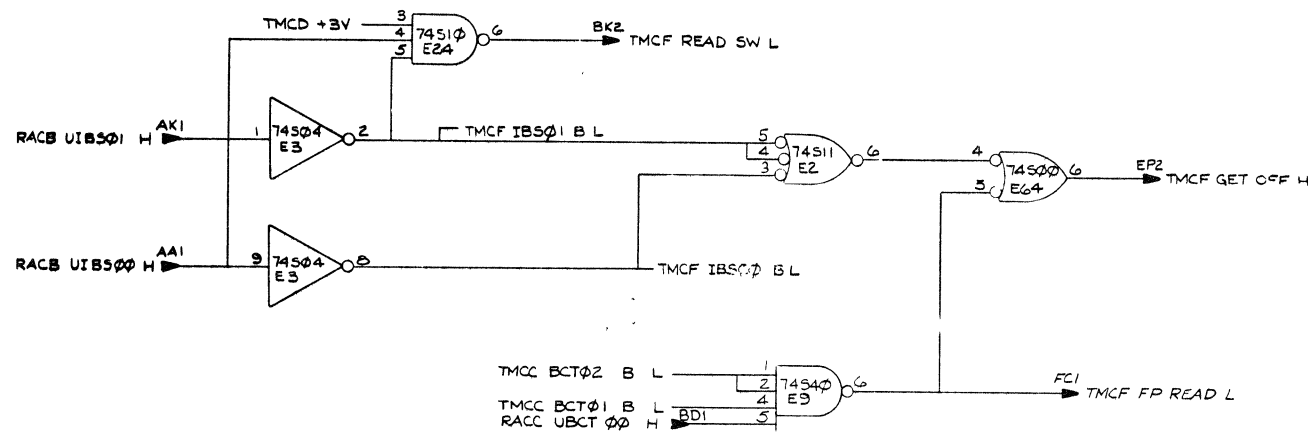
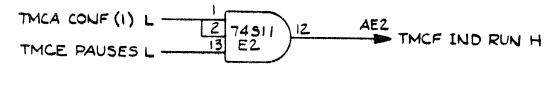
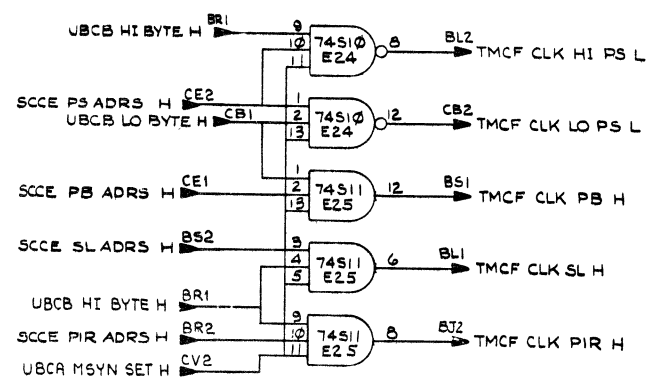
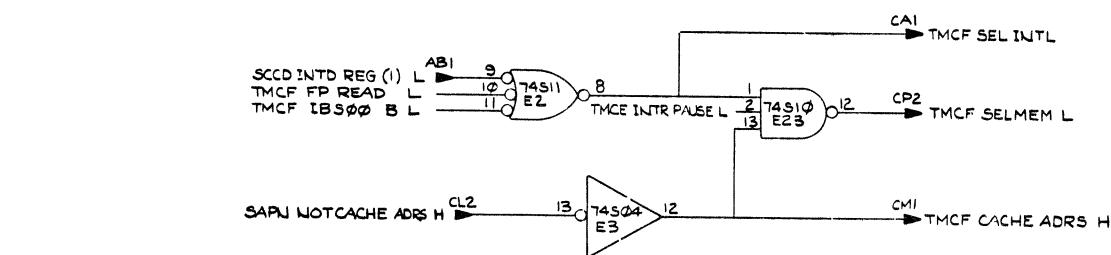
REVISIONS		
CHK	CHANGE NO.	REV.

(MSC, BCT, BSC DECODE) SLOT II
 TITLE TRAP & MSC CONTROL (TMCE) SIZE CODE NUMBER REV.
 DCS M8135-0-1
 SCALE SHEET 6 OF 7 DIST.

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1-0-9918W 2



REVISIONS		
CHK	CHANGE NO	REV.

(BRMX SELECTION FP READ) SLOT II

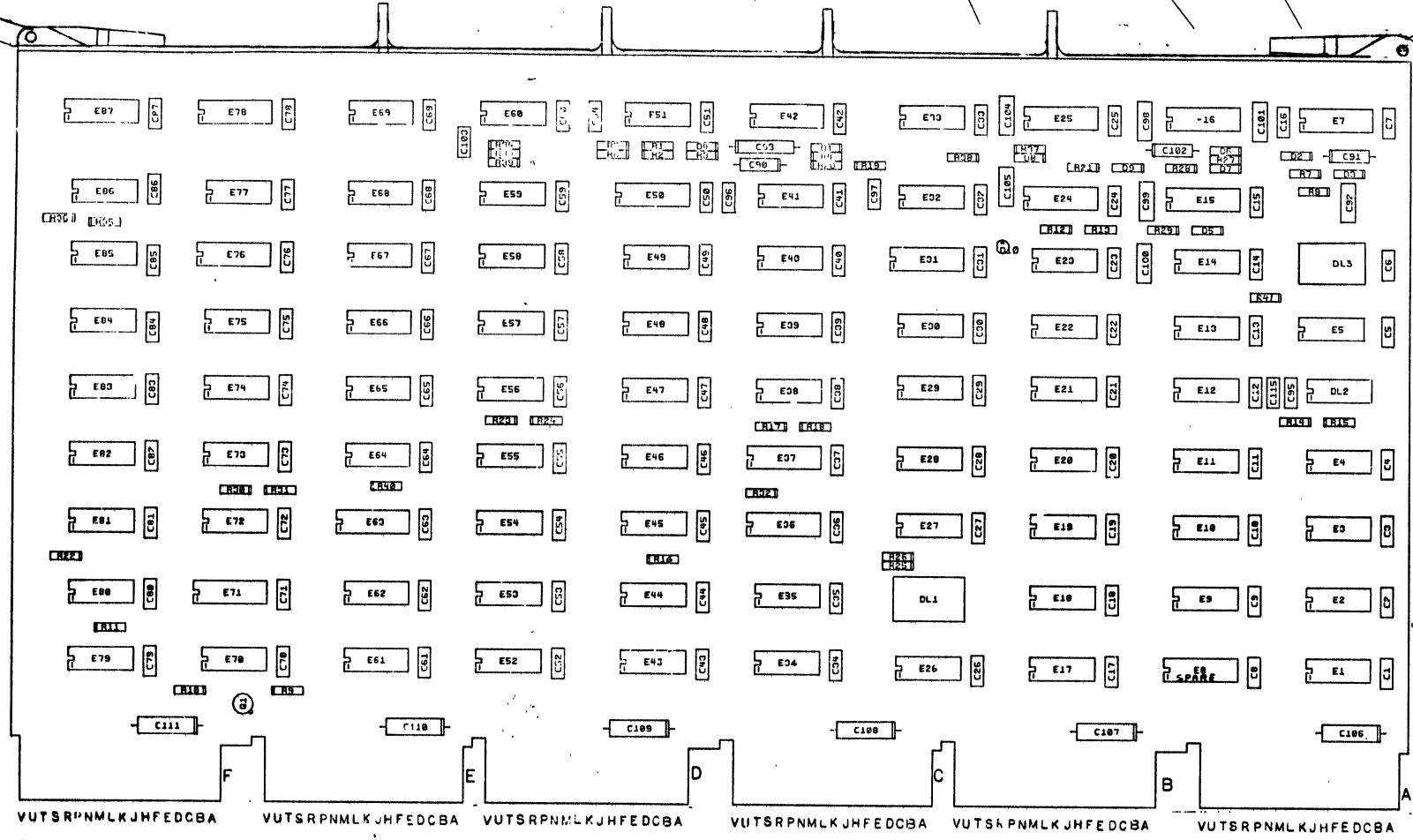
TITLE (TMCF) TRAP & MSC CONTROL SIZE CODE DCS NUMBER M8135-0-1 REV. *

SCALE SHEET 7 OF 7 DIST.

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NOTES:

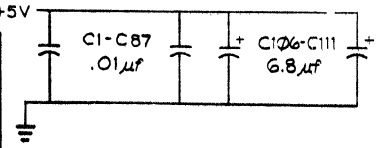
* MODULE LOCATION IS SLOT 12



6.44 F.P

15.68 F.B.S.

IC TYPE	QTY	DESCRIPTION	PART NO.	QTY	DESCRIPTION	PART NO.	ITEM NO.
IC DEC 74S175	8	IC DEC 74S175	B	16			
IC DEC 74S157	8	IC DEC 74S157	B	16			
IC DEC 74S112	8	IC DEC 74S112	B	16			
IC DEC 74193	8	IC DEC 74193	B	16			
IC DEC 74123	8	IC DEC 74123	B	16			
IC DEC 8640	1	IC DEC 8640	1	8			
IC DEC 7442	8	IC DEC 7442	B	16			
IC TYPE		GND		+5V			



AVR	WIRE, BUSS	30 AWG	9105740-55	54	REF	FLOW DIAGRAM	D-FD-M8136-0-8	53
1	DL3	DELAY LINE 100NS	1609559	52	REF <td>TIMING DIAGRAM</td> <td>D-TD-M8136-0-7</td> <td>51</td>	TIMING DIAGRAM	D-TD-M8136-0-7	51
QTY	REF DESIGNATION	DESCRIPTION	PART NO.	QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

FIRST USED ON OPTION MODEL		PARTS LIST	
11/70	ETCH BOARD REV	C	

DRN	DATE	CHK D.	DATE	ENG	DATE	PROJ. MGR.	DATE
	10/29/74						

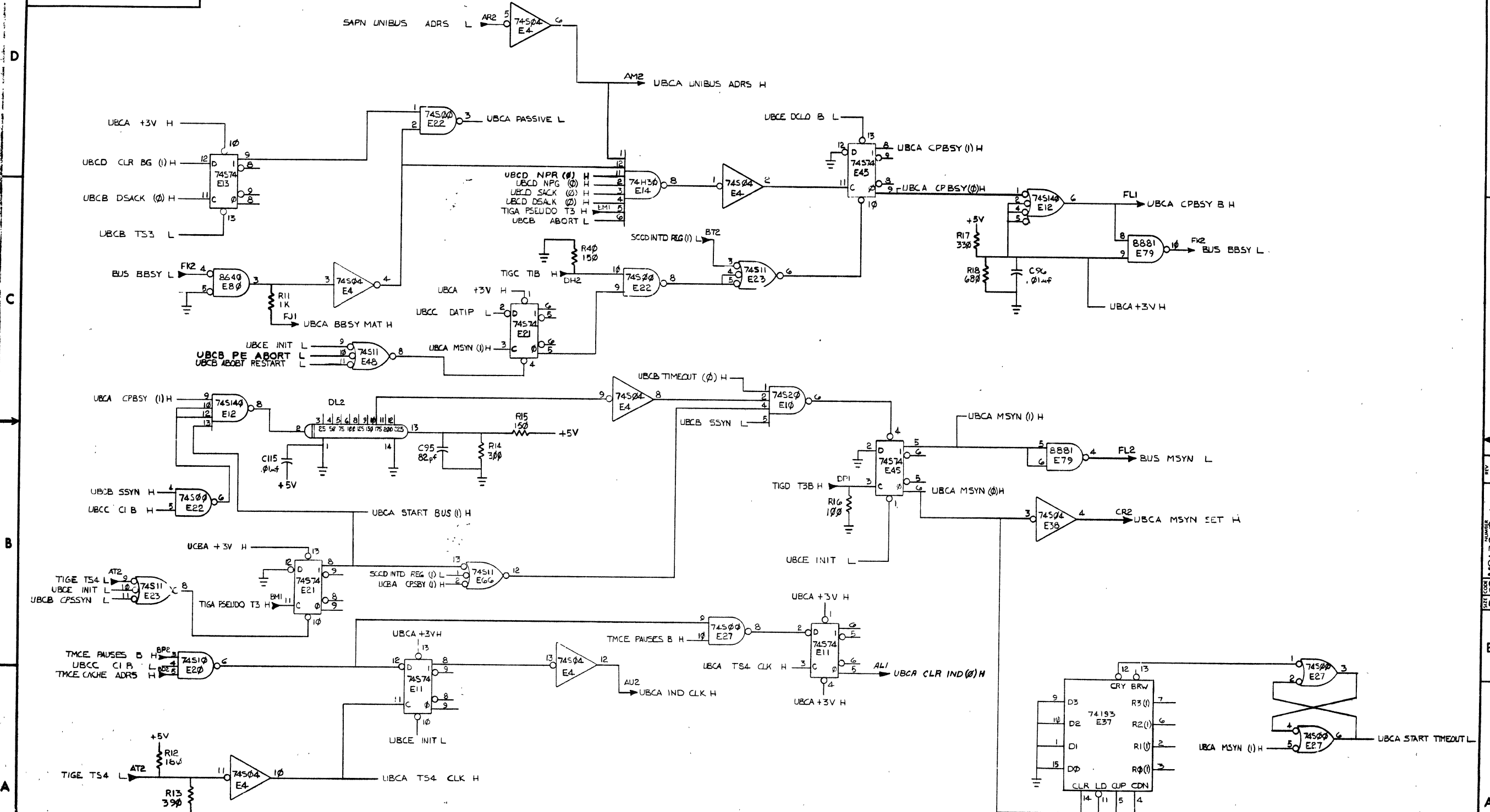
DEC NO.	EIA NO.	DEC NO.	EIA NO.

SCALE	SHEET	OF	B
	3		8

REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8136-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8136-0-5	2
REF	MODULE ECO HISTORY	B-MH-M8136-0-6	3
1	ETCHED CIRCUIT BOARD	5011340	4
2	C92, C101	CAPACITOR 330pf 100V 5%	1000023
7	C93, C106 THRU C111	CAPACITOR 6.8uf 35V 10%	1005306
93	C1 THRU C87, C94, C96, C97, C100, C103, C115	CAPACITOR .01uf 100V 20%	1001610-01
4	C98, C99, C104, C105	CAPACITOR 1200pf 100V 5%	1002424
1	C102	CAPACITOR 2.2uf 20V 10%	1002627
1	C95	CAPACITOR 82pf 100V 5%	1000015
2	C90, C91	CAPACITOR .47uf 35V 5%	1005965
9	D1 THRU D9	DIODE D684	1100114
1	D10	DIODE, LIGHT EMITTING MV5054-2	1110864
2	R32, R16	RESISTOR 100 OHM 1/4W 5%	1300229
3	R15, R25, R40	RESISTOR 150 OHM 1/4W 5%	1300250
3	R13, R24, R31	RESISTOR 390 OHM 1/4W 5%	1300309
8	R11, R10, R22, R39, R41	RESISTOR 1K 1/4W 5%	1300385
8	R1, R5, R17, R19, R33, R35	RESISTOR 330 OHM 1/4W 5%	1300225
5	R8, R21, R27, R28, R37	RESISTOR 15K 1/4W 5%	140488
1	R9	RESISTOR 3.9K 1/4W 5%	1300444
3	R12, R30, R23	RESISTOR 180 OHM 1/4W 5%	1301322
8	R2, R6, R18, R20, R34, R38	RESISTOR 680 OHM 1/4W 5%	1301424
2	R14, R28	RESISTOR 300 OHM 1/4W 5%	1301425
2	R3, R7	RESISTOR 20K 1/4W 5%	1302391
2	R4, R29	RESISTOR 30K 1/4W 5%	1302394
1	R38	RESISTOR 470 OHM 1/4W 5%	1300318
1	Q1	TRANSISTOR DEC 300CB	1503100
2	E14, E73	IC DEC 74H30	1900059
2	E1, E80	IC DEC 74H50	1900060
4	E61, E62, E70, E78	IC DEC 8661	1900709
13	E3, E22, E28, E34, E39, E27, E43, E58, E68, E69, E75, E77, E84	IC DEC 74S00	1910532
9	E2, E4, E9, E38, E82, E59, E57, E72, E85	IC DEC 74S04	1910534
3	E20, E44, E46	IC DEC 74S10	1910538
9	E18, E19, E23, E30, E32, E48, E54, E66, E67	IC DEC 74S11	1910537
3	E10, E65, E74	IC DEC 74S70	1910539
16	E13, E11, E17, E21, E20, E28, E33, E41, E45, E51, E59, E81, E82, E83, E80, E84	IC DEC 74S74	1910544
4	E24, E31, E38, E50	IC DEC 74S112	1910548
4	E12, E35, E49, E58	IC DEC 74S140	1910548
1	E83	IC DEC 74S187	1910548
5	E7, E15, E18, E25, E42	IC DEC 74123	1910438
1	E37	IC DEC 74193	1910019
1	E40	IC DEC 8688	1910849
2	E78, E87	IC DEC 7442	1910048
2	E71, E78	IC DEC 74S175	1910857
4	E80, E53, E47, E5	IC DEC 8640	1911489
1	DL1	DELAY LINE (80ns)	1800428
1	DL2	DELAY LINE (tapped)	1811243
1		HANDLE ASSY	1210711-02
		EYELETS	8008732

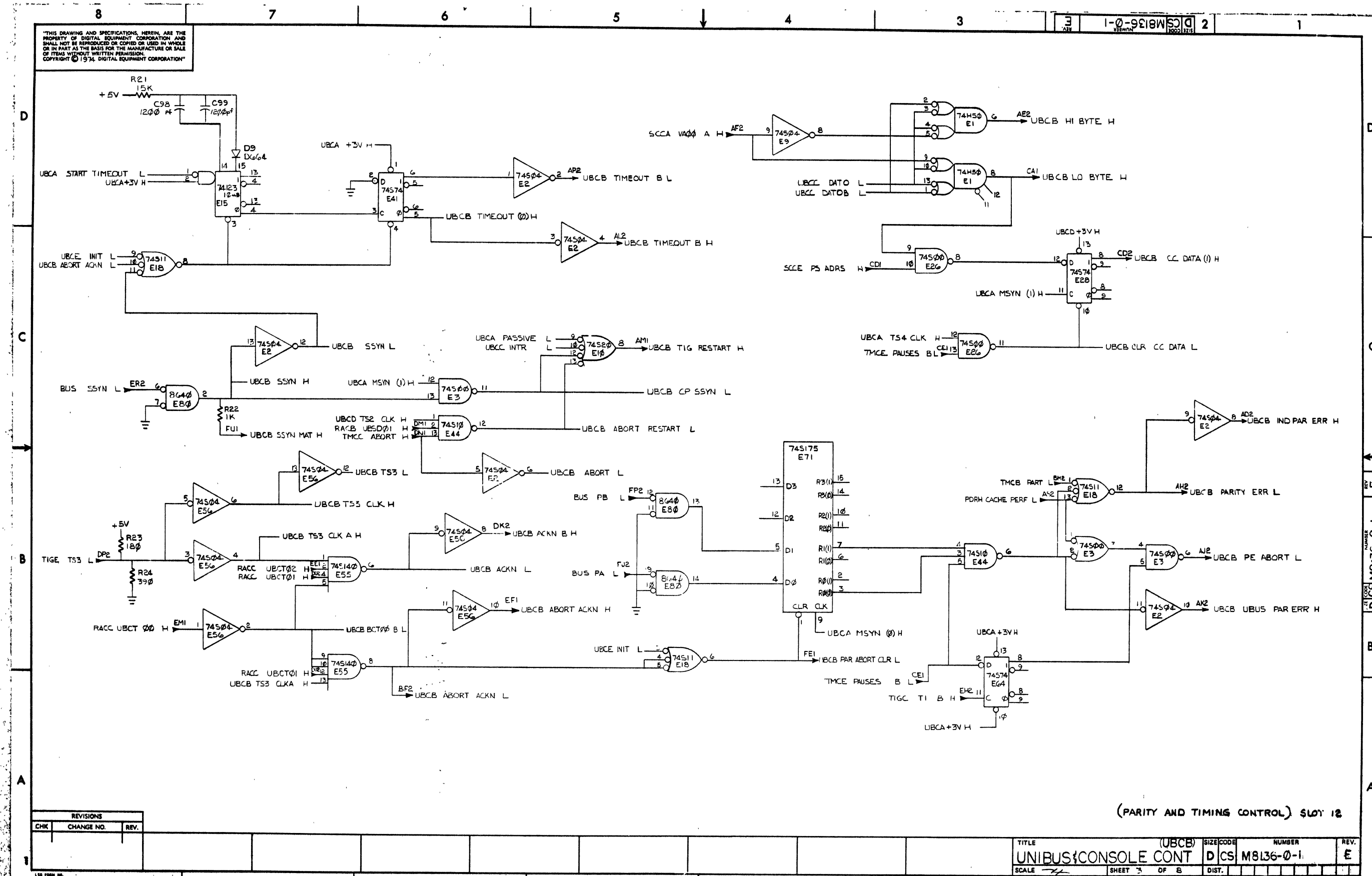
94

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REVISIONS		
CHK	CHANGE NO.	REV.

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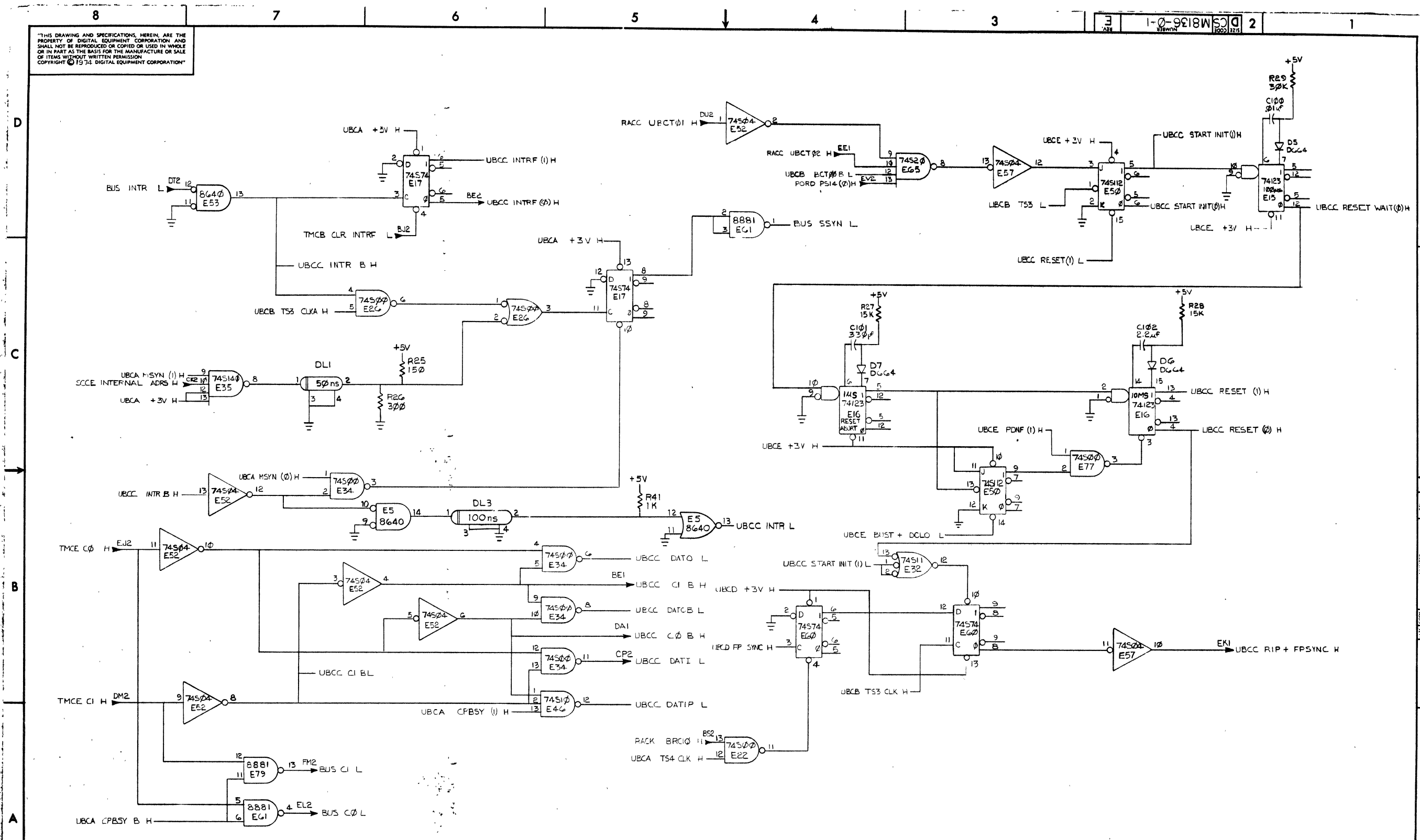


(PARITY AND TIMING CONTROL) SLOT 12

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(UBCB)	SIZE/CODE	NUMBER	REV.
UNIBUS/CONSOLE CONT	D	CS	M8136-0-1	E
SCALE	SHEET 3	OF 8	DIST.	

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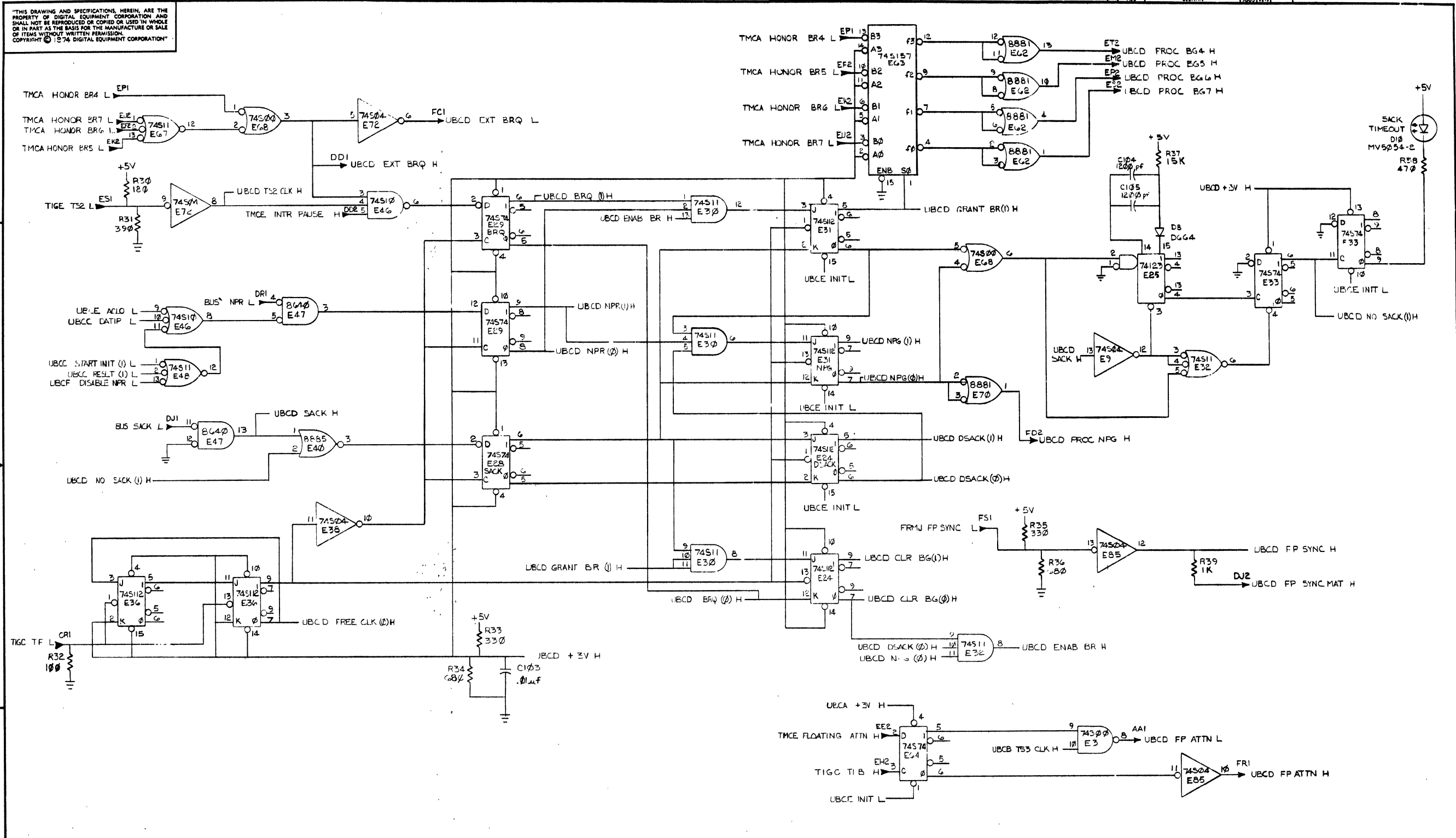


(RESET CONTROL) SLOT 12

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(UBCC) UNIBUS & CONSOLE CONT.	SIZE CODE	D CS	NUMBER	M8136-0-1	REV.	E
SCALE		SHEET	4	OF	8	DIST.	

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(BUS ARBITRATOR) SLOT 12

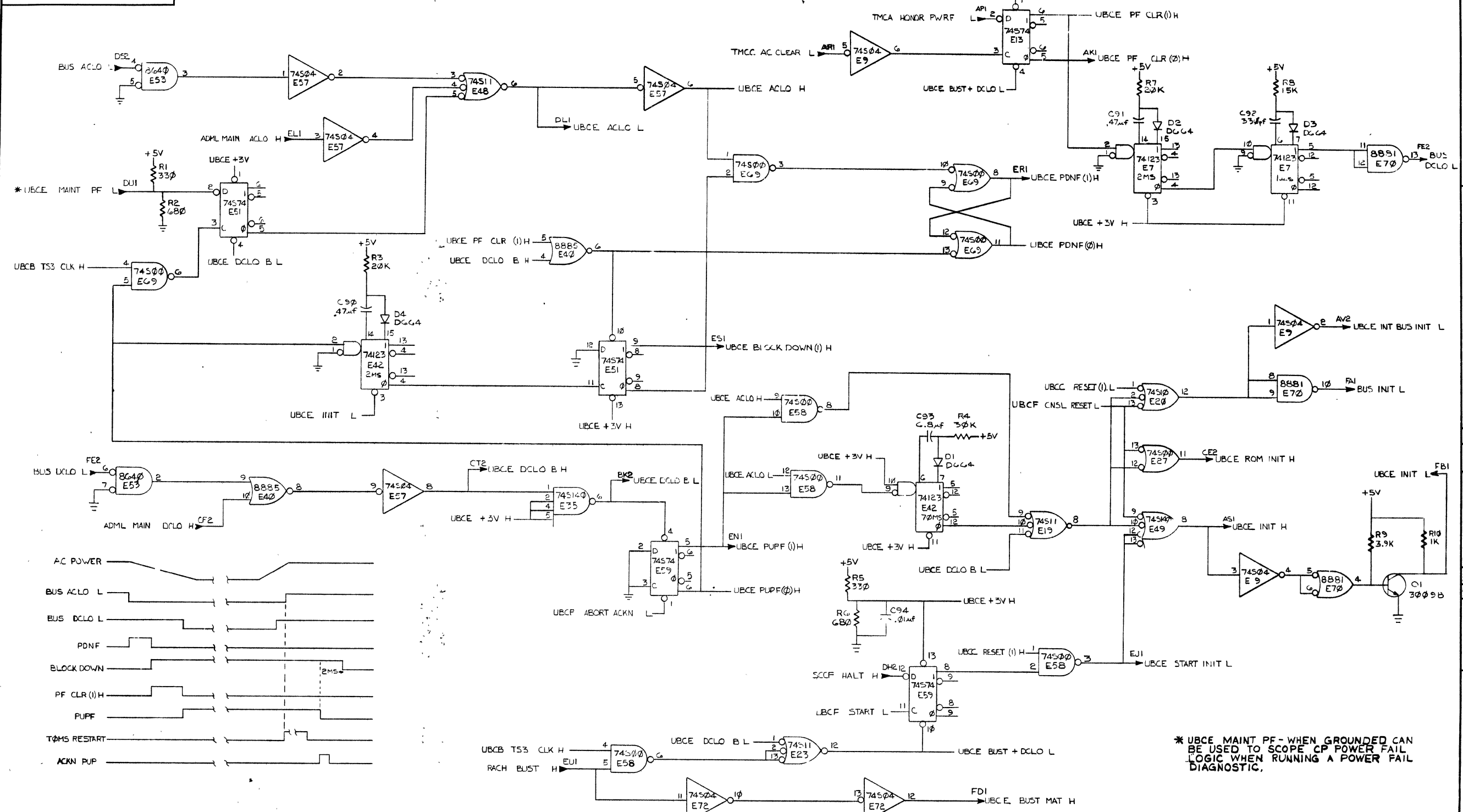
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(UBCD) UNIBUS/CONSOLE CONT.	SIZE/CODE	NUMBER	REV.
SCALE	SHEET 5 OF 8	DIST.	DCS M8136-0-1	E

98

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1-0-9618M136-0-1



* UBCE MAINT PF - WHEN GROUNDING CAN BE USED TO SCOPE CP POWER FAIL LOGIC WHEN RUNNING A POWER FAIL DIAGNOSTIC.

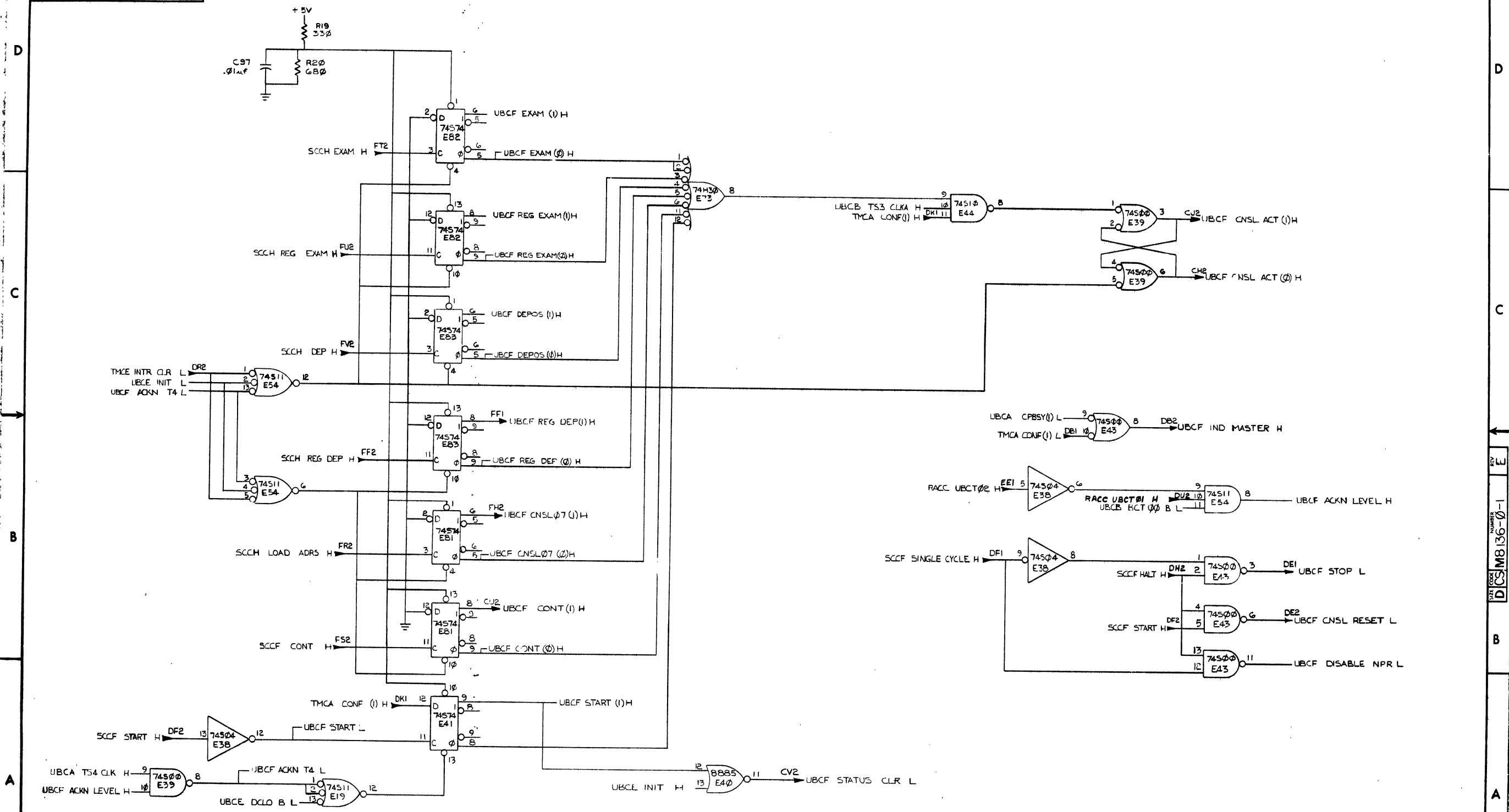
(PWR CONTROL) SLOT 12

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(UBCE) UNIBUS/CONSOLE CONT.	SIZE CODE	D CS	NUMBER	M8136-0-1	REV.	E
SCALE		SHEET	6	OF	8	DIST.	

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DIGITAL EQUIPMENT CORPORATION
 MODEL M8136-0-1-1
 SHEET 7 OF 8



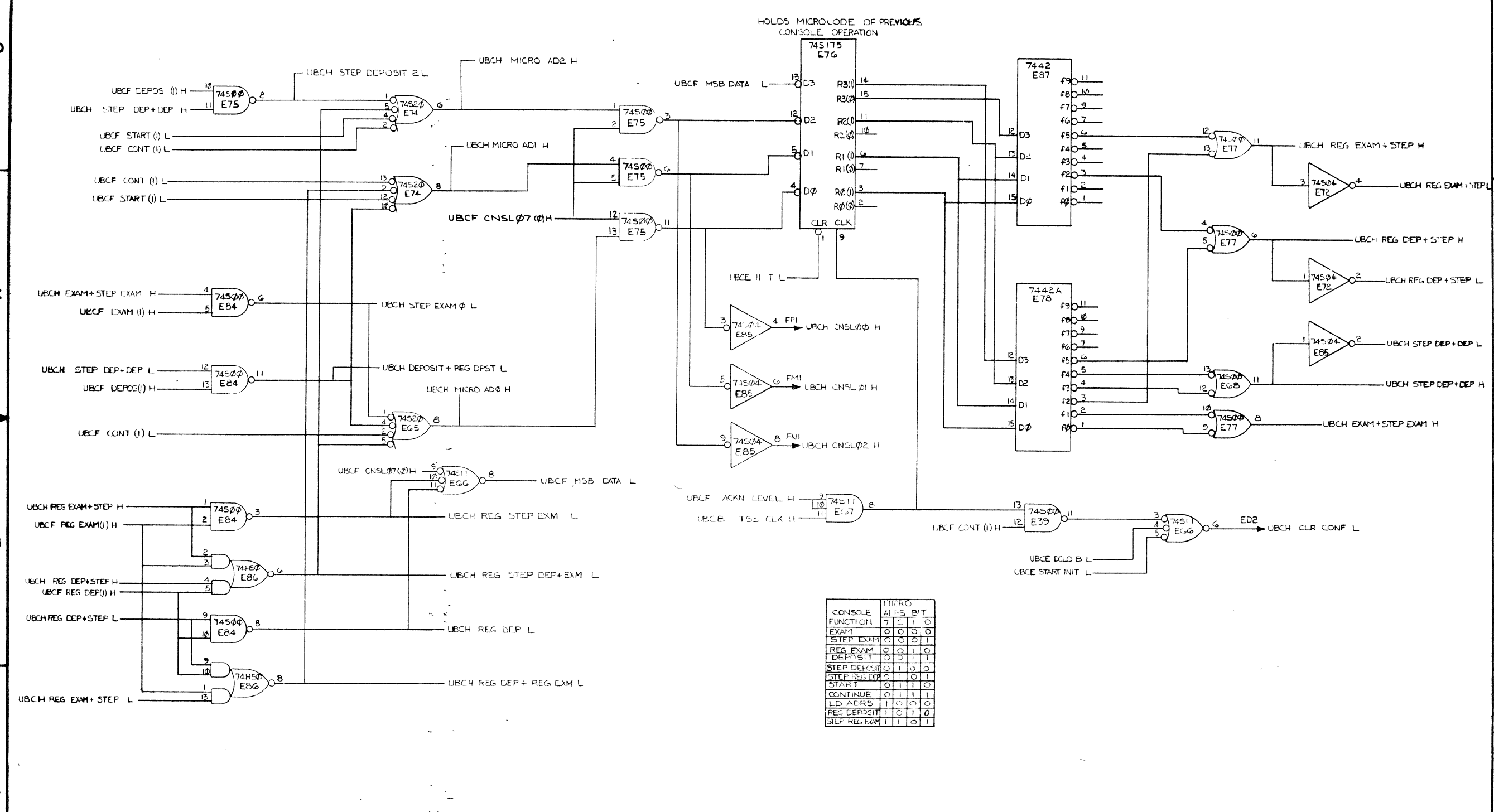
REVISIONS		
CHK	CHANGE NO.	REV.

(CONSOLE CONTROL) SLOT 12

TITLE	UNIBUS/CONSOLE CONT	(UBCF)	SIZE CODE	D CS	NUMBER	M8136-0-1	REV.	E
SCALE		SHEET	7	OF	8	DIST.		

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1-0-9318WJSD 2



CONSOLE FUNCTION	MICRO ADDRESS BIT
EXAM	7 2 1 0
STEP EXAM	0 0 0 1
REG EXAM	0 0 1 0
DEPOSIT	0 0 1 1
STEP DEPOSIT	0 1 0 0
STEP REG DEP	0 1 0 1
START	0 1 1 0
CONTINUE	0 1 1 1
LD ADRS	1 0 0 0
REG DEPOSIT	1 0 1 0
STEP REG EXAM	1 1 0 1

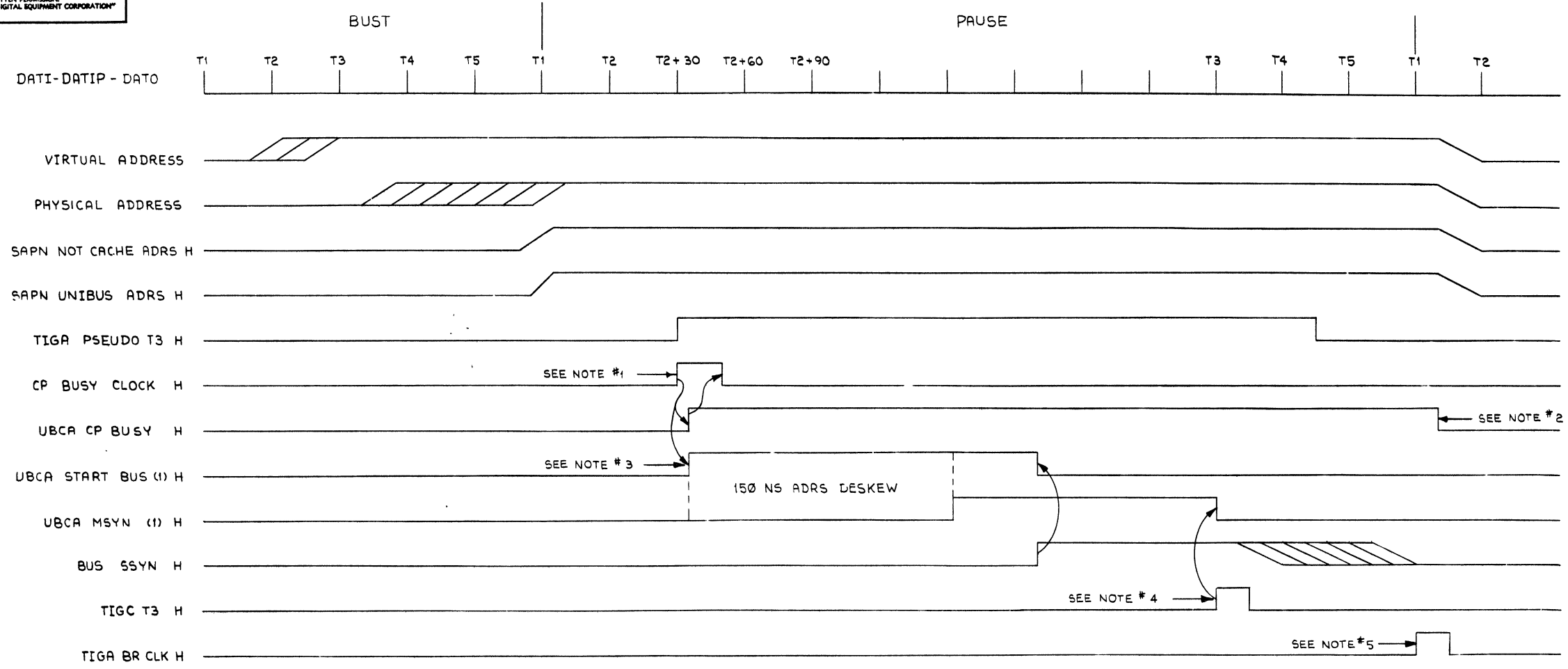
REVISIONS		
CHK	CHANGE NO.	REV.

(CONSOLE JL ADRS) SLOT 18
 TITLE UNIBUS CONSOLE CONT. (UBCH) SIZE CODE NUMBER DCS M8136-0-1 REV. E
 SCALE SHEET 8 OF 8 DIST.

REV. E
NUMBER DCS M8136-0-1

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REV. 2
 M8136-0-7
 11/75



NOTES :

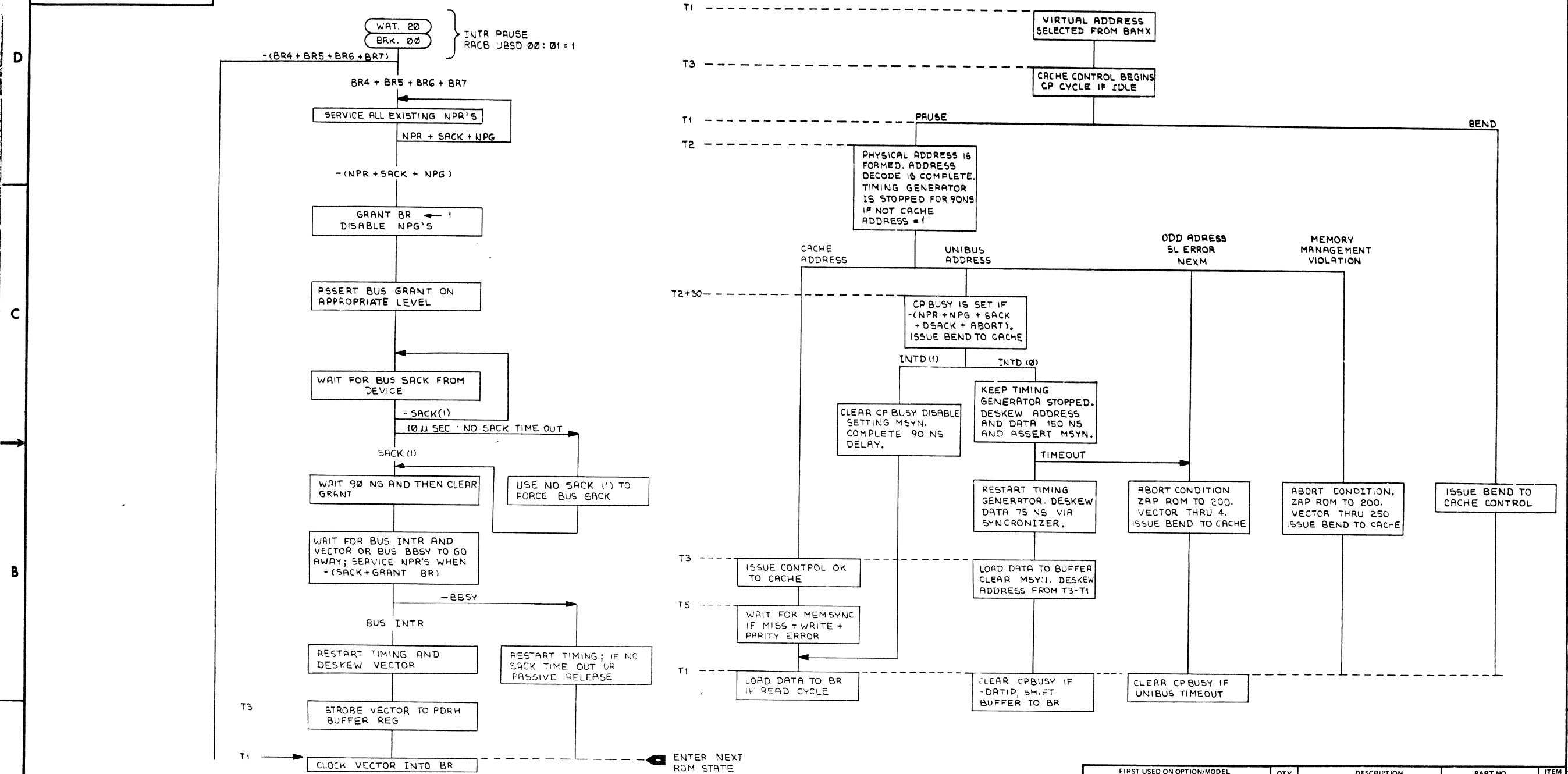
1. SET CP BUSY IF -(NPR + NPG + SACK + DSACK + ABORT + B BUSY)
2. CP BUSY IS NOT CLEARED IF DATIP CYCLE. IT IS CLEARED ON DATO PORTION OF DATIP/DATO
3. USED TO START DATO ADDRESS DESKEW ON DATIP/DATO OPERATION
4. 75 NS DATA DESKEW IS OBTAINED BY 2 STAGE SYNCHRONIZER ON TIGA. UNIBUS DATA IS LOADED INTO PDRH BUFFER REGISTER AT T3
5. ADDRESS & CONTROL ARE DESKEWED FROM T3 TO T1. PDRH BUFFER REGISTER LOADED TO BR AT T1.

REV.	
CHG	
CHK	
REV.	
CHG	
CHK	

FIRST USED ON OPTION/MODEL 11/70	QTY.	DESCRIPTION	PART NO.	ITEM N.O.
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN. DATE	12/3/74	
DIMENSIONS ARE MILLIMETERS INCHES UNLESS OTHERWISE SPECIFIED		CHK'D. DATE	12/19/74	
MILLIMETERS	INCHES	ANGLES	DATE	
XXX ±0.10	XXX ±0.006	30° 30'	12/19/74	
XX ±0.5	XX ±0.02		12/19/74	
X ±2.5	X ±0.1		12/19/74	
THIRD ANGLE PROJECTION		REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	
MATERIAL		FINISH		
SCALE		SIZE CODE	NUMBER	REV.
SHEET OF		D TD	M8136-0-7	*

REV. 2
 M8136-0-7
 11/75

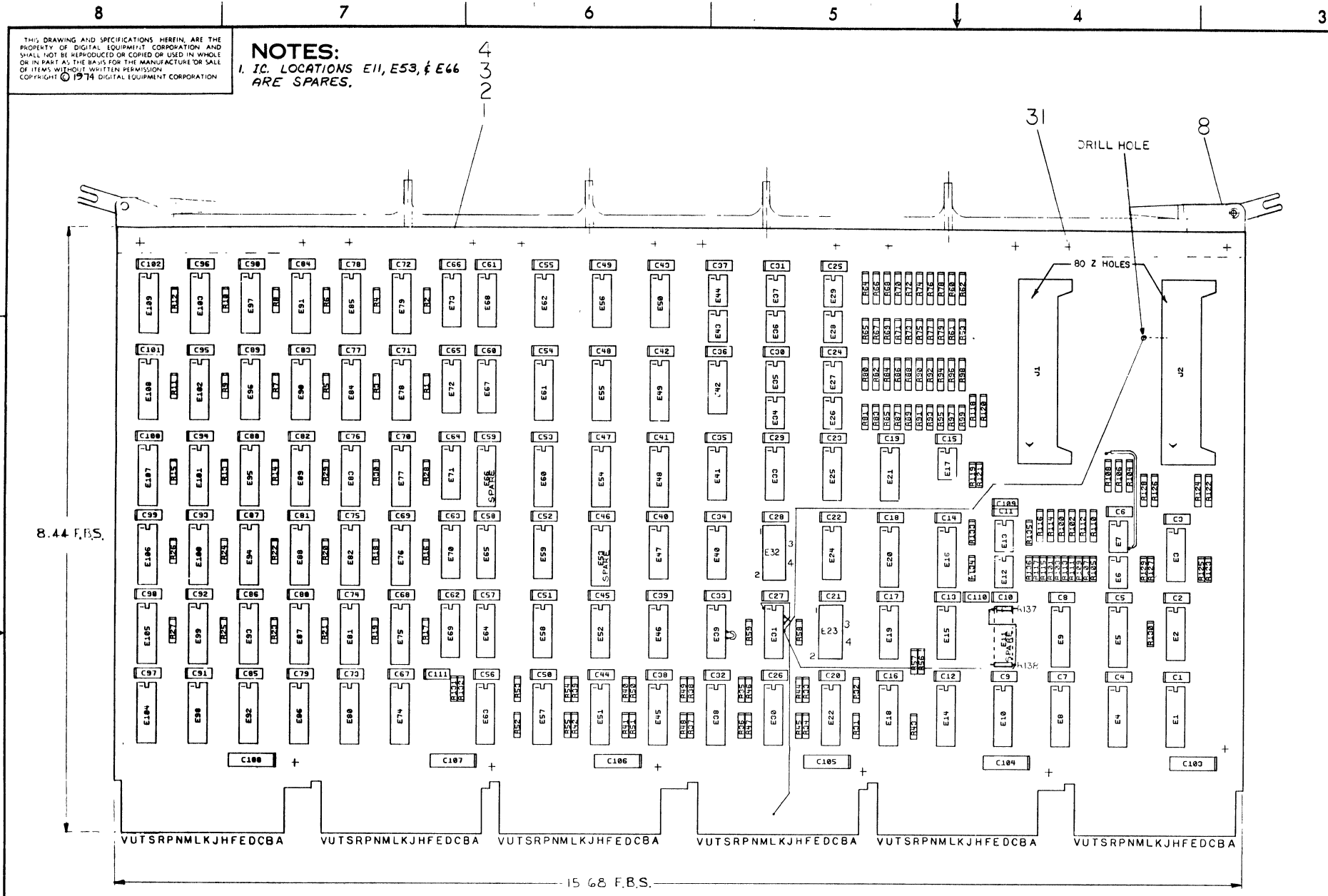
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REV	CHG	NO.	BY
1	CHK		

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/70				
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN. C. Bradley	DATE 12-15-74	
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		CHK'D. J. Mason	DATE 12-19-74	
MILLIMETERS	INCHES	ENG. P. J. Robinson	DATE 1-6-75	
XXX ±0.10	.XX ±.006	PH. J. Taylor	DATE 1-8-75	
XX ±0.5	.X ±.02			TITLE
X ±2	. ±.1			FLOW DIAGRAM
THIRD ANGLE PROJECTION		NEXT HIGHER ASSY.		SIZE CODE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				D FD M8136-0-8
MATERIAL	FINISH	SCALE	SHEET 1 OF 1	NUMBER
				REV. *

REV. * NUMBER DFD M8136-0-8



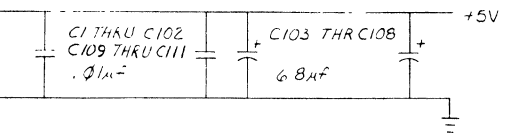
NOTES:
 1. IC LOCATIONS E11, E53, & E66 ARE SPARES.

IC TYPE	QTY	DESCRIPTION
IC DEC 74585	8	16
IC DEC 192069	8	16
IC DEC 8640	1	8
IC DEC 745175	8	16
IC DEC 75452	4	8
IC DEC 745153	8	16
IC DEC 74193	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

AA2 CA2 EA2
 AV1 CV1 EV1
 BA2 DA2 FA2
 BV1 DV1 FV1

AA2 AH1 AN2 AT1
 BC2 BH1 BN2 BT1
 CC2 CH1 CN2 CT1
 DC2 DH1 DN2 DT1
 EC2 EH1 EN2 ET1
 FC2 FH1 FN2 FT1



REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8143-B-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8134-B-5	2
REF	MODULE ECO HISTORY	B-MH-M8134-B-6	3
1	ETCHED CIRCUIT BOARD	5011385	4
6	C103 THRU C108	CAPACITOR, 6.8µF, 35V, 20%	1005306
105	C1 THRU C102, C109 THRU C111	CAPACITOR, 0.1µF, 100V, 20%	1001610-01
2		CONNECTOR, 40 PIN	1209941
1		HANDLE, HEX MODULE	1210711-2
3	R131, R133, R135	RESISTOR, 330 OHM, 1/4W, 5%	1300295
28	R31 THRU R55, R130, R58, R59	RESISTOR, 1K, 1/4W, 5%	1300365
3	R132, R134, R136	RESISTOR, 680 OHM, 1/4W, 5%	1301424
38	R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R96, R98, R100, R102, R104, R106, R108, R110, R112, R114, R116, R118, R120, R122, R124, R126, R128, R137	RESISTOR, 121 OHM, 1/4W, 1%	1301782
38	R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85, R87, R89, R91, R93, R95, R97, R99, R101, R103, R105, R107, R109, R111, R113, R115, R117, R119, R121, R123, R125, R127, R129, R130	RESISTOR, 198 OHM, 1/4W, 1%	1302956
30	R1 THRU R30	RESISTOR, 620 OHM, 1/4W, 5%	1303178
2	E23, E32	D10100 DELAY LINE	1609559
1	E2	I C DEC 74H74	1909887
2	E5, E9	I C DEC 74193	1910018
1	E40	I C DEC 74S00	1910532
4	E19, E50, E56, E62	I C DEC 74S04	1910534
1	E39	I C DEC 74S10	1910538
2	E24, E52	I C DEC 74S11	1910537
1	E46	I C DEC 74S64	1910542
9	E64, E65, E67 THRU R73	I C DEC 74S140	1910546
14	E1, E4, E8, E10, E14, E20, E63, F74, E80, E86, E92, E98, E104, E16	I C DEC 74S153	1910547
15	E12, E13, E17, E26 THRU E29, E34 THRU E37, E43, E44, E7, E6	I C DEC 75452	1910645
7	E18, E22, E30, E38, E45, E51, E57	I C DEC 74S175	1910957
9	E15, E21, E25, E33, E41, E42, E47, E58, E59	I C DEC 82S82	1911291
2	E3, E31	I C DEC 8640	1911469
6	E48, E49, E54, E55, E60, E61	I C DEC 74S85	1912089-00
30	E75 THRU E79, E81 THRU E85, E87 THRU E91, E93 THRU E97, E99 THRU E103, E105 THRU E109	I C DEC 1912069	1912069
12		FYLET	9006732
4		WIRE #30 AWG BUSS (RETROFIT)	91-05740-55
1	R56	RESISTOR 270Ω 1/4W 5%	1301972
1	R57	RESISTOR 390Ω 1/4W 5%	1300309

FIRST USED ON OPTION MODEL: 11/70

ETCH BOARD REV: B

SEMICONDUCTOR CONVERSION CHART

REVISIONS: A. HELENIUS, M8143-00001, 3-25-75

digital EQUIPMENT CORPORATION

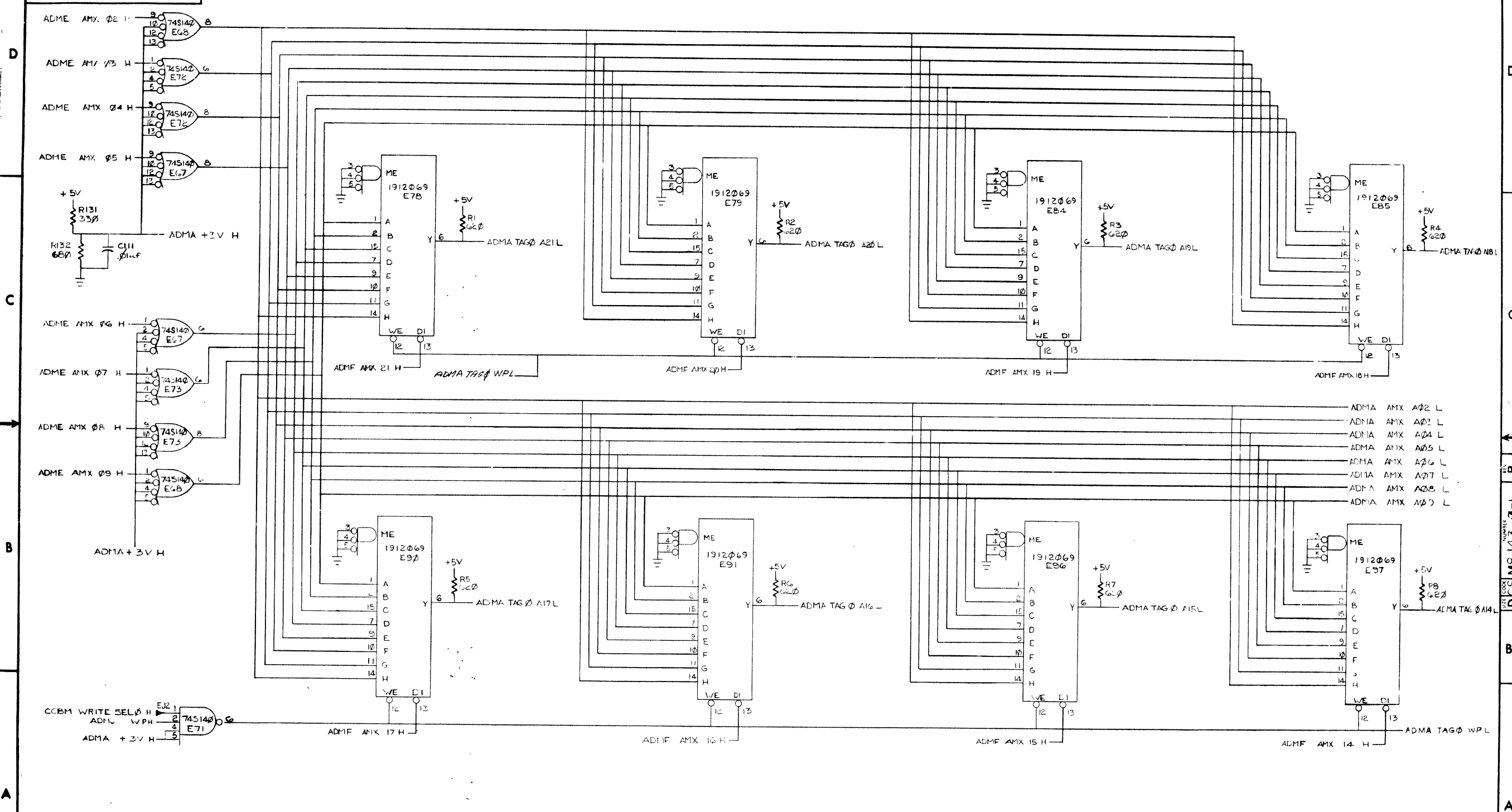
ADDRESS MEMORY BD

SIZE CODE: DCS M8143-0-1

SHEET 1 OF 12

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DCS M8143-0-1 2

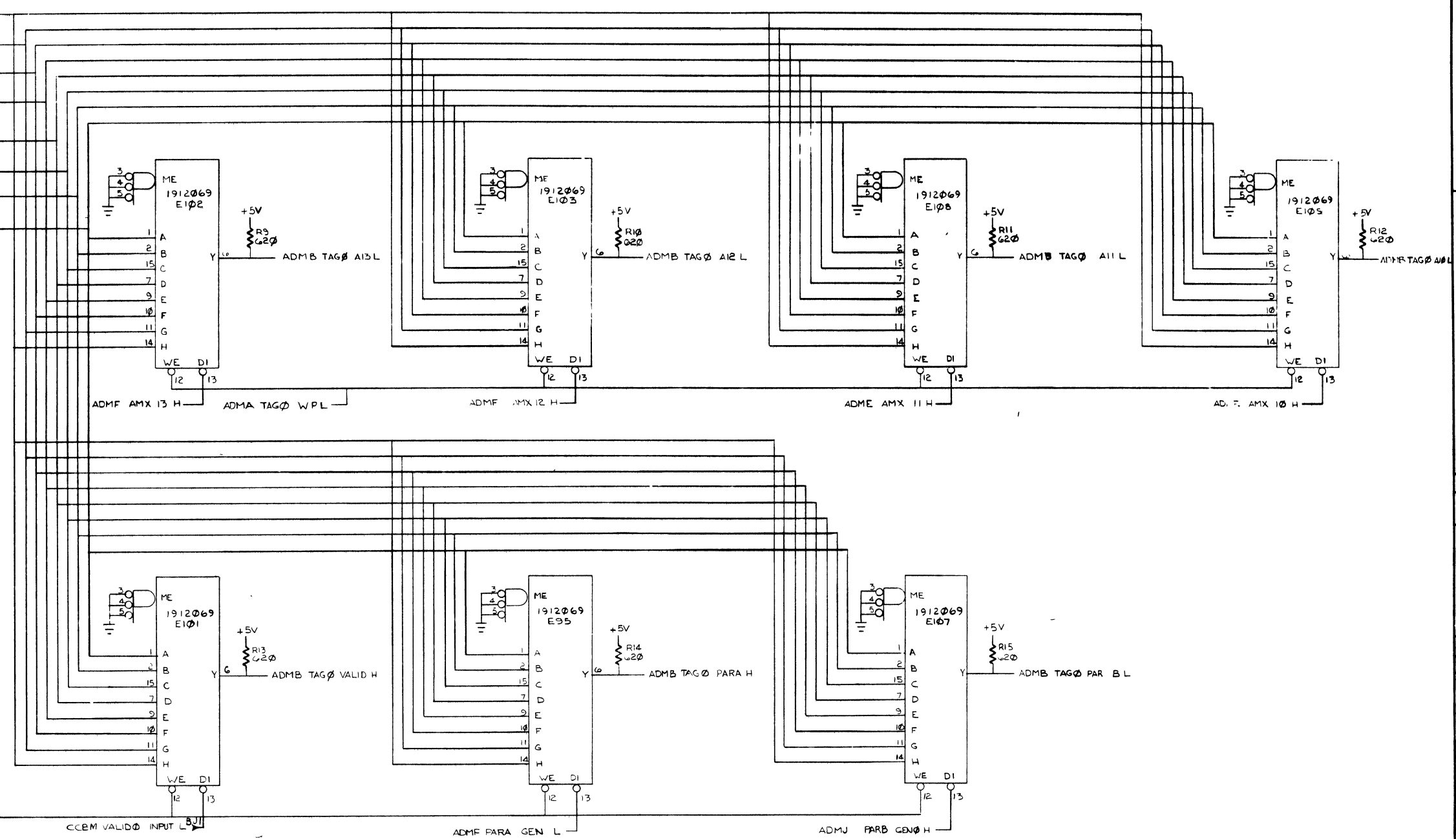


REVISIONS		
CHK	CHANGE NO	REV.

(TAG 0) SL.OT 18
 TITLE ADDRESS MEMORY BOARD (ADMA) SIZE CODE DCS M8143-0-1 NUMBER REV. B
 SCALE SHEET 2 OF 12 DIST.

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- ADMA AMX A02 L
- ADMA AMX A03 L
- ADMA AMX A04 L
- ADMA AMX A05 L
- ADMA AMX A06 L
- ADMA AMX A07 L
- ADMA AMX A08 L
- ADMA AMX A09 L

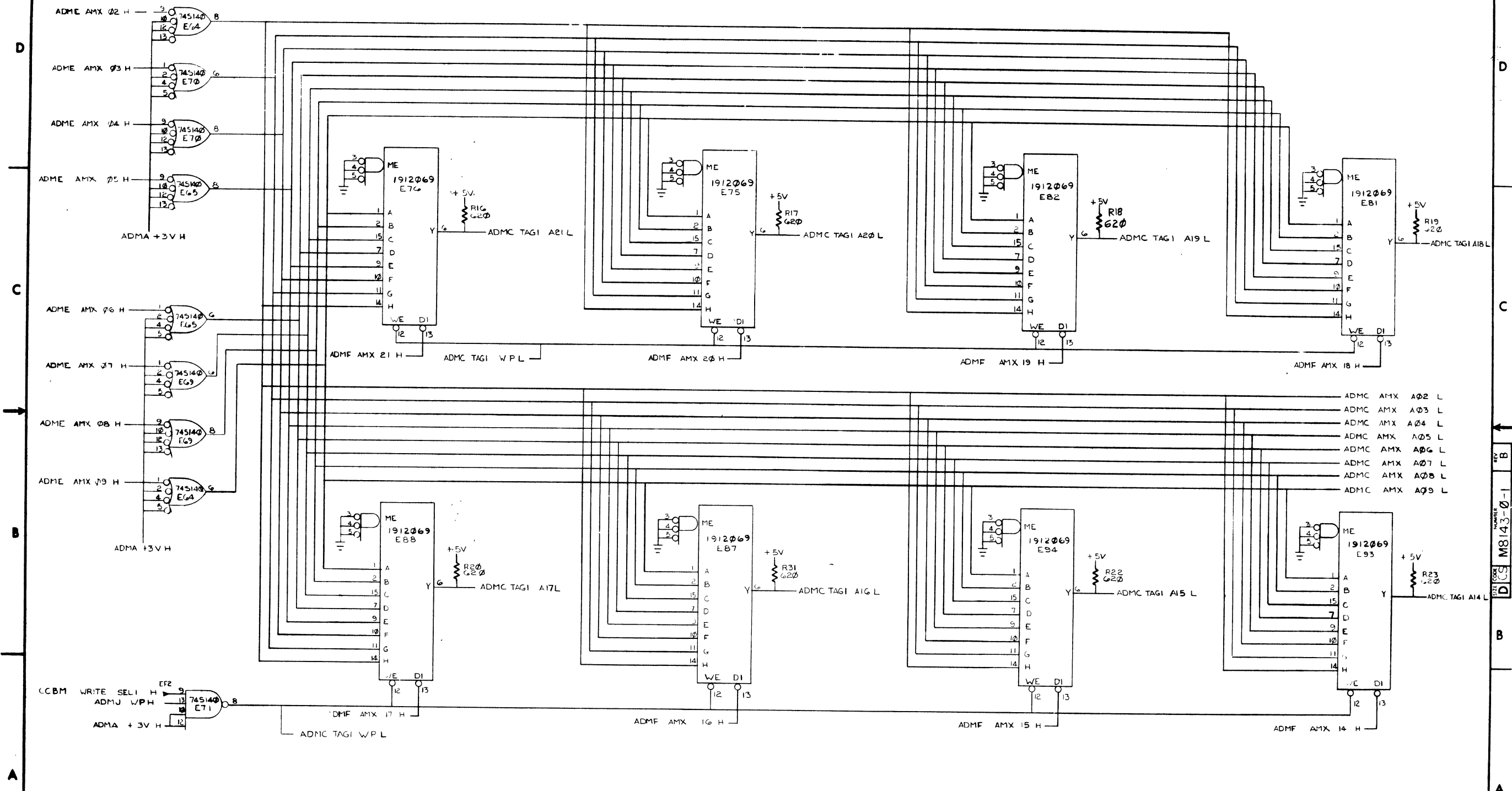


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(ADMB) SIZE CODE	NUMBER	REV.
ADDRESS MEMORY BOARD		DCS	M8143-0-1	B
SCALE	SHEET 3	OF 12	DIST.	

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DCS M8143-0-1 2

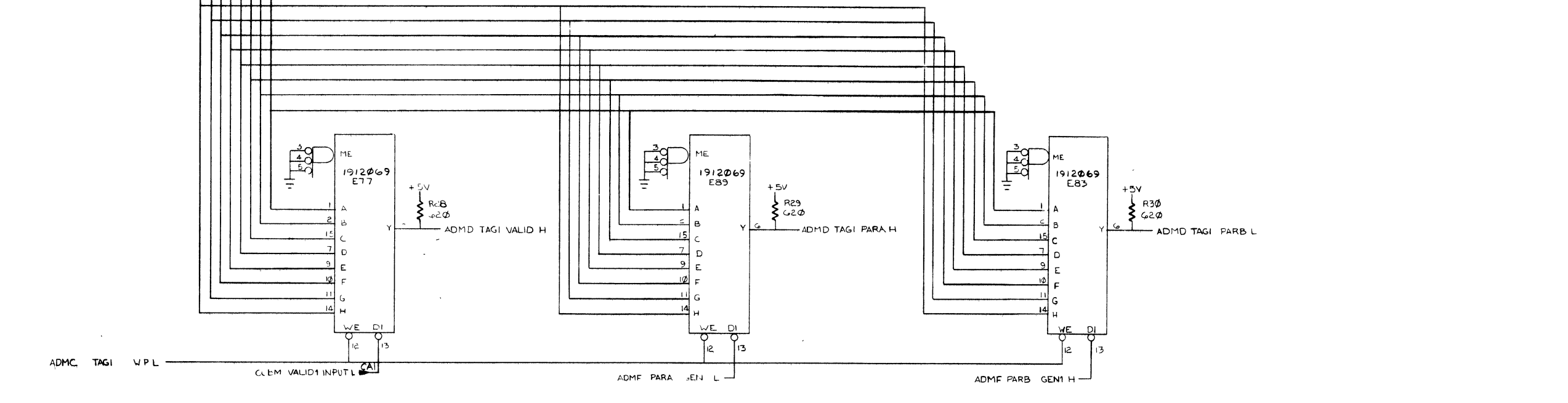
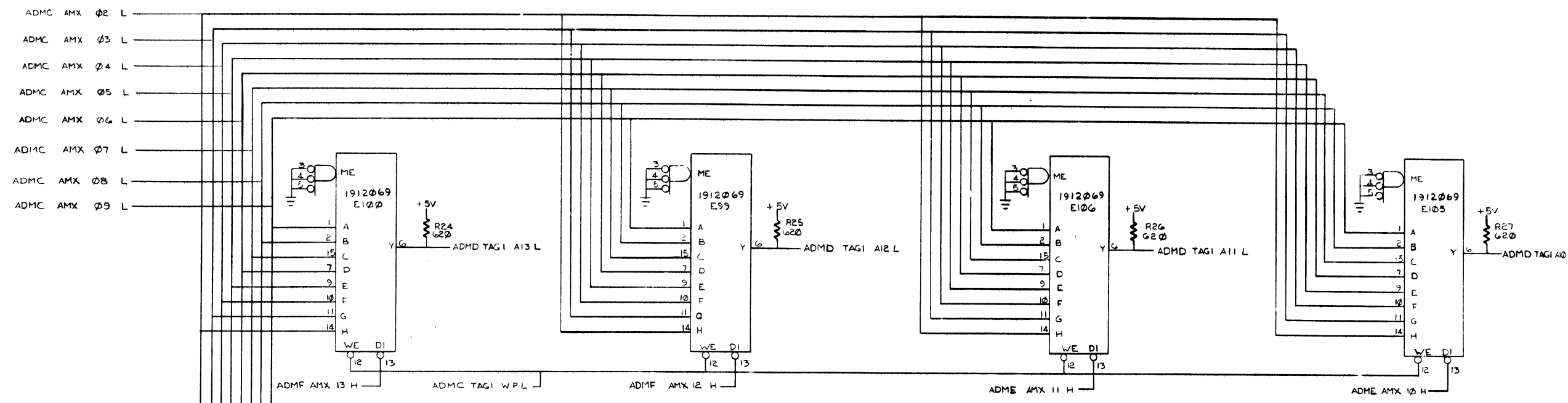


REVISIONS		
CHK	CHANGE NO	REV.

(TAGI) SLOT 18
 TITLE ADDRESS MEMORY (ADMC) BOARD SIZE CODE DCS M8143-0-1 REV. 8
 SCALE SHEET 4 OF 12 DIST

107

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D
C
B
A

D
C
B
A

REVISIONS		
CHK	CHANGE NO.	REV.

(TAGI) SLOT 13

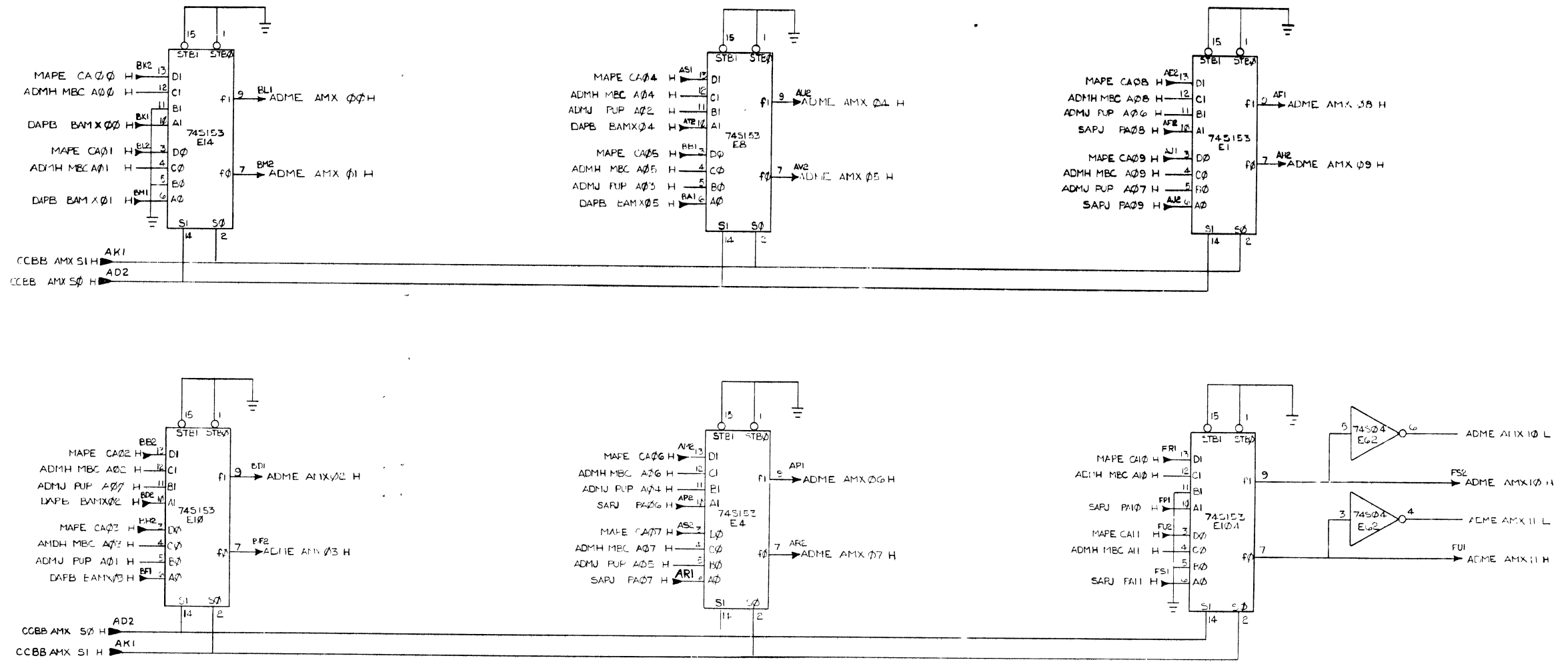
TITLE	(ADMD) SIZE CODE	NUMBER	REV.
ADDRESS MEMORY BOARD	D CS	M8143-0-1	B
SCALE	SHEET	OF	DIST
	5	12	

108

REV. B
D CS M8143-0-1

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8 7 6 5 4 3 2 1
 B A 1-0-3-0-1 DCS M8143-0-1 2



S1	S0	OUTPUT
0	0	CPL
0	1	POWER UP
1	0	MEC
1	1	UNITBUS

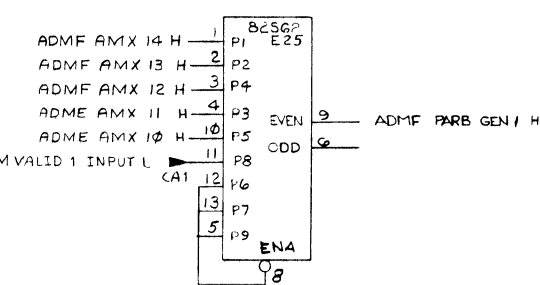
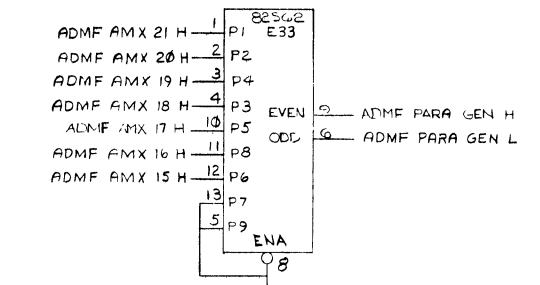
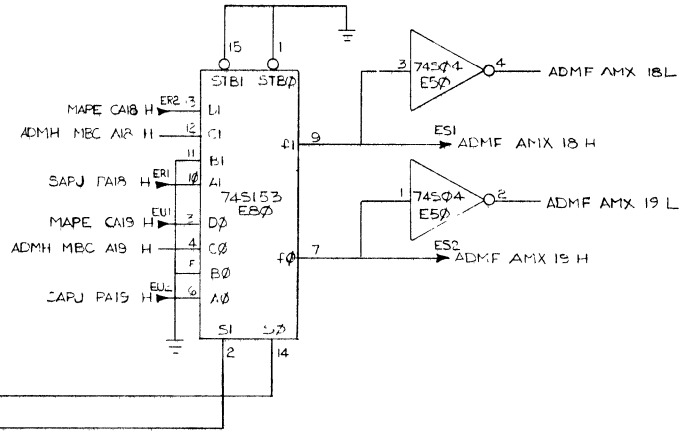
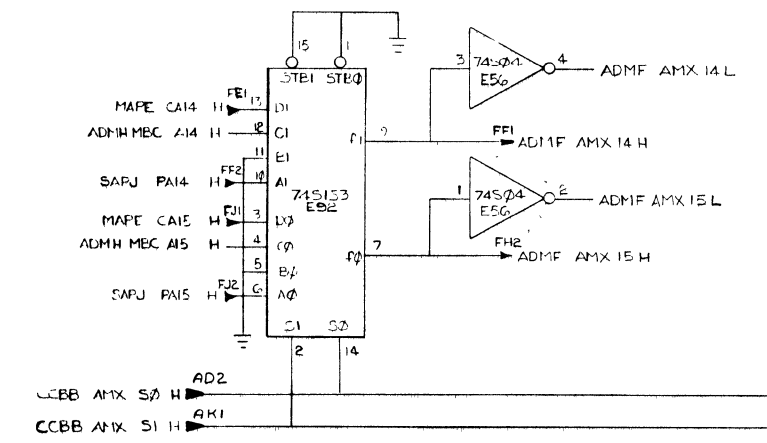
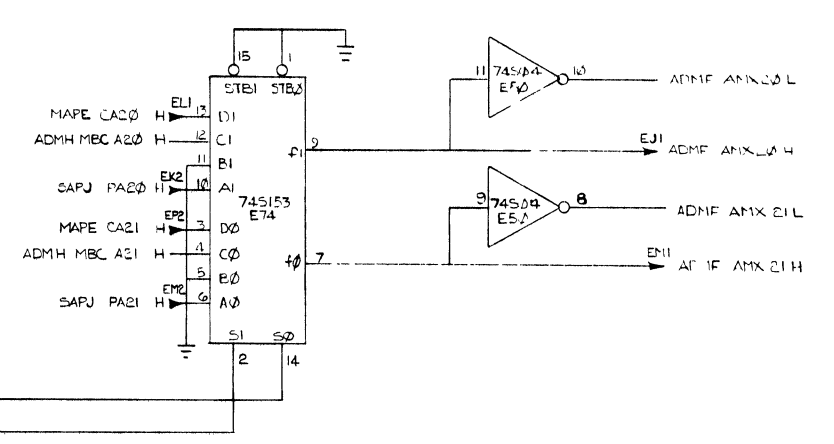
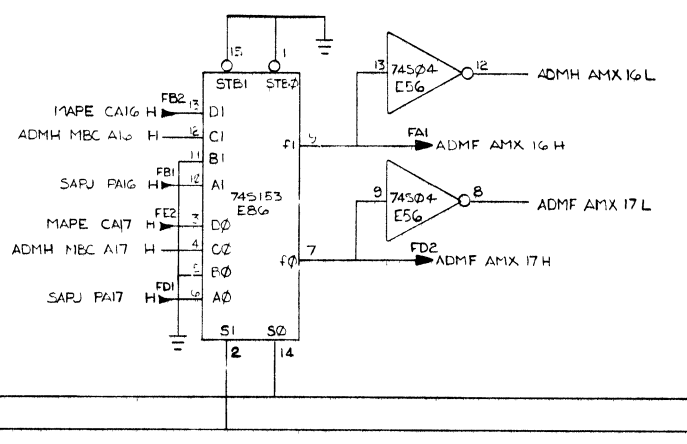
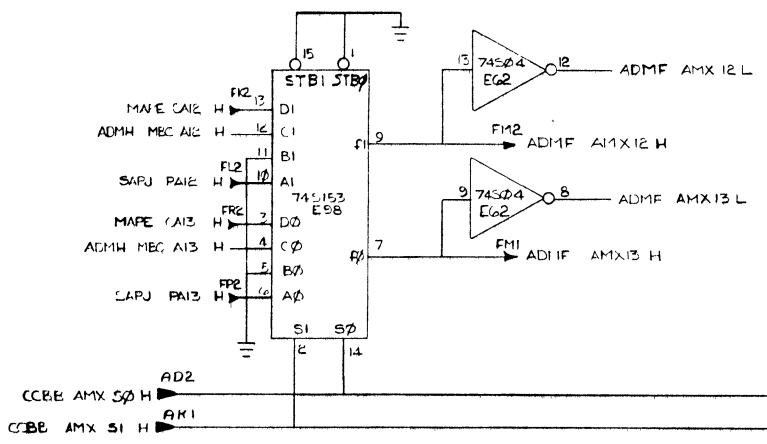
REVISIONS		
CHK	CHANGE NO	REV.

(ADDRESS MULTIPLEXOR) SLOT 18

TITLE	(ADME)	SIZE CODE	NUMBER	REV.
ADDRESS MEMORY BOARD	DCS	M8143-0-1	B	
SCALE	SHEET	OF 12	DIST	

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DCS M8143-0-1

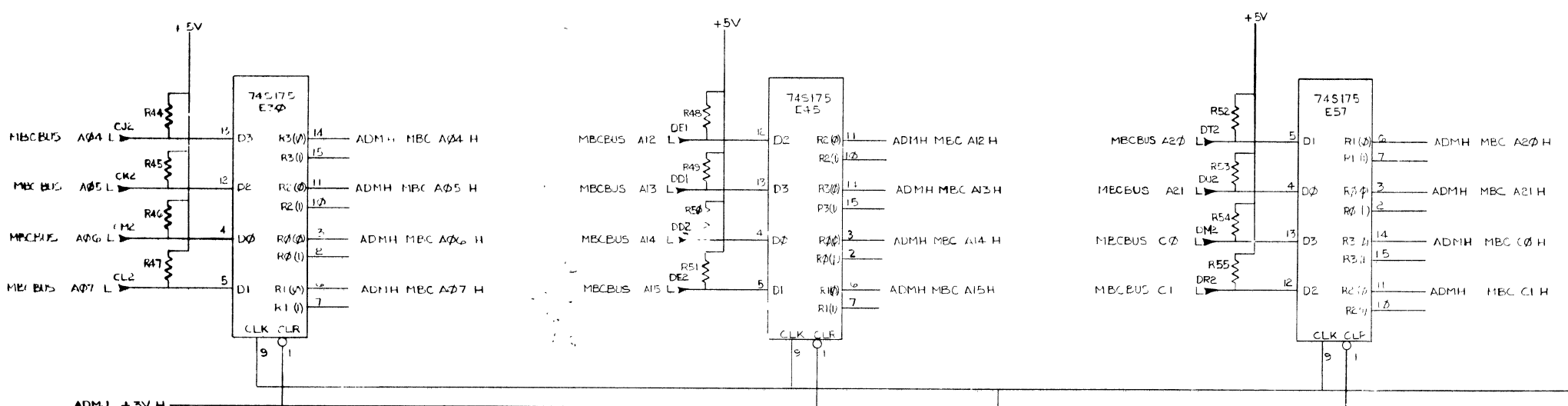
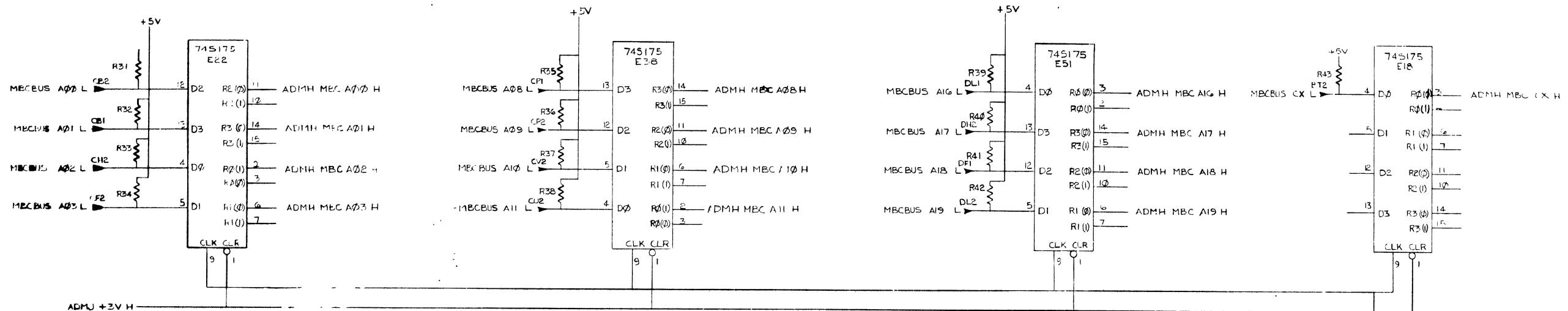


REVISIONS		
CHK	CHANGE NO.	REV.

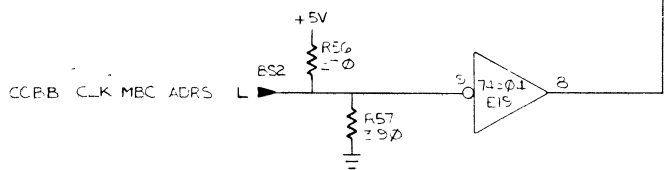
(ADDRESS MULTIPLEXOR) SLOT 19

TITLE	(ADMF) ADDRESS MEMORY BOARD	SIZE CODE	D CS	NUMBER	M8143-0-1	REV.	B.
SCALE		SHEET	7	OF	12	DIST.	

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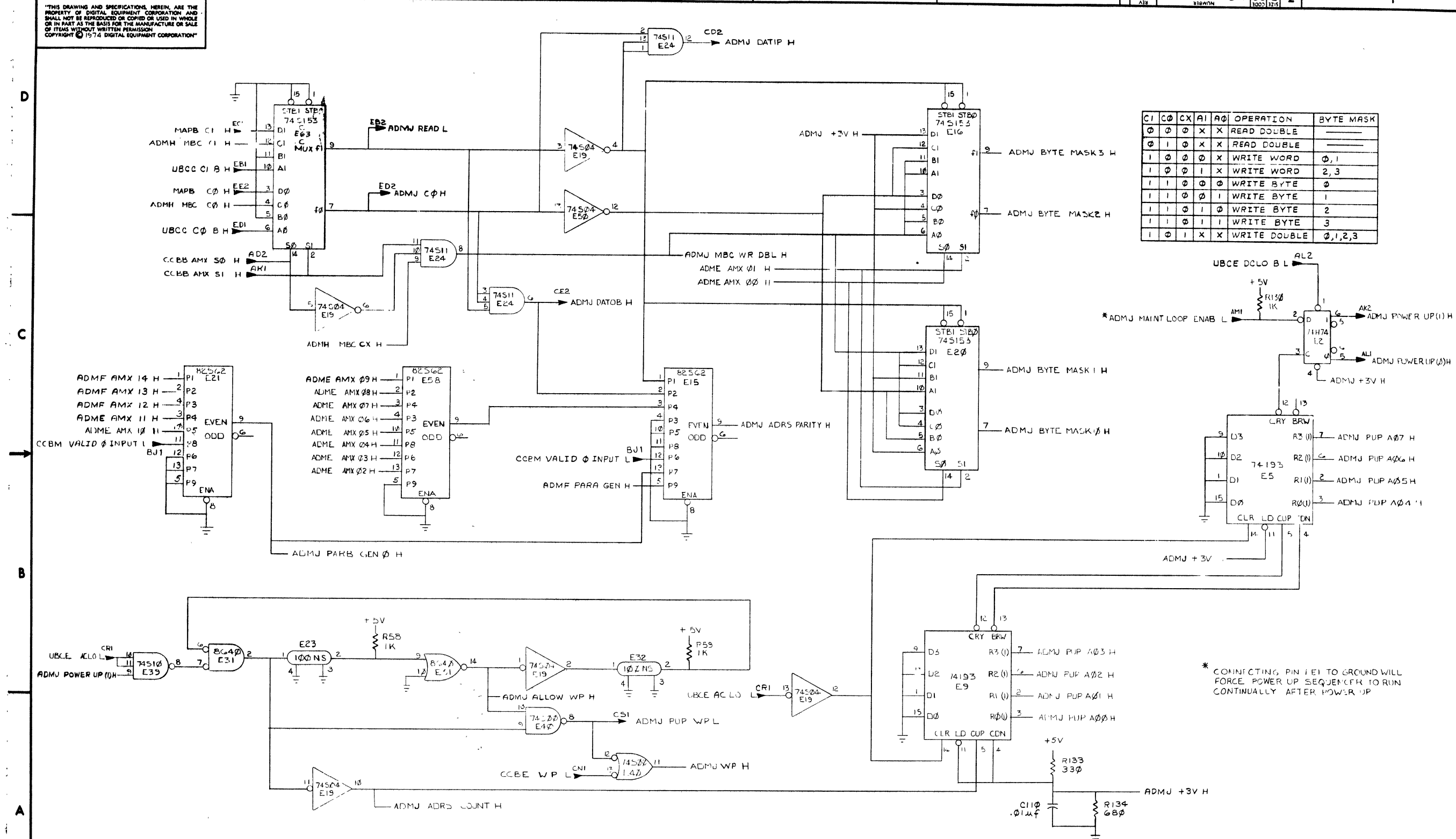
* NOTE
ALL PULLUP RESISTORS ARE 1K 1/4W 5%



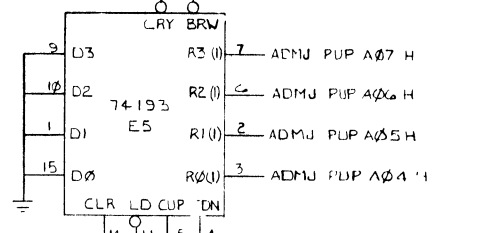
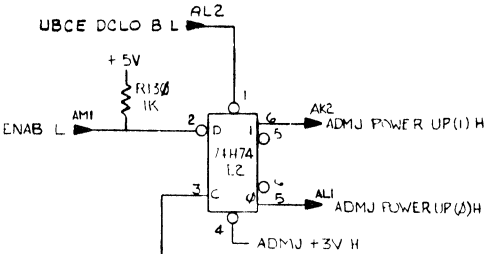
REVISIONS		
CHK	CHANGE NO.	REV.

(MBC ADDRESS BUFFER) SLOT 13		(ADMH) SIZE CODE	NUMBER	REV.
ADDRESS MEMORY BOARD		DCS	M8143-0-1	B
SCALE	SHEET 8 OF 12	DIST.		

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CI	CO	CX	AI	AQ	OPERATION	BYTE MASK
0	0	0	X	X	READ DOUBLE	
0	1	0	X	X	READ DOUBLE	
1	0	0	0	X	WRITE WORD	0,1
1	0	0	1	X	WRITE WORD	2,3
1	1	0	0	0	WRITE BYTE	0
1	1	0	0	1	WRITE BYTE	1
1	1	0	1	0	WRITE BYTE	2
1	1	0	1	1	WRITE BYTE	3
1	0	1	X	X	WRITE DOUBLE	0,1,2,3



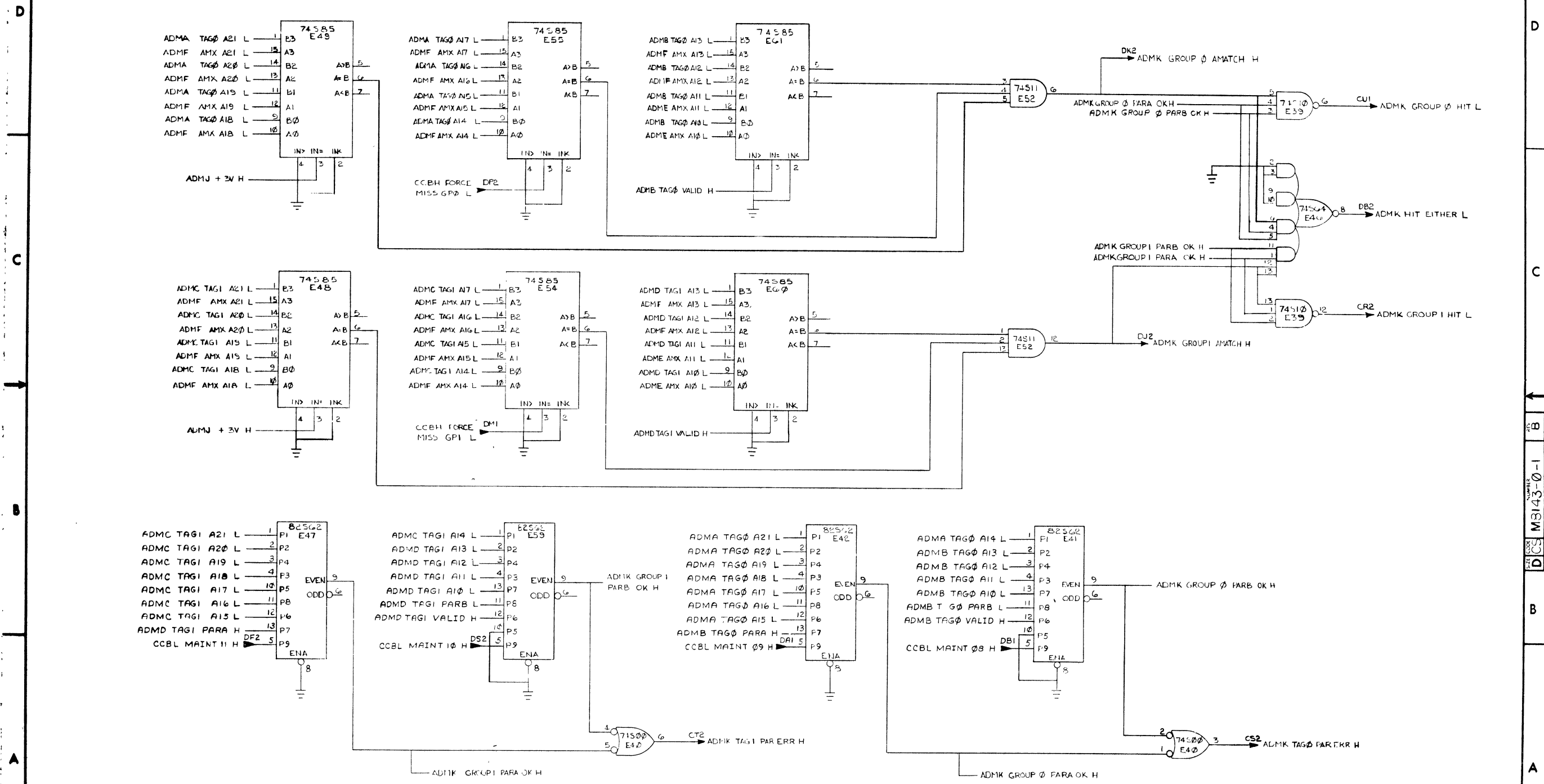
* CONNECTING PIN 1E1 TO GROUND WILL FORCE POWER UP SEQUENCER TO RUN CONTINUALLY AFTER POWER UP

REVISIONS		
CHK	CHANGE NO.	REV.

(BYTE MASK, PUP SEQUENCER) SLOT 18

TITLE	(ADMJ) ADDRESS MEMORY BOARD	SIZE CODE	D CS	NUMBER	M8143-0-1	REV.	9
SCALE		SHEET	9	OF	12	DIST.	

112



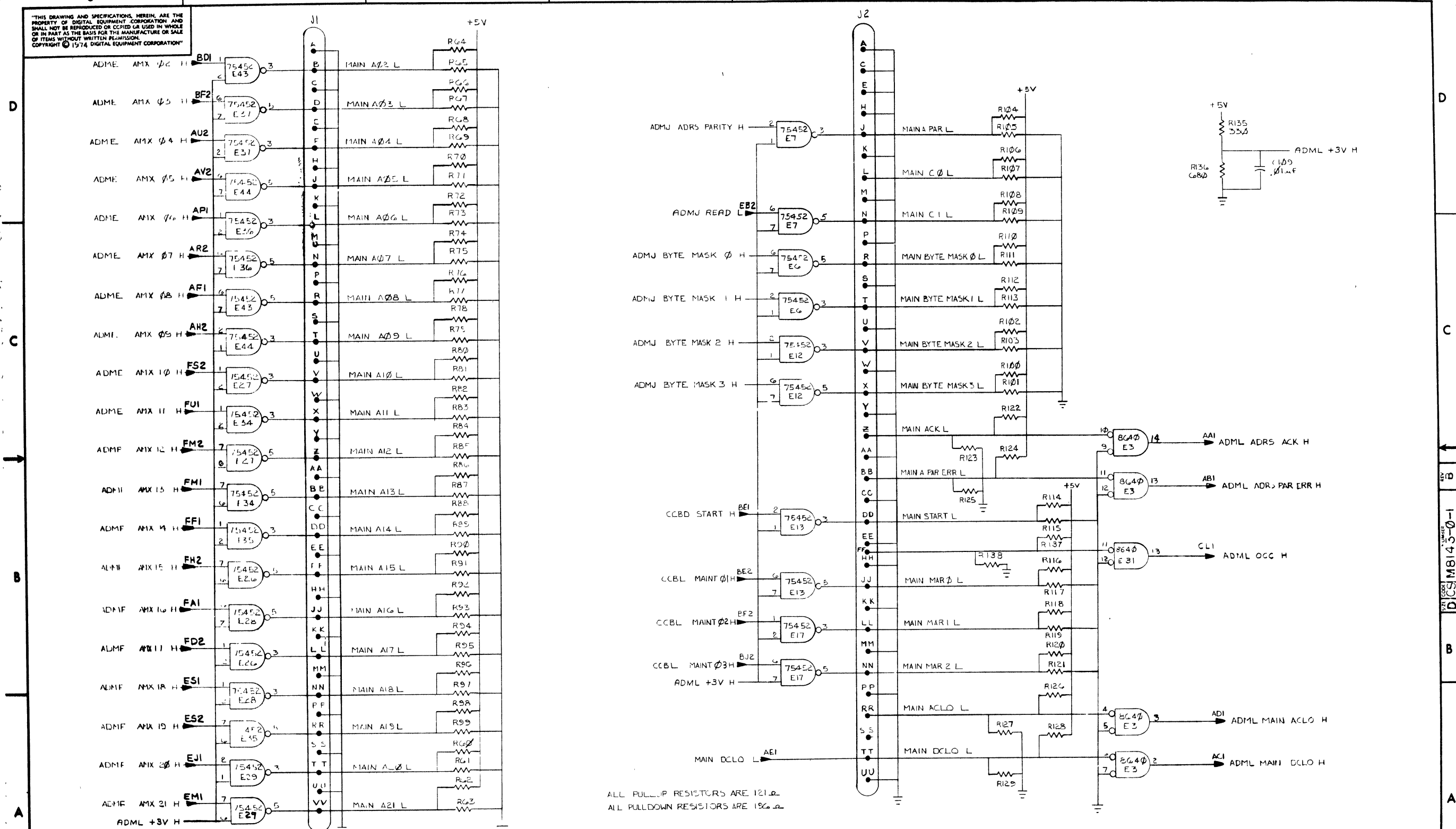
REVISIONS		
CHK	CHANGE NO.	REV.

(EQUALS CHECK, PARITY CHECK) SLOT 18

TITLE	ADDRESS MEMORY BOARD	SIZE CODE	DCS	NUMBER	M8143-0-1	REV.	B
SCALE	1/1	SHEET	12	OF	12	DIST.	

M8143-0-1

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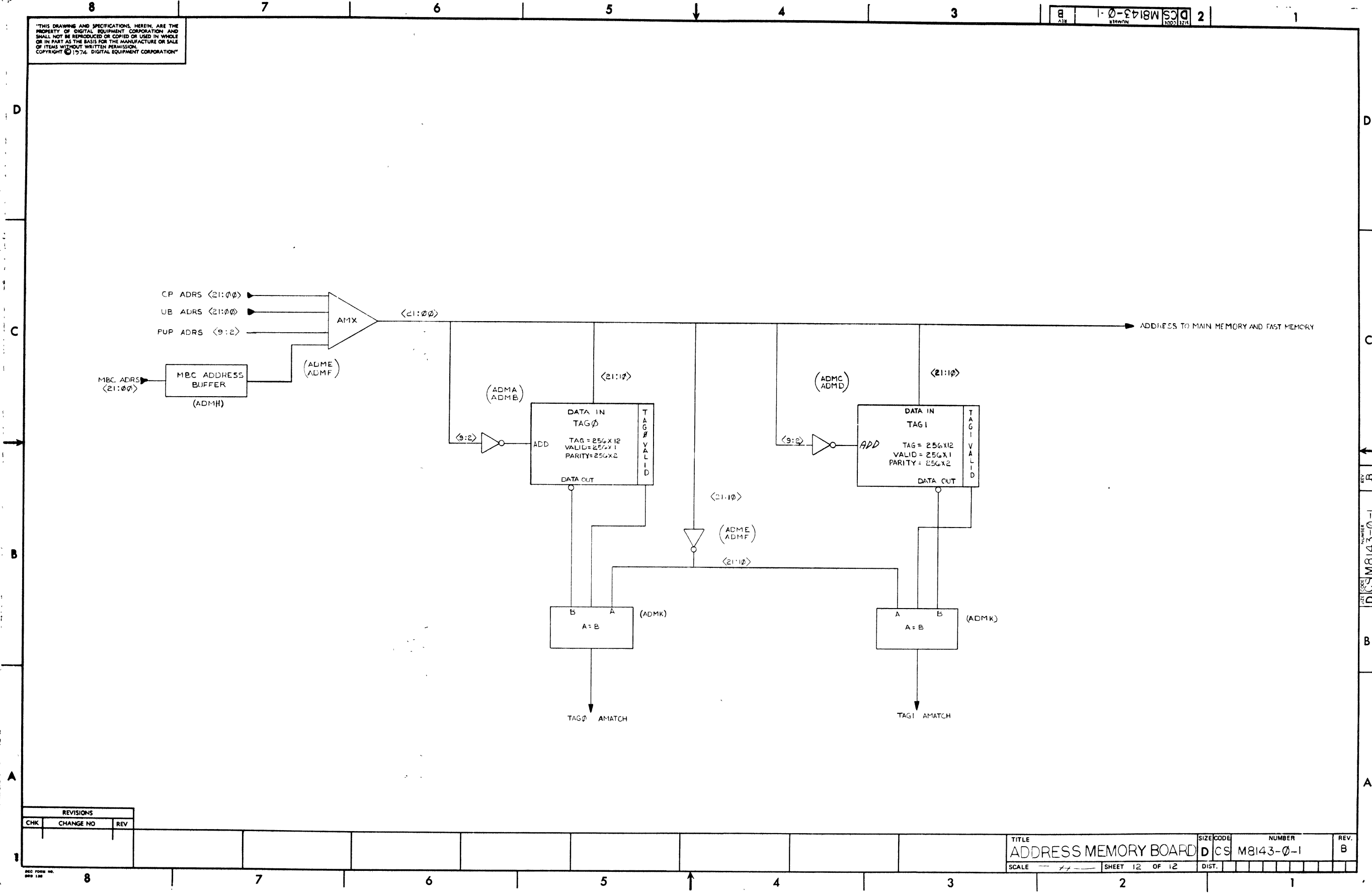
(MAIN MEMORY ADMS DRIVERS) SLOT 18

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(ADML)	SIZE	CODE	NUMB'R	REV.
ADDRESS MEMORY BOARD	D	CS	M8143-0-1	B	
SCALE	SHEET	OF	DIST.		
	11	12			

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REV. B
 DCS M8143-0-1
 NUMBER 1000 1212 2



REVISIONS		
CHK	CHANGE NO	REV

TITLE ADDRESS MEMORY BOARD
 SIZE CODE DCS NUMBER M8143-0-1
 SCALE SHEET 12 OF 12 DIST.

REV. B
 DCS M8143-0-1
 NUMBER 1000 1212 2

8 7 6 5 4 3

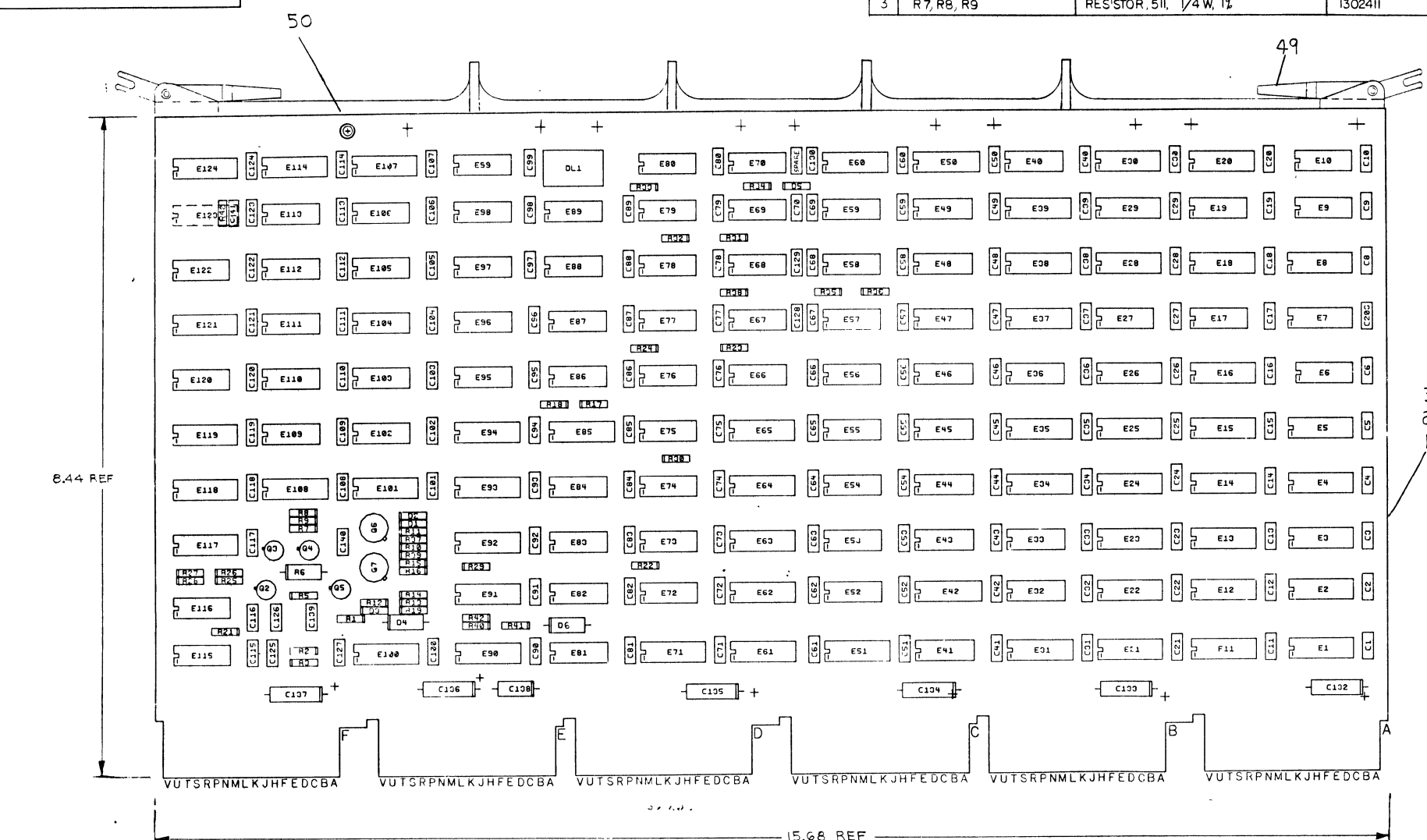
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NOTES: 1. E1, E5, E107, F14, E121, E123, E124 ARE SPARES

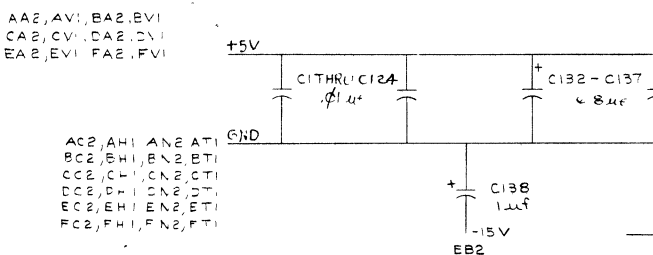
5	E4, E2, E14, E51, E42	I.C. DEC 74175	1910651	48
1		HANDLE ASSY	1210711-2	49
12		EYELET	9006732	50
3	R7, R8, R9	RESISTOR, 511, 1/4 W, 1%	1302411	51

DCS M8142-0-1 2 1

REF	QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
REF			X-Y COORDINATE HOLE LOCATION	K-CO M8142-0-4	1
REF			ASSY/DRILLING HOLE LAYOUT	D-AH M8142-0-5	2
REF			MODULE ECO HISTORY	B-WH M8142-0-6	3
1			ETCHED CIRCUIT BOARD	011393	4
6		C132 THRU C137	CAPACITOR, 6 8uf, 35V, 20%	1005306	5
126		C1 THRU C124, C128 THRU 129	CAPACITOR, 01uf, 100V, 20%	1001610-01	6
1		C125	CAPACITOR, 56pf, 100V	100001	7
1		C138	CAPACITOR, 1uf, 35V, 10%	1001776	8
4		D1, D2, D3, D5	DIODE D6F4	1100114	9
2		D4, D6	DIODE 1N4733A	1104943	10
2		R10, R37	RESISTOR, 133 1/8W, 5%	130202	11
4		R31, R17, R26, R27	RESISTOR, 150, 1/4W, 5%	1300250	12
4		R23, R35, R39, R32	RESISTOR, 330, 1/4W, 5%	1300295	13
5		R39, R19, R22, R21, R33	RESISTOR, 1K, 1/4W, 5%	1300365	14
1		R34	RESISTOR, 15K, 1/4W, 5%	1300496	15
2		R24, R36	RESISTOR, 680, 1/4W, 5%	1301424	16
3		R18, R25, R28	RESISTOR, 220, 1/4W, 5%	1301771	17
1		R3	RESISTOR, 5 6K, 1/4W, 5%	1301874	18
1		R2	RESISTOR, 820 OHM, 1/4W, 5%	1301775	19
1		R6	RESISTOR, 3 32K, 1/4W, 1%	1302311	20
1		R12	RESISTOR, 2K, 1/4W, 5%	1302388	21
1		R5	RESISTOR, 1 47K, 1/8W, 1%	1305108	22
5		R11, R13, R14, R15, R16	RESISTOR, 5 1 OHM, 1/4W, 5%	1303222	23
4		.Q2, Q3, Q4, Q5	TRANSISTOR, PCC3009A	50113	24
1		Q7	TRANSISTOR, DEC3762	1509649	25
1		Q6	TRANSISTOR, DEC3734	1510062	26
1		DL1	DELAYLINE 100NS	1609559	27
2		E76, E86	I C DEC 74H50	1909060	28
4		E3, E7, E24, E25	I C DEC 8265	1909934	29
8		E28, E64, E31, E62, E63, E34, E29, E8	I C DEC 74151	1909936	30
4		E13, E16, E15, E18	I C DEC 74153	1909937	31
1		E37	I.C. DEC 7442	1910046	32
1		E74	I C DEC 7437	1910091	33
1		E60	I.C. DEC 74123	1910436	34
13		E95, E109, E106, E111, E69, E56, E48, E49, E32, E41, E44, E66, E71	I C DEC 74S08	1910532	35
7		E97, E36, E75, E46, E17, E53, E10	I C DEC 74S04	1910544	36
6		E87, E102, E98, E99, E47, E54	I C DEC 74S10	1910526	37
10		E49, E96, E69, E120, E67, E6, E40, E52, E43, E103	I C DEC 74S11	1910537	38
2		E104, E78	I C DEC 74S28	1910539	39
11		F13, E105, E79, E110, E112, E122, E88, E58, E27, E55, E45	I C DEC 74S64	1910542	40
13		E72, E82, E115, E116, E84, E59, E70, E81, E9, E19, E33, E57, E77	I C DEC 74S74	1910544	41
18		E23, E20, E22, E26, E118, E92, E50, E30, E90, E91, E85, E94, E101, E100, E108, E93, E117, E119	I C DEC 74S112	1910545	42
3		R40, R41, R42	RESISTOR, 56, 1/4W, 5%	1302602	58
1		C141	CAP 680pf, 100V, 5%	1000026	59
A/R			*30 WIRE (RETROFIT)	9105740-55	63
2		Q6, Q7	TRANSIPADS	9007201	64
4		R1, R29, R30, R42	RESISTOR 1002 1/4W 5%	1300229	55
4		C126, C127, C139, C140	CAPACITOR .22 uf 50V	1010274-01	56
1		C130	CAPACITOR 1200pf 100V 5%	1002424-01	57



IC TYPE	GND	+5V
964C	1	8
E266	8	16
74123	8	16
745133	8	16
74174	8	16
74151	8	16
7442	8	16
74153	8	16
74175	8	16
74575	8	16
745112	8	16



QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
3	R40, R41, R42	RESISTOR, 56, 1/4W, 5%	1302602	58
1	C141	CAP 680pf, 100V, 5%	1000026	59
A/R		*30 WIRE (RETROFIT)	9105740-55	63
2	Q6, Q7	TRANSIPADS	9007201	64
4	R1, R29, R30, R42	RESISTOR 1002 1/4W 5%	1300229	55
4	C126, C127, C139, C140	CAPACITOR .22 uf 50V	1010274-01	56
1	C130	CAPACITOR 1200pf 100V 5%	1002424-01	57

DEC NO	EIA NO	DEC NO	EIA NO

REVISIONS

CHK	CHANGE NO	REV

DATE: 2/12/74
 DATE: 1/27/75
 DATE: 1/22/75
 DATE: 2/2/75
 DATE: 1/24/75

SCALE: NONE
 SHEET: 1 OF 13

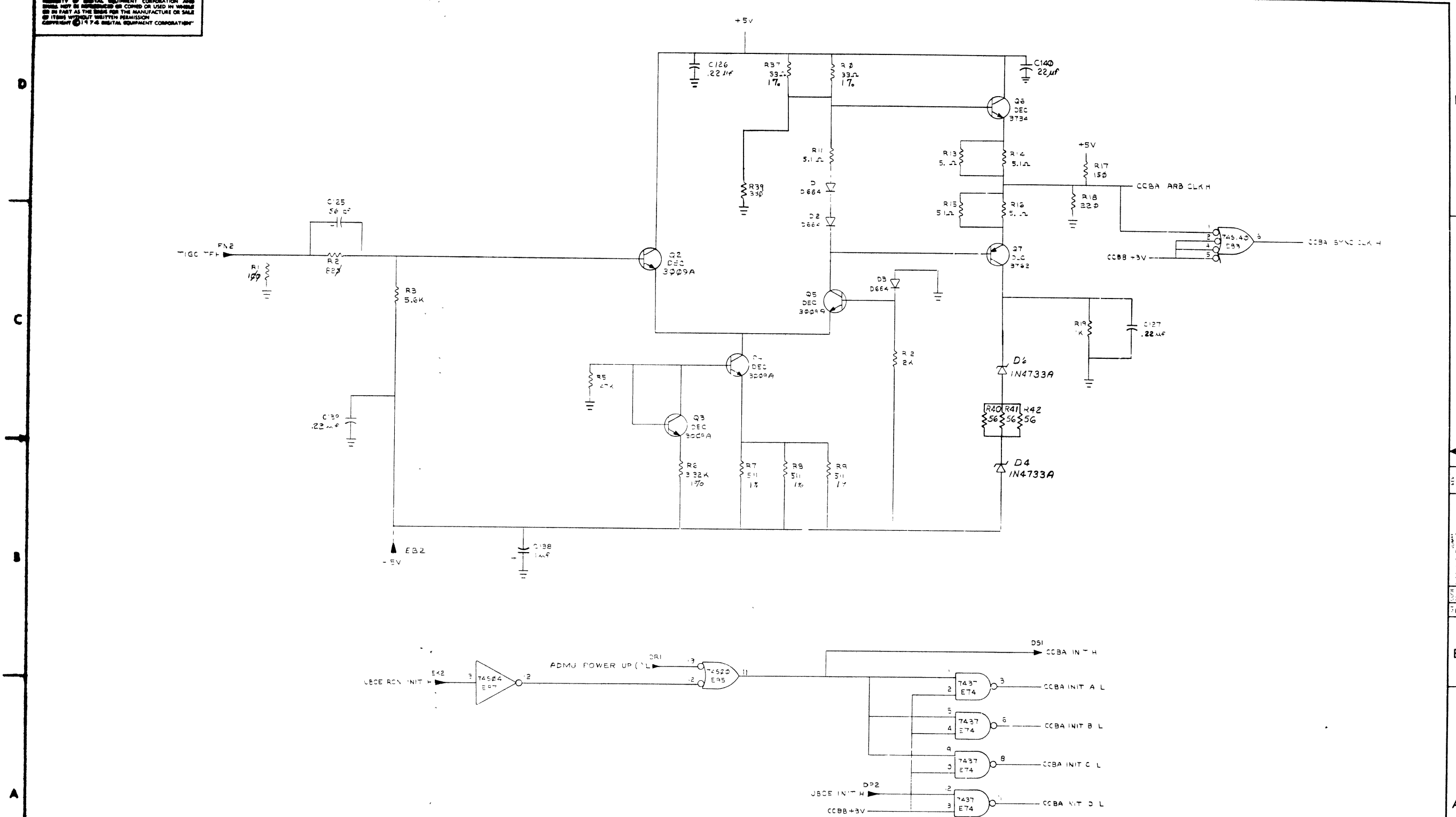
SIZE CODE: DCS M8142-0-1
 NUMBER: 1
 REV: D

8 7 6 5 4 3 2 1

116

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DIGITAL EQUIPMENT CORPORATION
 MODEL 114142-0-1
 SHEET 2 OF 3

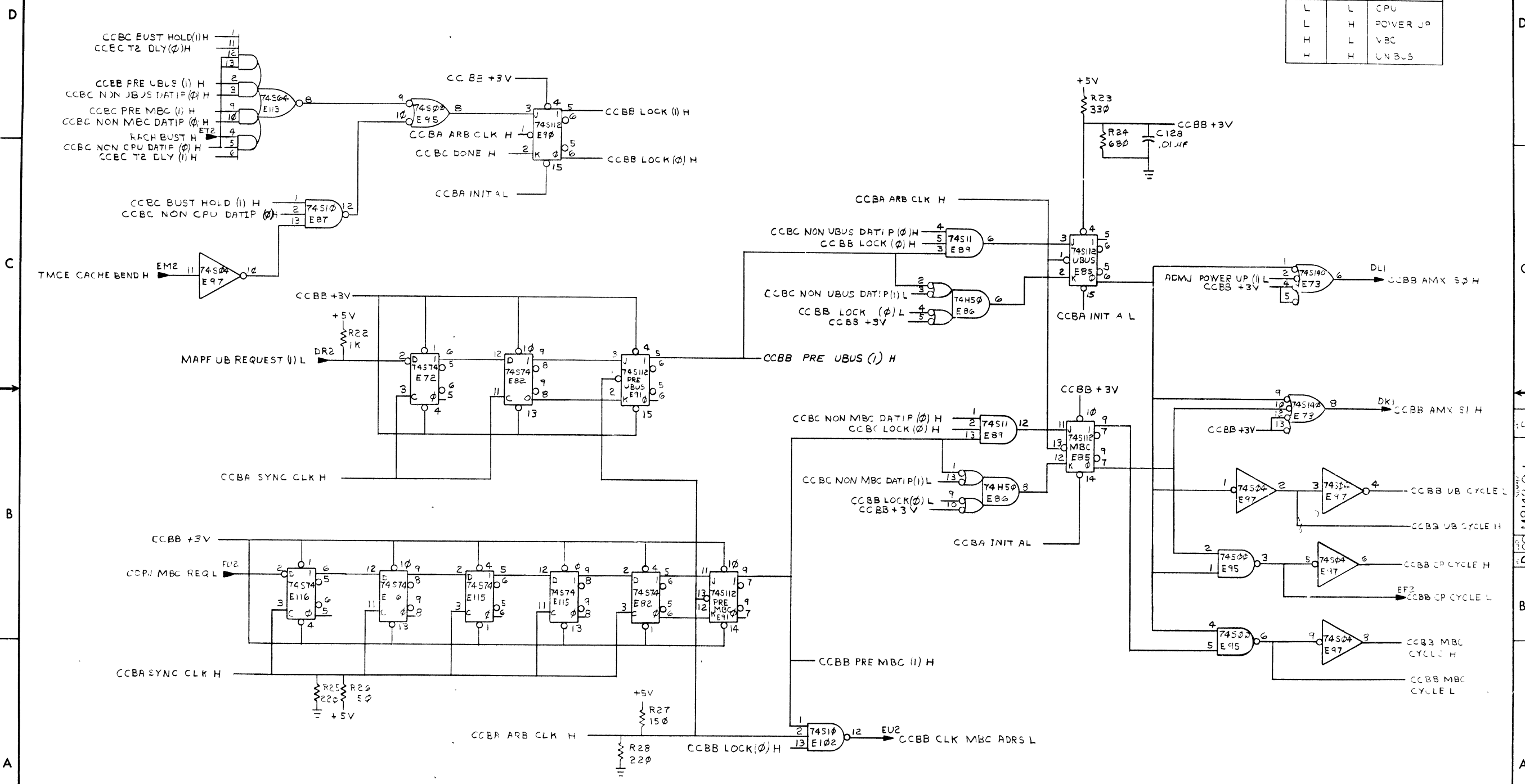


REVISIONS		
CHK	CHANGE NO	REV

INIT + CLK LOGIC (SLOT 17)
 TITLE CACHE CONTROL BOARD (CCBA)
 SIZE CODE DCS
 NUMBER MS142-0-1
 SHEET 2 OF 3
 DIST

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S1	S0	CYCLE
L	L	CPU
L	H	POWER UP
H	L	VBC
H	H	UNBUS



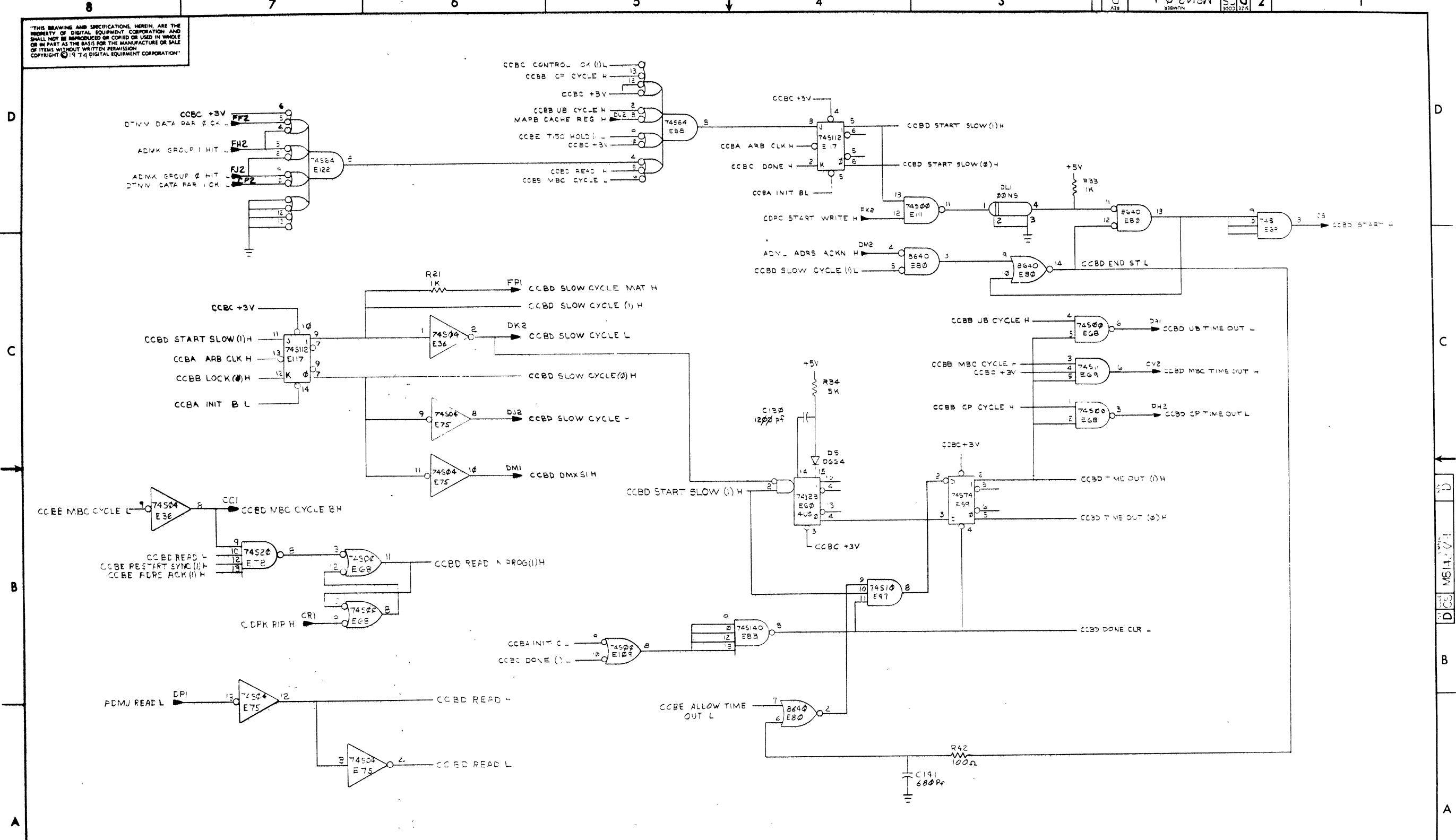
REVISIONS		
CHK	CHANGE NO	REV

REQUEST ARBITRATOR (SLOT 17)
 TITLE CACHE CONTROL BOARD (CCBB)
 SIZE CODE DCS
 NUMBER M8142-01
 SCALE 1:1 SHEET 3 OF 13 DIST

118

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DCS M8142-0-1 2

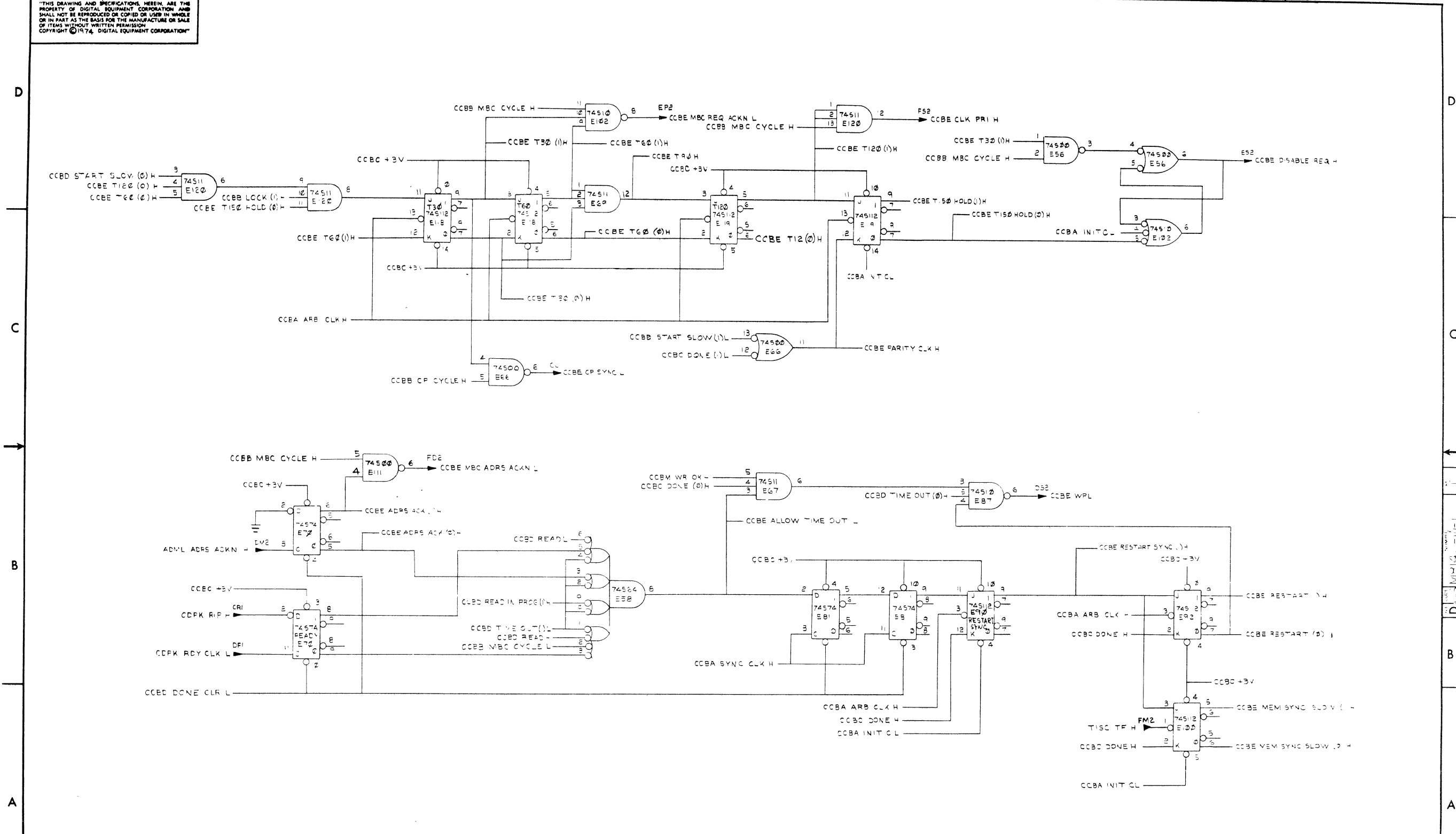


REVISIONS		
CHK	CHANGE NO	REV

MAN MEMORY CONTROL (SLOT 17)		TITLE	SIZE CODE	NUMBER	REV
		CACHE CONTROL BOARD (CCBD)	DCS	M8142-0-1	
SCALE	SHEET	OF	DIST		
	5	13			

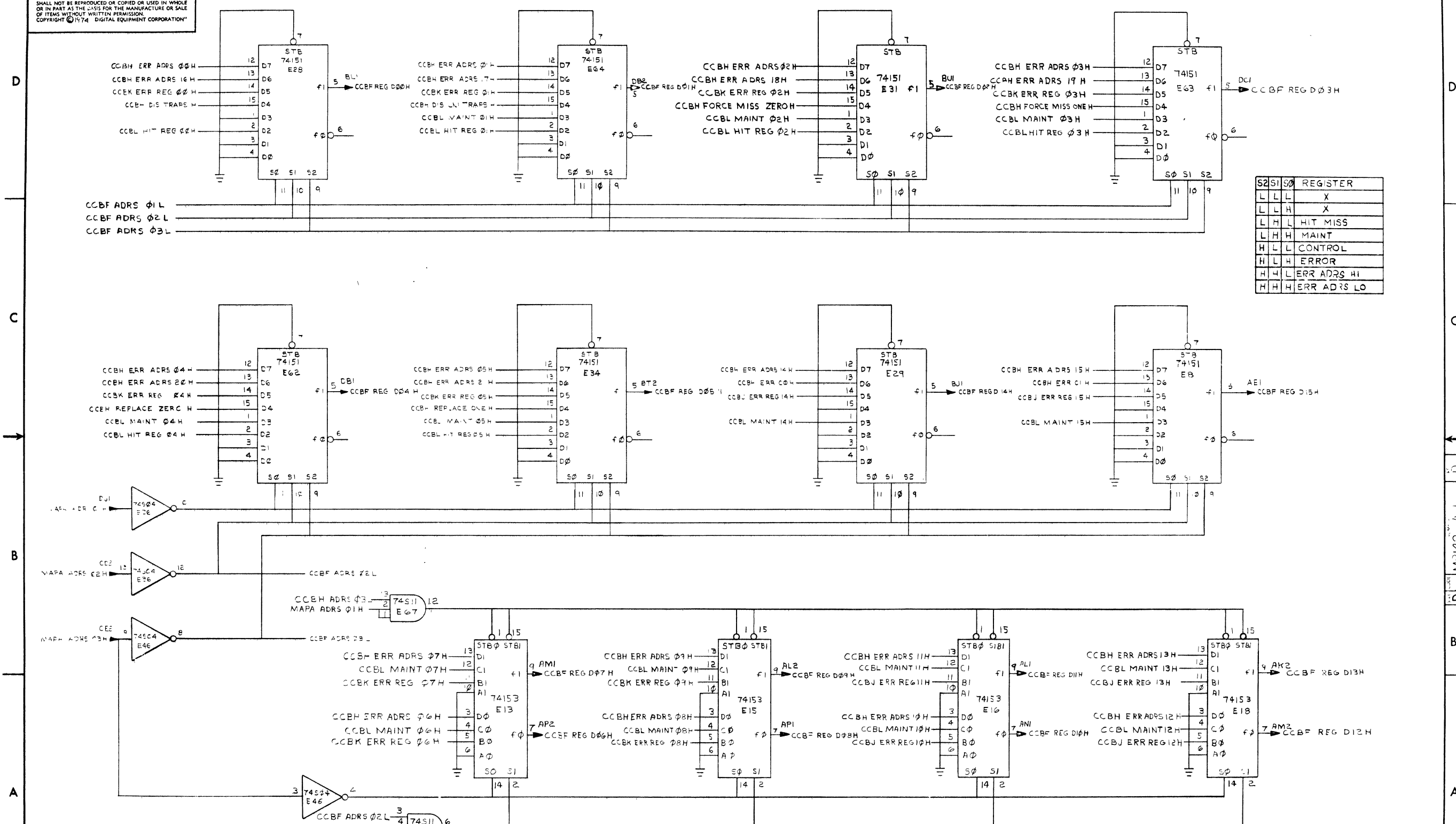
120

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REVISIONS		
CHK	CHANGE NO	REV

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S2	S1	S0	REGISTER
L	L	L	X
L	L	H	X
L	H	L	HIT MISS
L	H	H	MAINT
H	L	L	CONTROL
H	L	H	ERROR
H	H	L	ERR ADRS HI
H	H	H	ERR ADRS LO

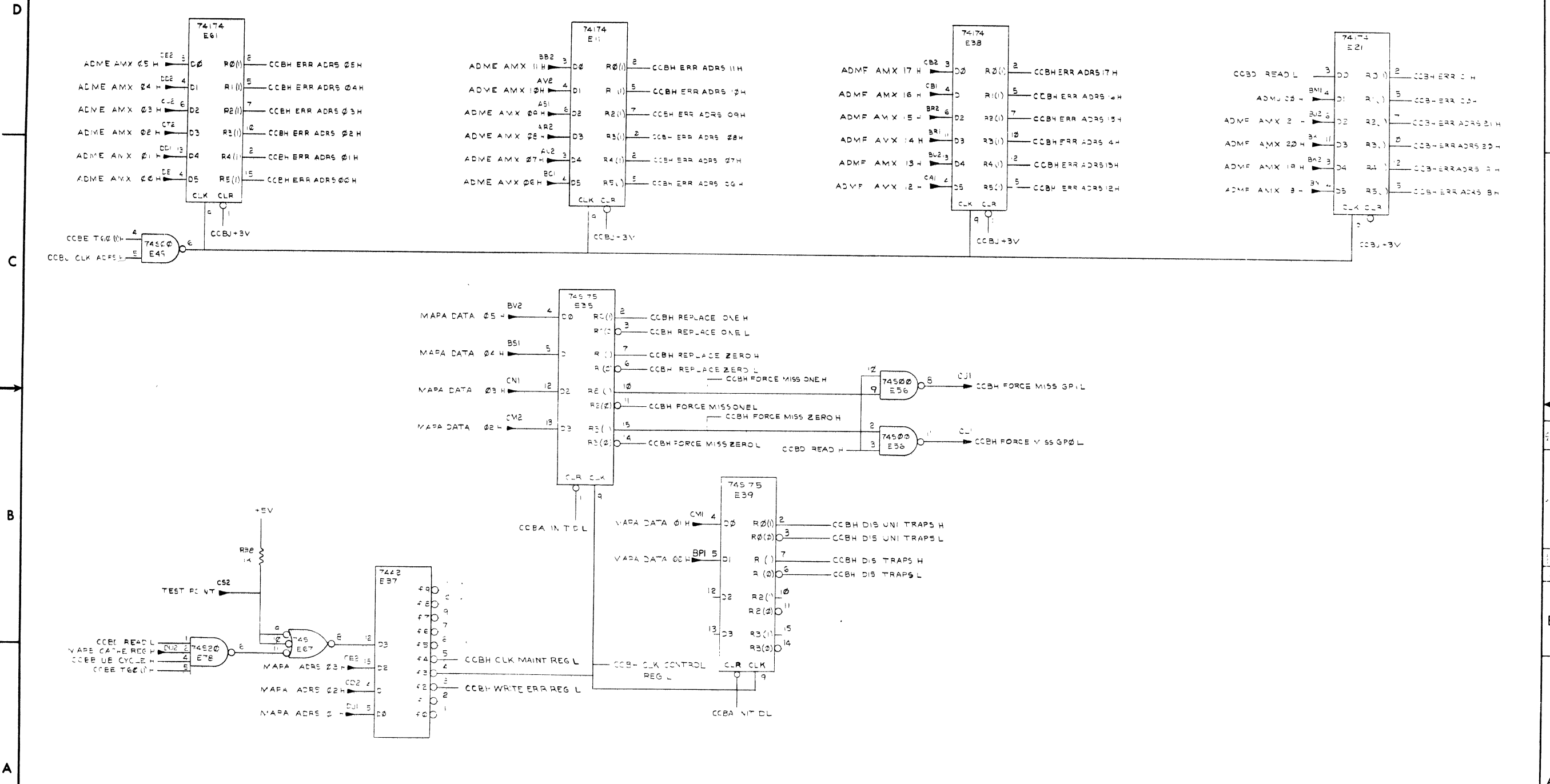
D 1-0-2181800-1

REVISIONS		
CHK	CHANGE NO	REV

REGISTER DATA PATH (SLOT 17)		TITLE (CCBF) CACHE CONTROL BOARD	SIZE CODE	NUMBER	REV
		D 1-0-2181800-1			D
SCALE	SHEET 7 OF 13	DIST			

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0 1-0-2618MSS 2



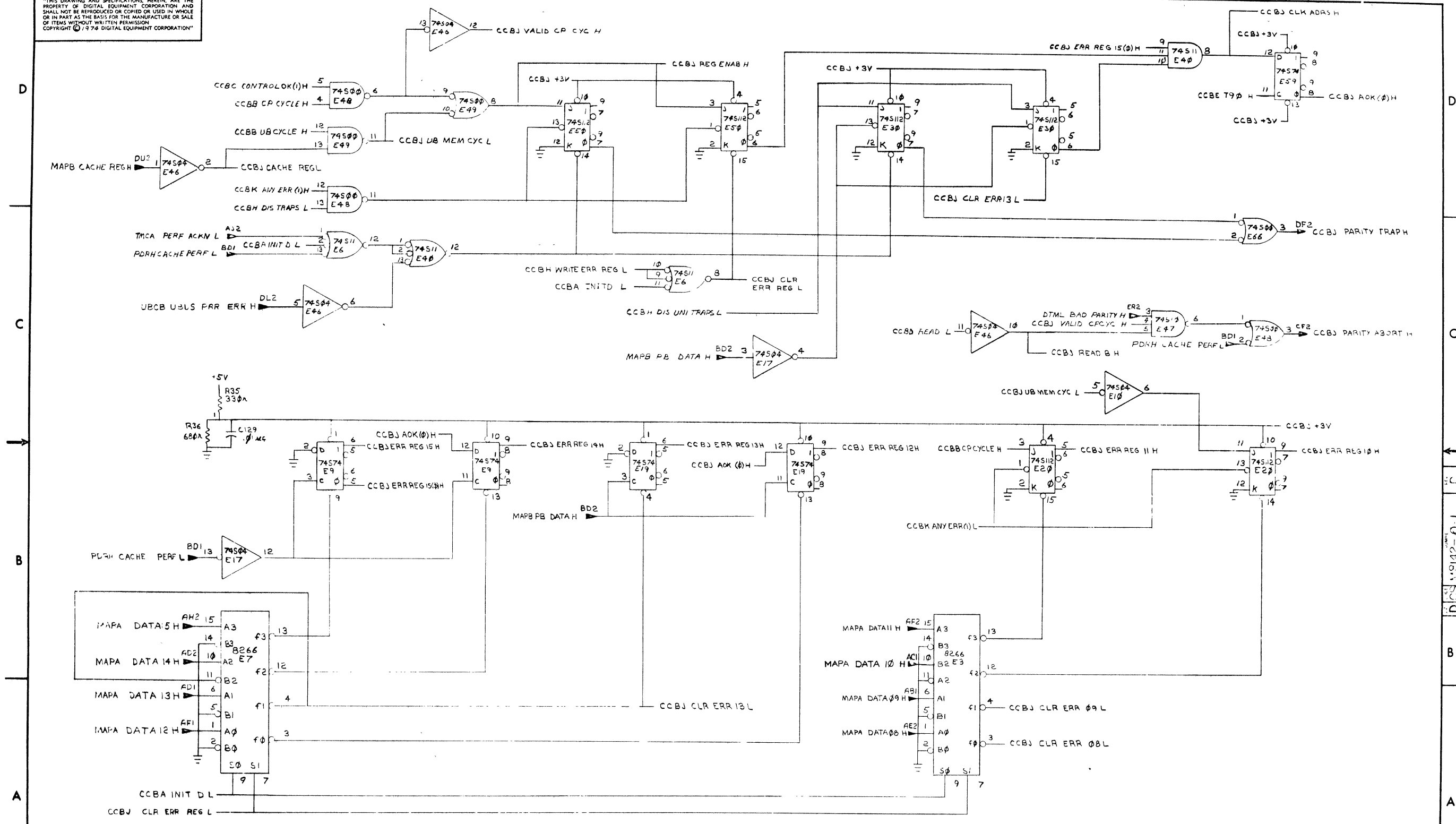
REVISIONS		
CHK	CHANGE NO	REV

ERROR ADRS REG & DECODE (CLOT 17)

TITLE	CACHE CONTROL BOARD (CCBH)	SIZE CODE	D C5	NUMBER	M3142-0-1	REV	D
SCALE	++	SHEET	3	OF	13	DIST	

123

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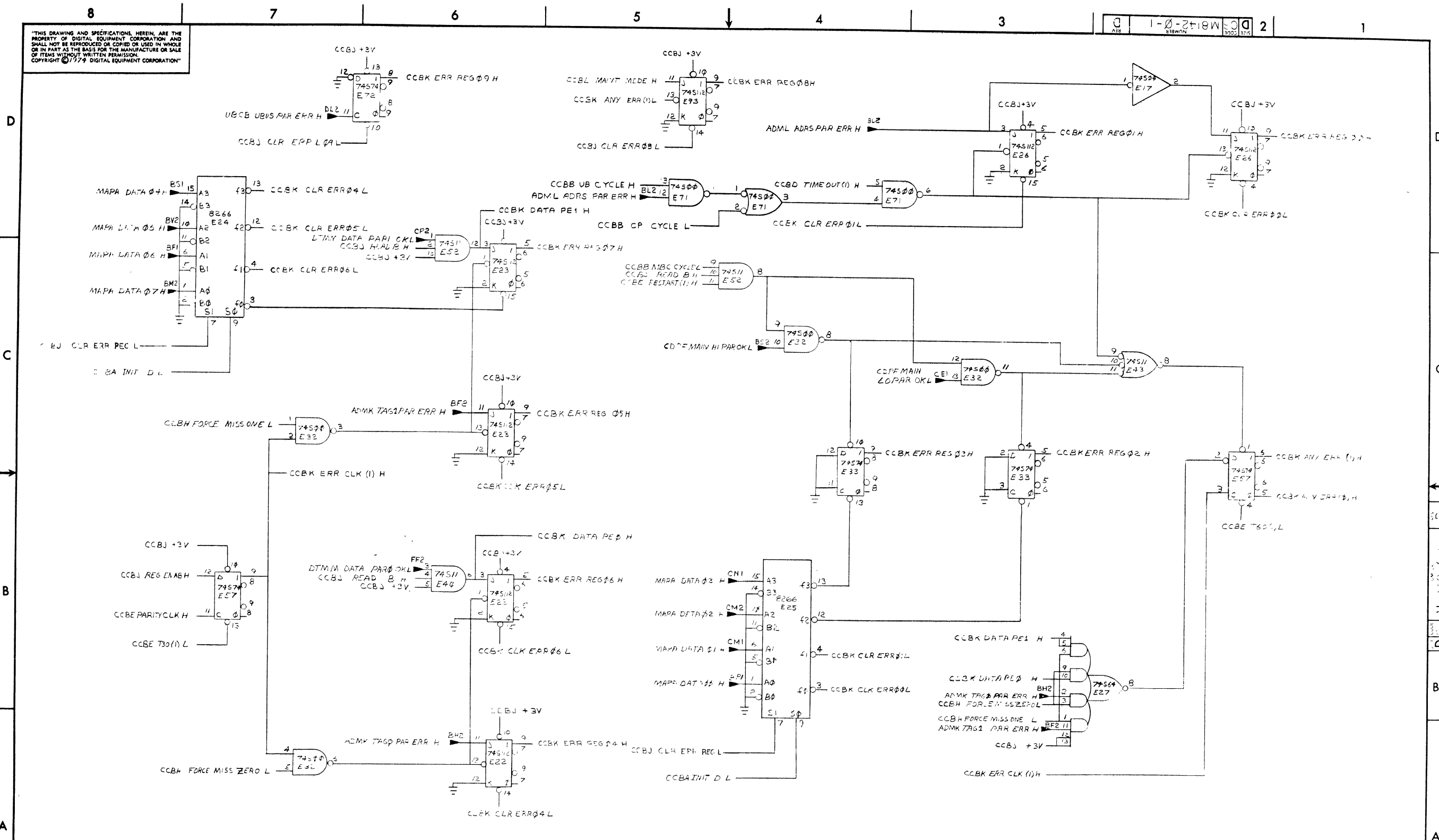
CACHE ERROR REGISTER (SLOT 17)

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	CACHE CONTROL BOARD (CCBJ)	SIZE CODE	D CS	NUMBER	ME142-0-1	REV.	D
SCALE	SHEET 9 OF 13	DILT					

DEC FORM NO 989 118
124

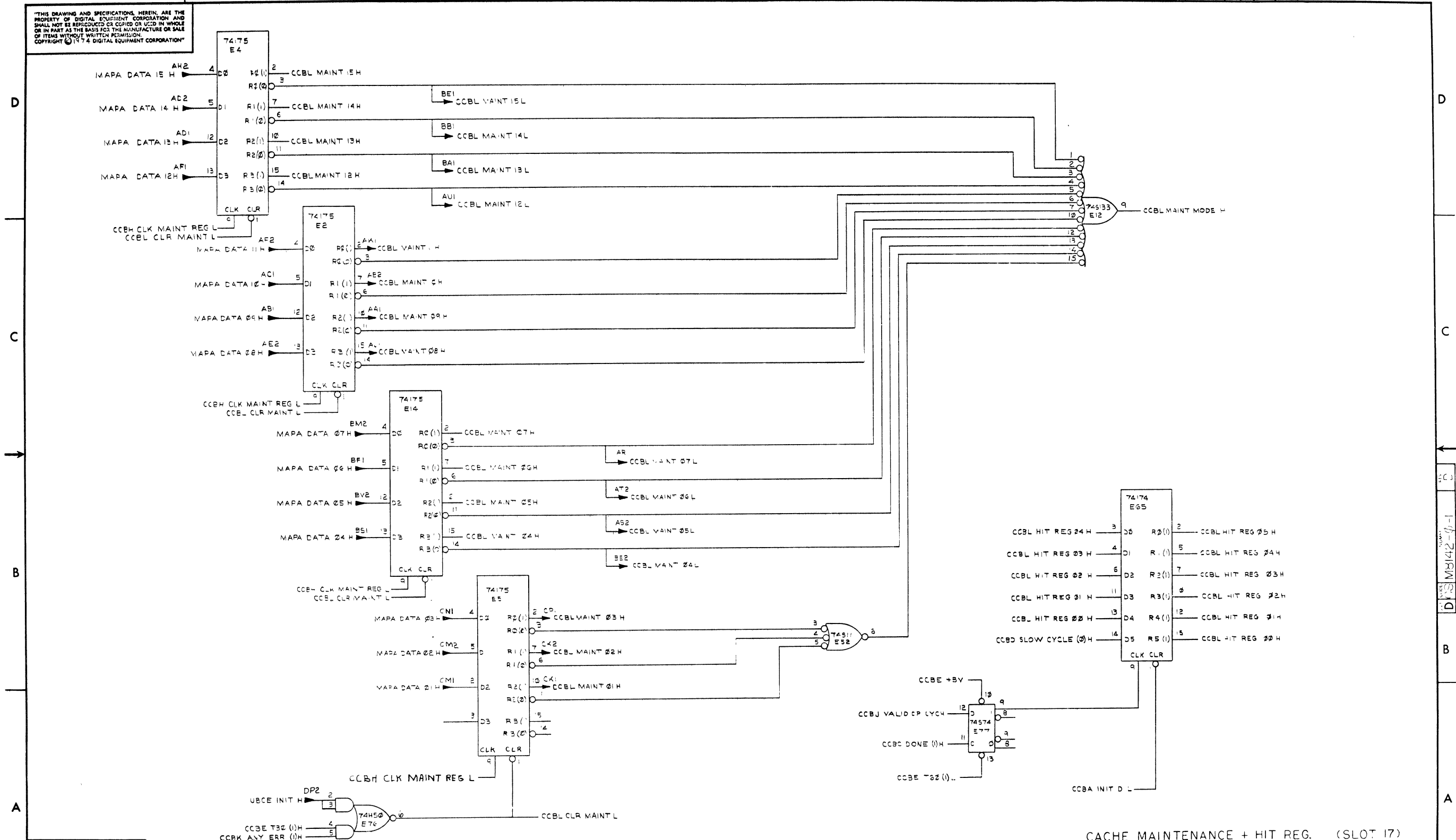
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REVISIONS		
CHK	CHANGE NO	REV

CACHE ERROR REGISTER (SLOT 17)			
TITLE	CACHE (CCBK) CONTROL BOARD	SIZE CODE	NUMBER
SCALE	SHEET 10 OF 13	DIST	REV D

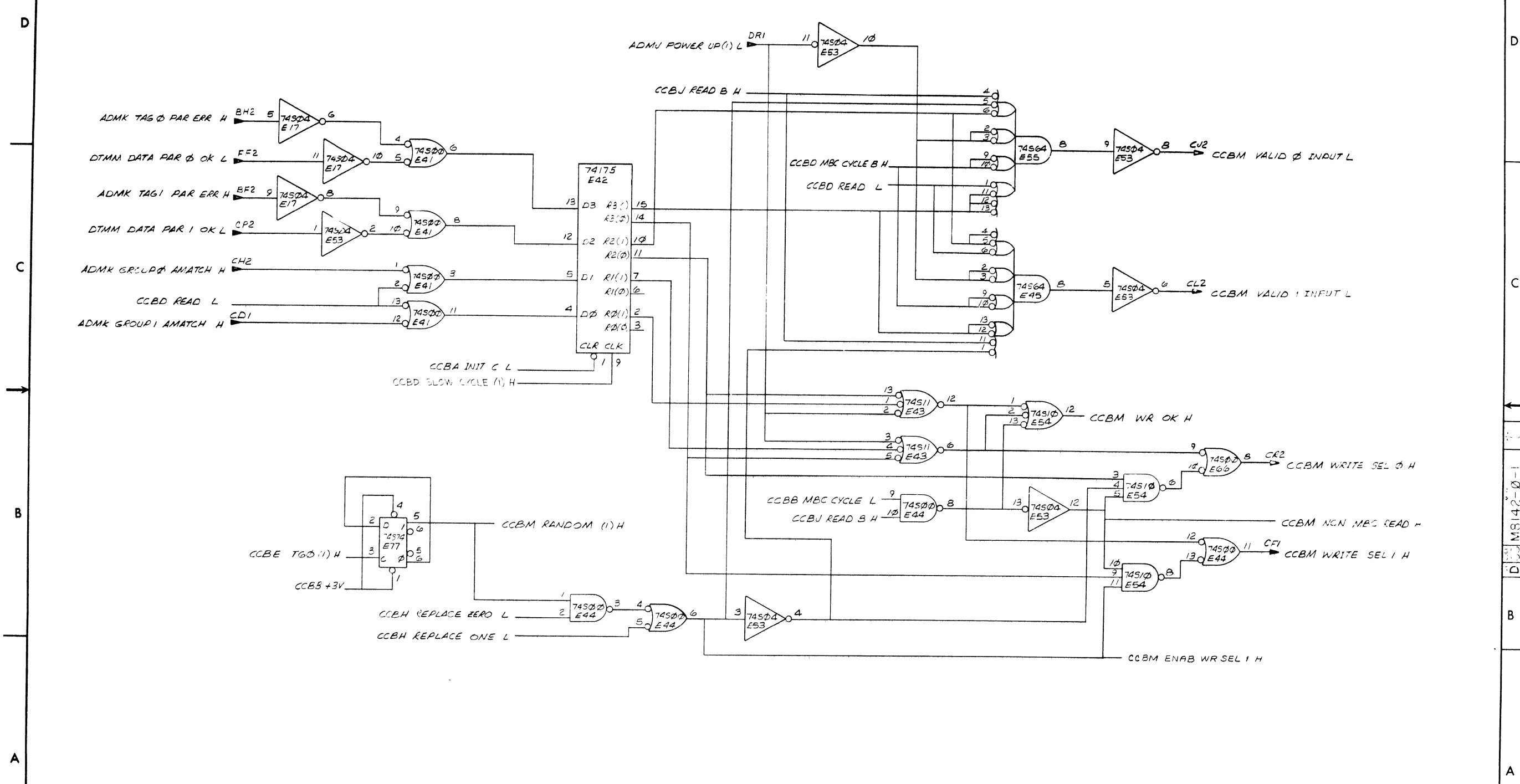
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REVISIONS		
CHK	CHANGE NO	REV

TITLE		CACHE MAINTENANCE + HIT REG. (SLOT 17)	SIZE CODE	NUMBER	REV.
CONTROL BOARD (CCBL)		D CS M8142-2-1	D	1	D
SCALE	SHEET	11 OF 15	DIST		

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REVISIONS		
CHK	CHANGE NO	REV

1074

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1777740 ERROR ADDRESS LOW
 1777742 ERROR ADDRESS HI
 1777744 ERROR REGISTER
 1777746 CONTROL REGISTER
 1777750 MAINTENANCE REGISTER
 1777752 HIT MISS

CACHE ERROR REGISTER

BIT	DESCRIPTION
ERR REG 15	CPU ABORT
ERR REG 14	CPU ABORT AFTER ADRS LOCK
ERR REG 13	PARITY ERROR ON DATA TO UNIBUS
ERR REG 12	PARITY ERROR ON DATA TO UNIBUS AFTER ADRS LOCK
ERR REG 11	ERROR DURING CP CYCLE
ERR REG 10	ERROR DURING UNIBUS CYCLE
ERR REG 09	CPU RECEIVED PARITY ERROR FROM UNIBUS CYCLE
ERR REG 08	ERROR IN MAINTENANCE MODE
ERR REG 07	FAST DATA MEMORY PARITY ERROR GROUP 1
ERR REG 06	FAST DATA MEMORY PARITY ERROR GROUP 0
ERR REG 05	ADDRESS MEMORY PARITY ERROR GROUP 1
ERR REG 04	ADDRESS MEMORY PARITY ERROR GROUP 0
ERR REG 03	MAIN MEMORY PARITY ERROR ODD WORD
ERR REG 02	MAIN MEMORY PARITY ERROR EVEN WORD
ERR REG 01	MAIN MEMORY ADDRESS PARITY ERROR
ERR REG 00	MAIN MEMORY TIMEOUT

CONTROL REGISTER

BIT	DESCRIPTION
05	FORCE REPLACEMENT TO GROUP 1
04	FORCE REPLACEMENT TO GROUP 0
03	FORCE MISS GROUP 1 (READ CYCLES)
02	FORCE MISS GROUP 0 (READ CYCLES)
01	DISABLE UNIBUS PB TRAPS
00	DISABLE CPU AND FAST MEMORY TRAPS

CACHE MAINTENANCE REGISTER

BIT	DESCRIPTION
MAINT 15	FORCE MAIN MEMORY ODD WORD, HI BYTE PARITY BIT TO 1
MAINT 14	FORCE MAIN MEMORY ODD WORD, LO BYTE PARITY BIT TO 1
MAINT 13	FORCE MAIN MEMORY EVEN WORD, HI BYTE PARITY BIT TO 1
MAINT 12	FORCE MAIN MEMORY EVEN WORD, LO BYTE PARITY BIT TO 1
MAINT 11	FORCE WRONG ADDRESS MEMORY PARITY GROUP 1
MAINT 10	FORCE WRONG ADDRESS MEMORY PARITY GROUP 1
MAINT 09	FORCE WRONG ADDRESS MEMORY PARITY GROUP 0
MAINT 08	FORCE WRONG ADDRESS MEMORY PARITY GROUP 0
MAINT 07	FORCE FAST DATA MEMORY GROUP 1 HI BYTE PARITY BIT TO 1
MAINT 06	FORCE FAST DATA MEMORY GROUP 1 LO BYTE PARITY BIT TO 1
MAINT 05	FORCE FAST DATA MEMORY GROUP 0 HI BYTE PARITY BIT TO 1
MAINT 04	FORCE FAST DATA MEMORY GROUP 0 LO BYTE PARITY BIT TO 1
MAINT 03	MAIN MEMORY MARGIN CODE
MAINT 02	
MAINT 01	
MAINT 00	NOT USED

MAINT 3	MAINT 2	MAINT 1	DESCRIPTION
0	0	0	NORMAL OPERATION
0	0	1	CHECK WRONG ADDRESS PARITY
0	1	0	EARLY STROBE MARGIN
0	1	1	LATE STROBE MARGIN
1	0	0	LOW CURRENT MARGIN
1	0	1	HIGH CURRENT MARGIN
1	1	0	NOT USED
1	1	1	NOT USED

11/70 PARITY ERROR RESPONSE

SOURCE OF CYCLE	CYCLE TYPE	TYPE OF ERROR	ACTION*				BITS SET IN ERROR REGISTER
			ALL TRAPS ENABLED	DISABLE WARNING TRAPS (CR00 1)	DISABLE ALL TRAPS (CR 01,00 3)		
CPU to CACHE	DATI/P	MAIN BUS TIMEOUT	ABORT	ABORT	ABORT	15 11 0	
		MAIN BUS PARITY	ABORT	ABORT	ABORT	15 11 1	
		MAIN MEM WANTED WORD	ABORT	ABORT	ABORT	15 11 2 or 3	
	DATO/B	MAIN MEM OTHER WORD	TRAP	NO ACTION	NO ACTION	11 2 or 3	
		FAST MEM ADDRESS	TRAP	NO ACTION	NO ACTION	11 4 or 5	
		FAST MEM DATA	TRAP	NO ACTION	NO ACTION	11 6 or 7	
UNIBUS (thru MAP) to CACHE	DATI/P	MAIN BUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	NONE	
		MAIN BUS PARITY	UNIBUS TIMEOUT, TRAP	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 1	
		MAIN MEM WANTED WORD	UNIBUS PB, TRAP	UNIBUS PB, TRAP	UNIBUS PB, TRAP	13 10 2 or 3	
		MAIN MEM OTHER WORD	TRAP	NO ACTION	NO ACTION	10 2 or 3	
		FAST MEM ADDRESS	TRAP	NO ACTION	NO ACTION	10 4 or 5	
		FAST MEM DATA	TRAP	NO ACTION	NO ACTION	10 6 or 7	
	DATO/B	MAIN BUS TIMEOUT	UNIBUS TIMEOUT, TRAP	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 0	
		MAIN BUS PARITY	UNIBUS TIMEOUT, TRAP	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 1	
		FAST MEM ADDRESS	TRAP	NO ACTION	NO ACTION	10 4 or 5	
		DATI/P	MAIN BUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	NONE
			MAIN BUS PARITY	ABORT TO 4	ABORT TO 4	ABORT TO 4	10 1
			MAIN MEM WANTED WORD	UNIBUS TIMEOUT, TRAP	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 1
DATO/B	MAIN MEM OTHER WORD	UNIBUS PARITY	UNIBUS PARITY	UNIBUS PARITY	13, 10, 9 2 or 3		
	FAST MEM ADDRESS	ABORT TO 114	ABORT TO 114	ABORT TO 114	10 2 or 3		
	FAST MEM DATA	TRAP	NO ACTION	NO ACTION	10 4 or 5		
	MAIN BUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 6 or 7		
	MAIN BUS PARITY	ABORT TO 4	ABORT TO 4	ABORT TO 4	10 1		
	FAST MEM ADDRESS	UNIBUS TIMEOUT, TRAP	UNIBUS TIMEOUT	UNIBUS TIMEOUT	10 1		

* ALL TRAPS VECTOR TO 114

NOTES

- 1 THESE TABLES ONLY COVER SINGLE ERRORS
- 2 THE PROCESSOR ALSO WILL ABORT TO 114 WHEN DOING DATI/P CYCLES ON THE UNIBUS AND THE DEVICE ASSERTS PB IN THESE CASES, BIT 9 SETS IN THE ERROR REGISTER.
- 3 ERRORS ON MASSBUS CYCLES ARE HANDLED BY THE MASSBUS CONTROLS, AND HAVE AN EFFECT ON THE ERROR REGISTER

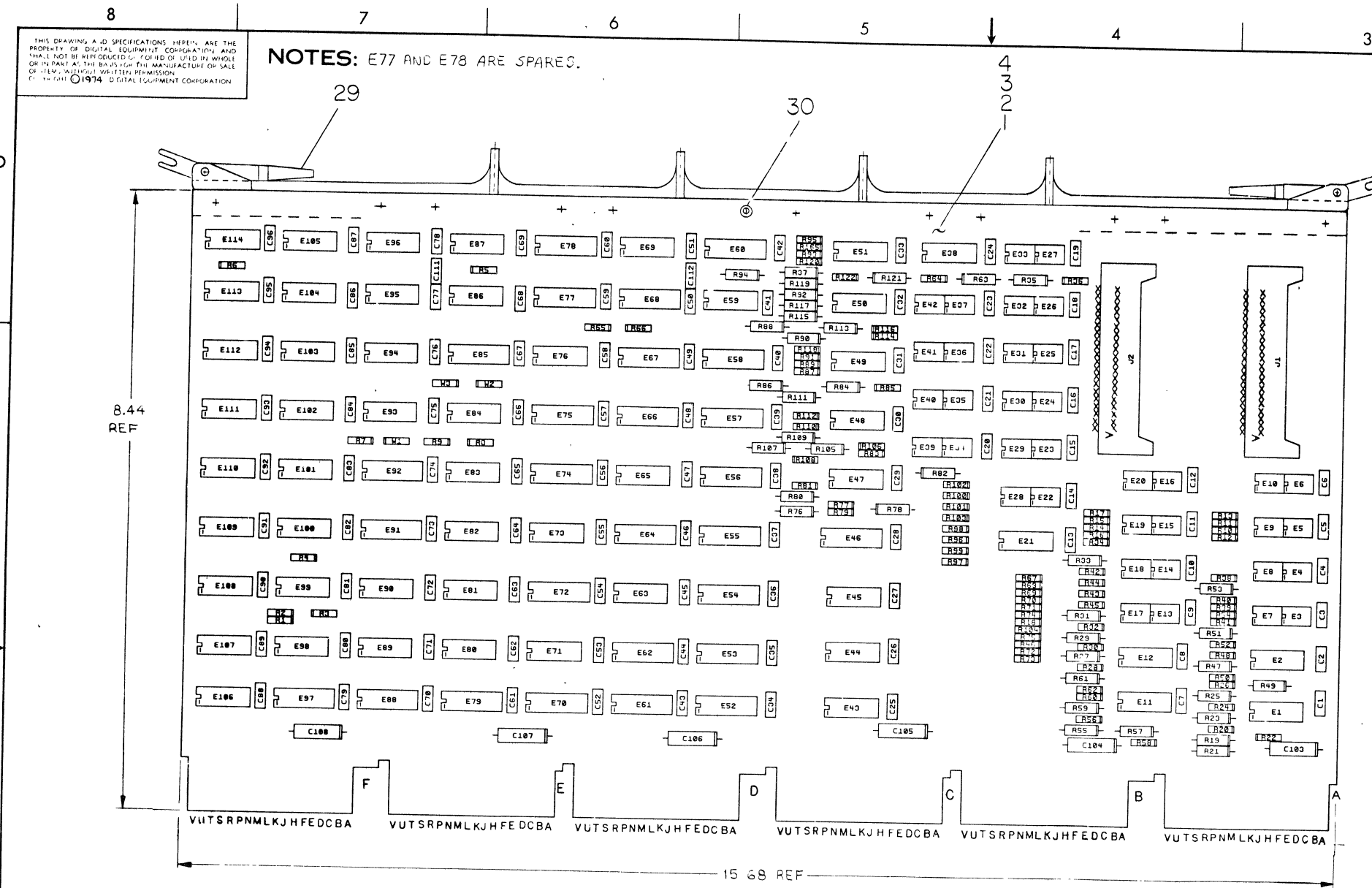
REVISIONS

CHK	CHANGE NO	REV

DCS M8142-0-1-D

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NOTES: E77 AND E78 ARE SPARES.

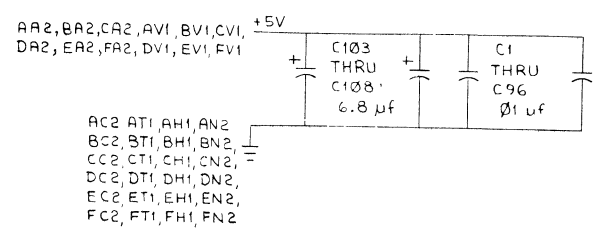


1-0-51818102

REF	X-Y COORDINATE HOLE LOCATION	K-CD-M8145-B-A	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8145-B-5	2
REF	MODULE ECO HISTORY	B-MH-M8145-B-6	3
1	ETCHED CIRCUIT BOARD	501:386	4
98	C1 THRU C96, C111, C112	CAPACITOR, .01uf, 100V, 20%	5
8	C103 THRU C108	CAPACITOR, 6.8uf, 35V, 20%	6
2	R5, R65	RESISTOR, 330 OHM, 1/4W, 5%	7
43	R1 THRU R4, R7 THRU R9, R10 THRU R18, R38 THRU R46, R67 THRU R75, R95 THRU R104	RESISTOR, 1K, 1/4W, 5%	8
2	R6, R66	RESISTOR, 680 OHM, 1/4W, 5%	9
38	R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R47, R49, R51, R53, R55, R57, R59, R61, R63, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R105, R107, R109, R111, R113, R115, R117, R119, R121	RESISTOR, 121 OHM, 1/2W, 1%	10
38	R20, R22, R24, R26, R28, R30, R32, R34, R36, R48, R50, R52, R54, R56, R58, R60, R62, R64, R77, R79, R81, R83, R85, R87, R89, R91, R93, R95, R108, R108, R110, R112, R114, R116, R118, R120, R122, R124	RESISTOR, 196 OHM, 1/4W, 1%	11
4	E52, E79, E88, E97	I C DEC 8266	12
5	E81, E82, E89, E100, E103	I C DEC 74580	13
4	E69, E80, E99, E108	I C DEC 74584	14
5	E43, E94, E90, E98, E107	I C DEC 74510	15
6	E73, E76, E83, E106, E109, E110	I C DEC 74511	16
2	E93, E113	I C DEC 74520	17
4	E86, E87, E94, E95	I C DEC 74564	18
6	E96, E101, E102, E104, E111, E112	I C DEC 74574	19
2	E44, E114	I C DEC 745140	20
9	E55, E58, E64, E66, E67, E70, E72, E74, E75	I C DEC 745158	21
18	E4, E8, E8, E10, E14, E16, E18, E20, E22, E23, E24, E25, E27, E34, E35, E36, E37, E26	I C DEC 74542	22
12	E46, E53, E54, E56, E57, E60, E61, E62, E68, E85, E91, E92	I C DEC 745175	23
18	E3, E5, E7, E9, E13, E15, E17, E19, E28, E29, E30, E31, E32, E33, E39, E40, E41, E42	I C DEC 74543	24
6	E21, E45, E59, E63, E65, E71	I C DEC 82562	25
11	E1, E2, E11, E12, E38, E47, E49, E49, E50, E51, E105	I C DEC 8640	26
3	W1, W2, W3	JUMPER	27
2	J1, J2	CONNECTOR BERG 40 PIN	28
1		HANDLE ASSY	29
12		EYELET	30
1		BLOCK DIAGRAM	31

IC TYPE	GND	+5V
IC DEC 8640	1	8
IC DEC 745175	8	16
IC DEC 74543	4	8
IC DEC 74542	4	8
IC DEC 745158	8	16
IC DEC 8266	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.



REV	DESCRIPTION
1	INITIAL DESIGN
2	REVISED FOR MANUFACTURE
3	REVISED FOR MANUFACTURE
4	REVISED FOR MANUFACTURE
5	REVISED FOR MANUFACTURE

DEC NO	EIA NO	DEC NO	EIA NO

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO

digital EQUIPMENT CORPORATION

TITLE: **CACHE DATA PATH**

SIZE: DCS M8145-0-1

NUMBER: 1

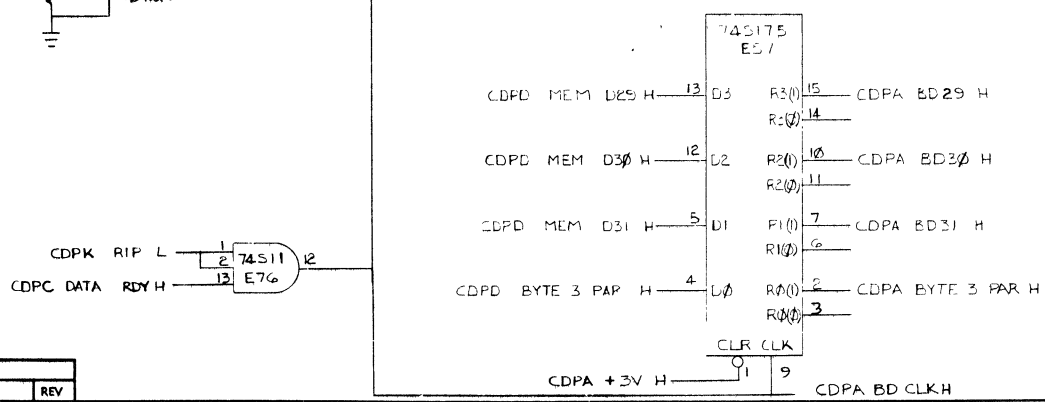
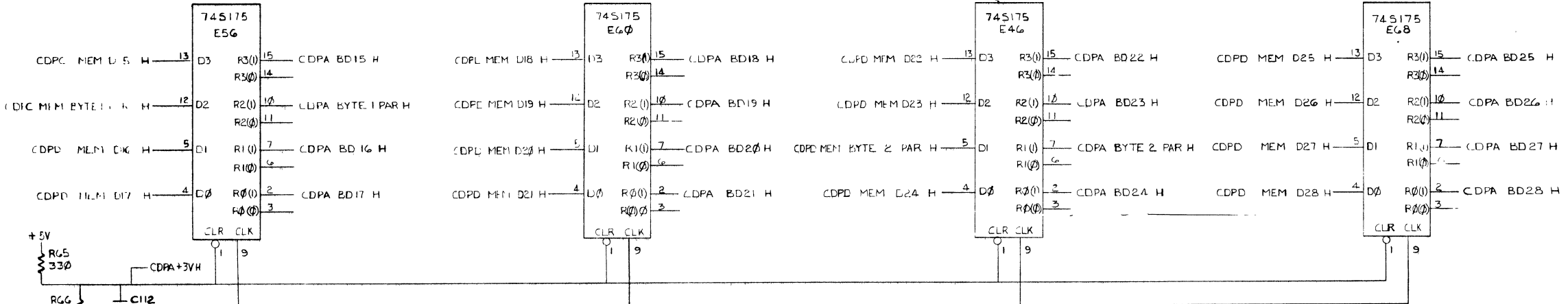
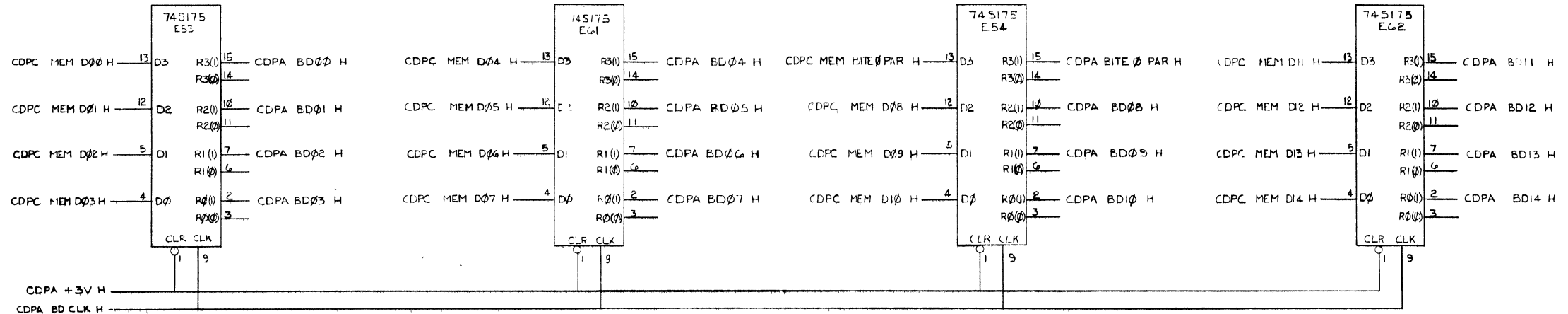
REV: C

SCALE: 1 OF 10

SHEET: 1 OF 10

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1-0-9718W 2



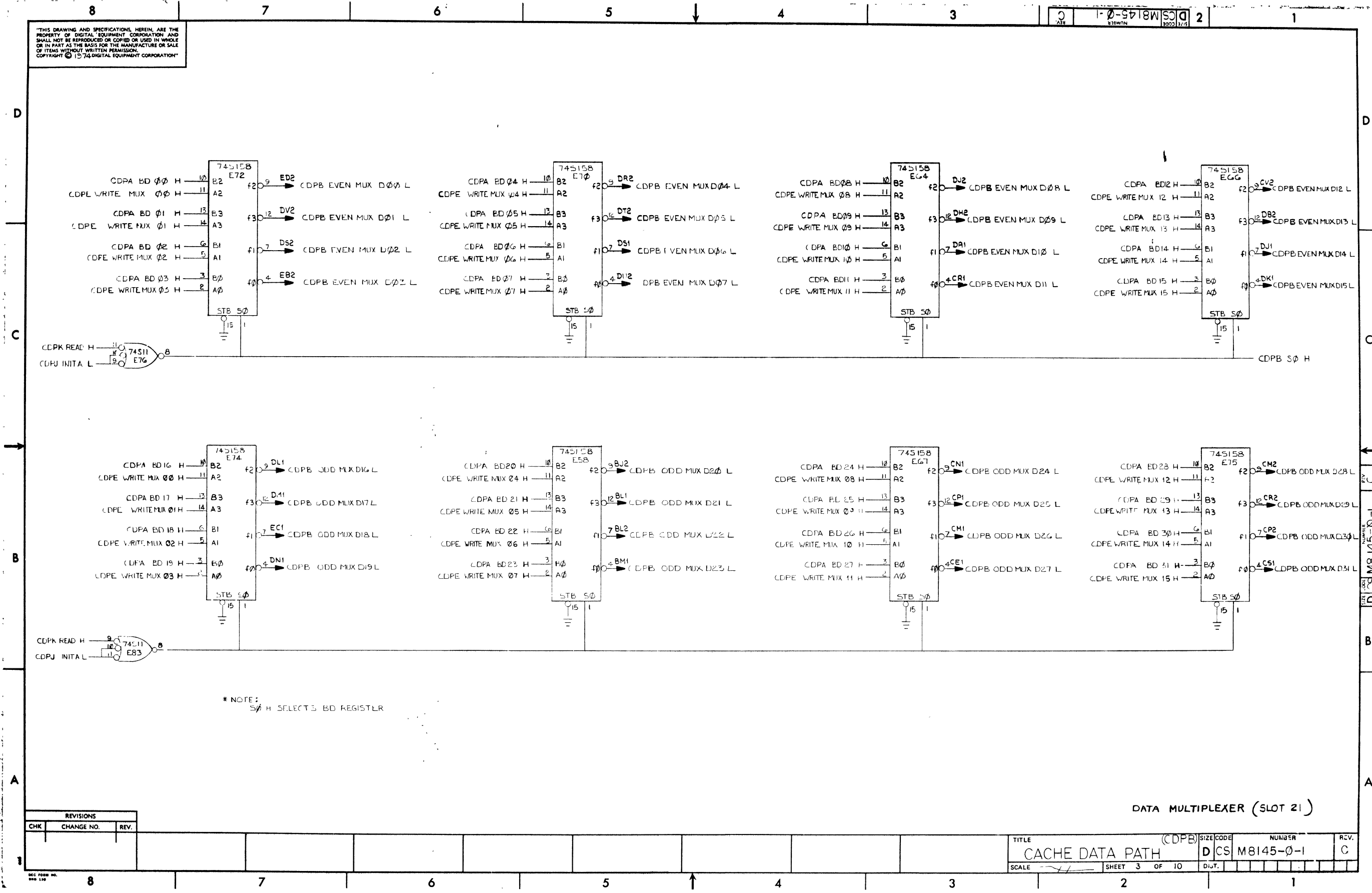
BD REGISTER (SLOT 21)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	(CDPA) CACHE DATA PATH	SIZE CODE	D CS	NUMBER	M8145-0-1	REV.	G
SCALE		SHEET	2	OF	10	DIST.	

170

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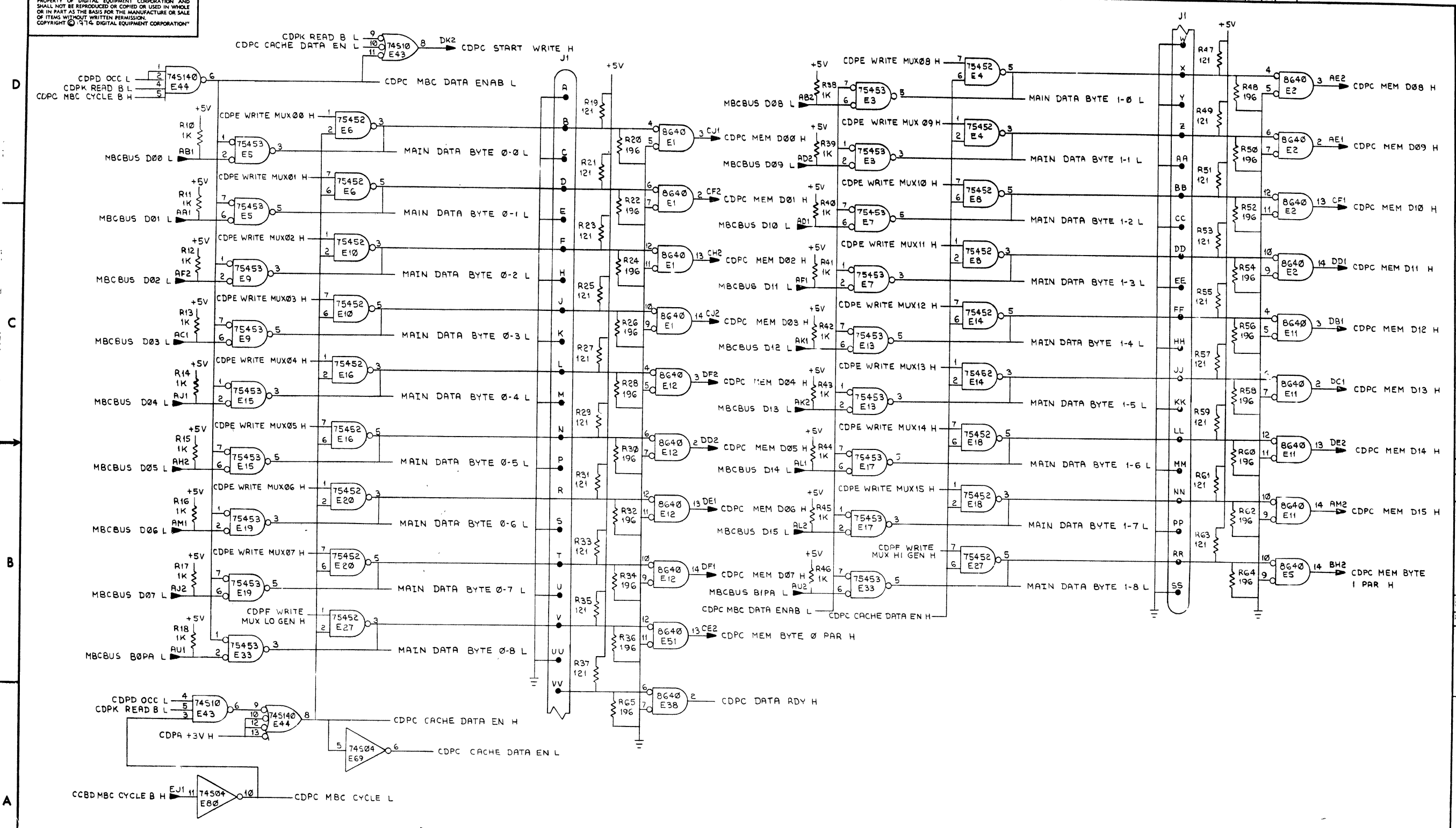
* NOTE:
S0 H SELECTS BD REGISTER

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(CDPB) SIZE CODE	NUMBER	REV.
CACHE DATA PATH		D CS	M8145-0-1	C
SCALE	SHEET 3 OF 10	DWG.		

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DCS M8145-0-1

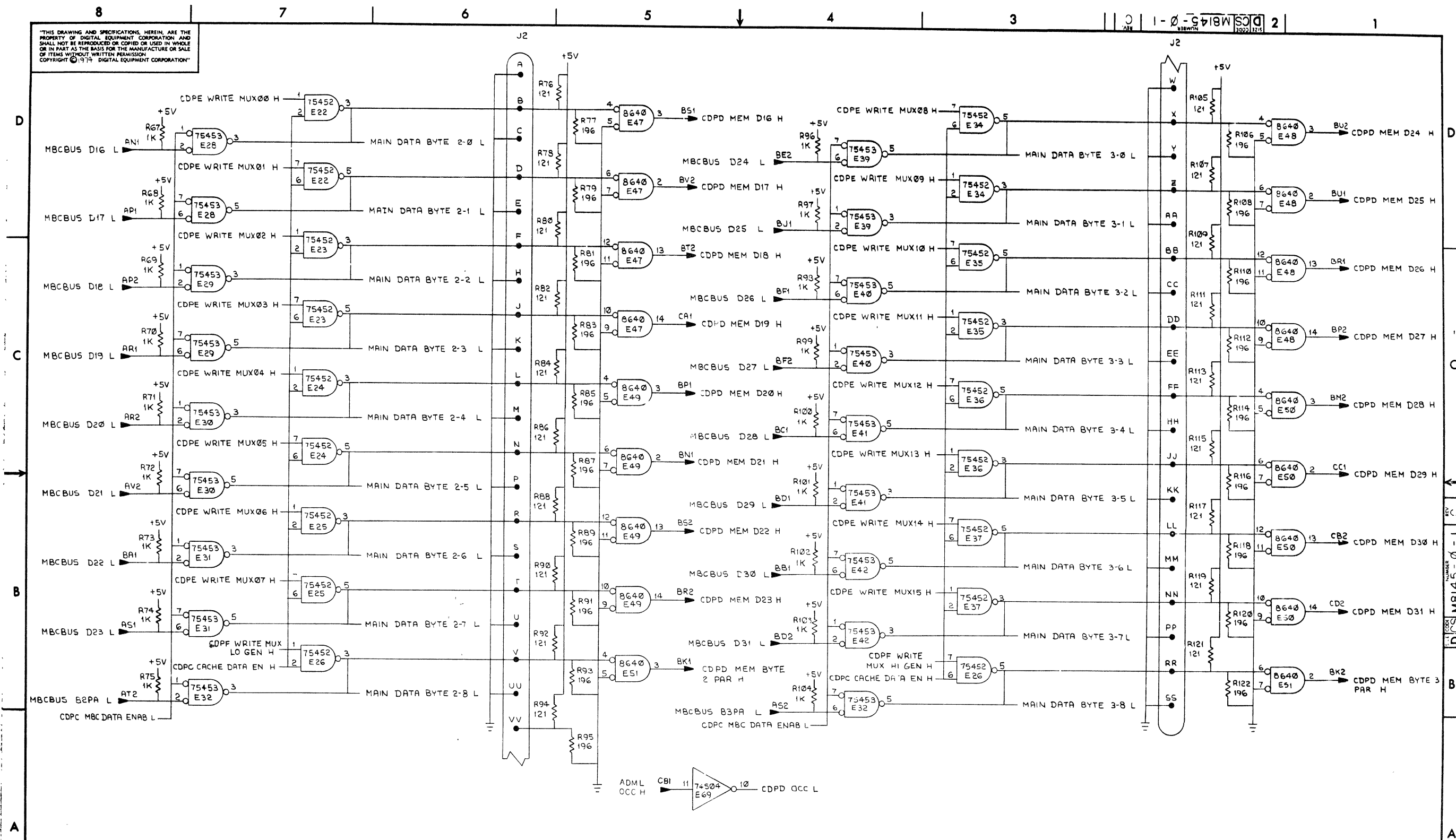


REVISIONS		
CHK	CHANGE NO.	REV.

MAIN MEMORY EVEN WORD (SLCT 21)

TITLE	CACHE DATA PATH (CDPC)	SIZE CODE	D CS	NUMBER	M8145-0-1	REV.	C
SCALE		SHEET	4	OF	10	DIST.	

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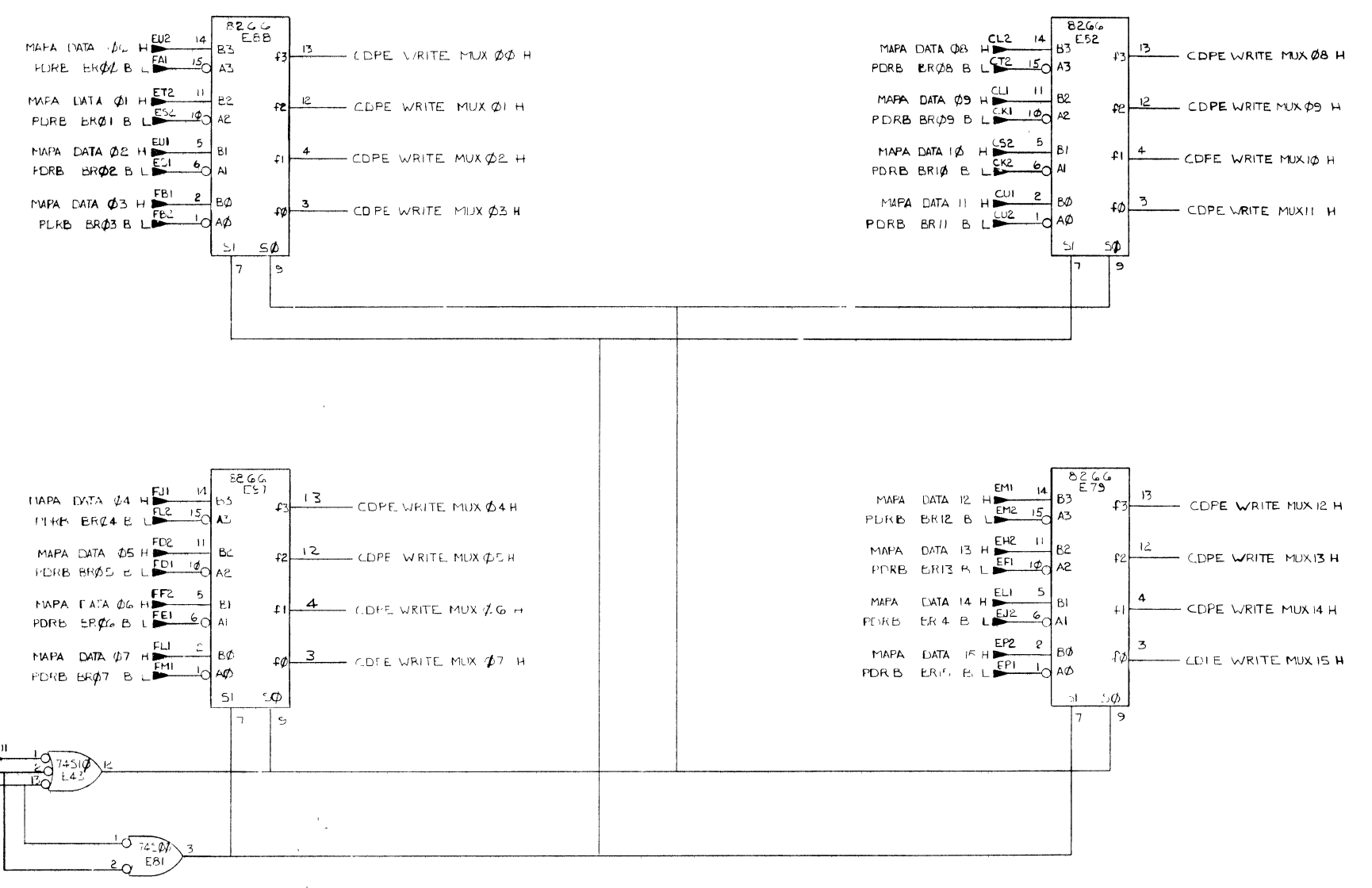


REVISIONS		
CHK	CHANGE NO	REV

MAIN MEMORY ODD WORD (SLOT 21)

TITLE	CACHE DATA PATH (CDPD)	SIZE/CODE	D CS	NUMBER	M8145-0-1	REV.	C
SCALE	SHEET 5 OF 10		DIST.				

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I	O	OUTPUT	OPERATION
L	L	MAP DATA	UNIBUS CYCLE
L	H	BR DATA	CP CYCLE
H	L	MAP DATA	CAN'T HAPPEN
H	H	ALL '1'	MBC CYCLE, PUP

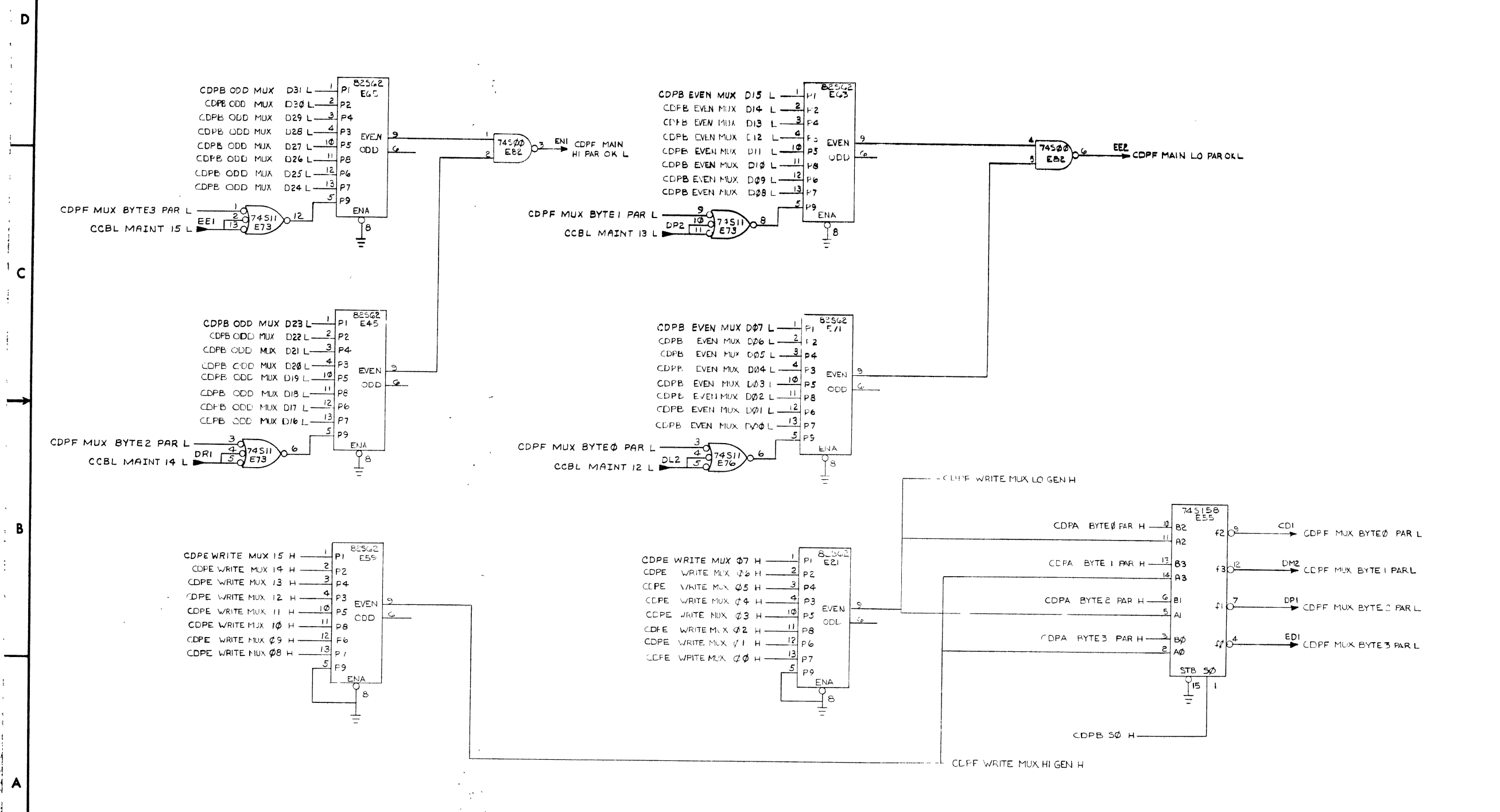
WRITE MULTIPLEXER (SLOT 21)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(CDPE)	SIZE CODE	NUMBER	R.V.
CACHE DATA PATH		D CS	M8145-0-1	C
SCALE		SHEET	6 OF 10	D.W.T.

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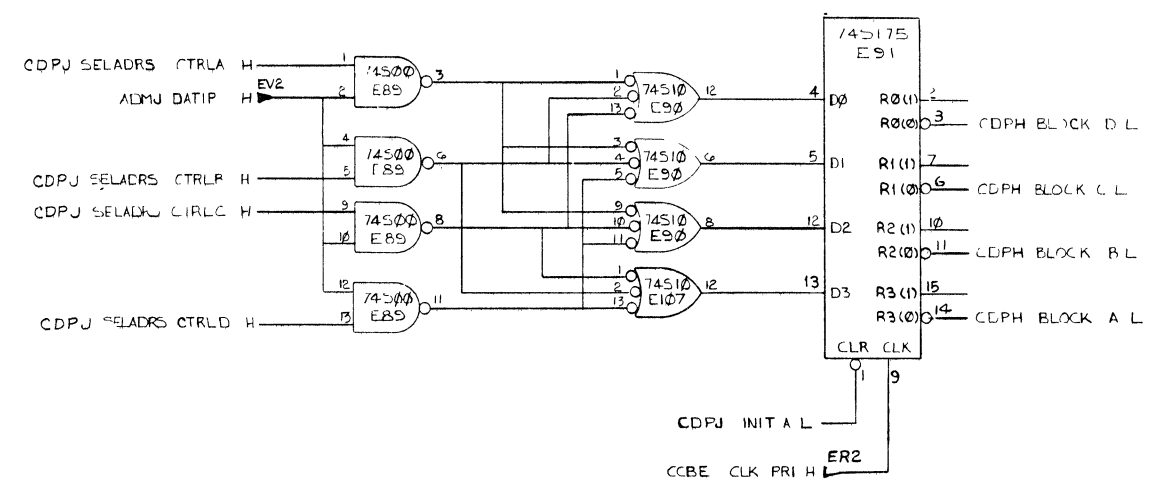
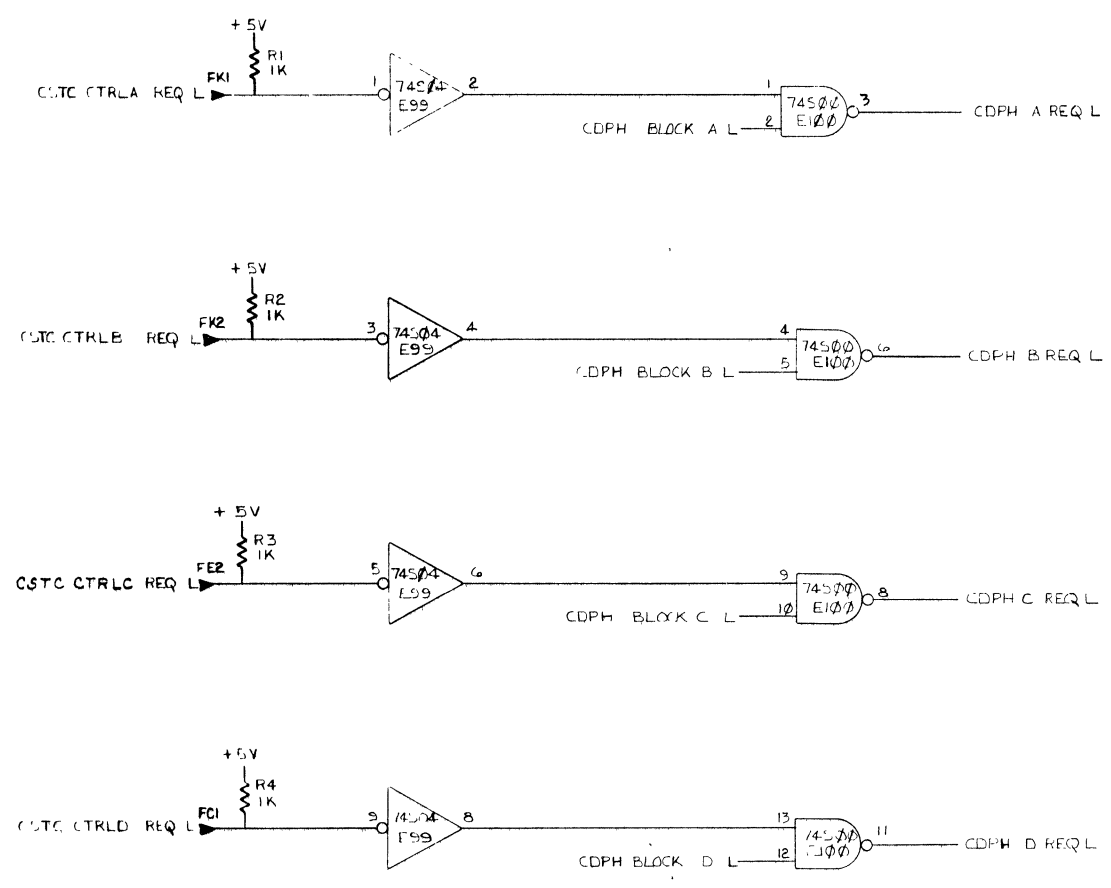
REVISIONS		
CHK	CHANGE NO	REV.

MEMORY PARITY CONTROL (SLOT 21)

TITLE	(CDPF)	SIZE CODE	NUMBER	REV.
CACHE DATA PATH	DCS	M8145-0-1	C	
SCALE	SHEET 7 OF 10	DIST		

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REVISIONS		
CHK	CHANGE NO.	REV.

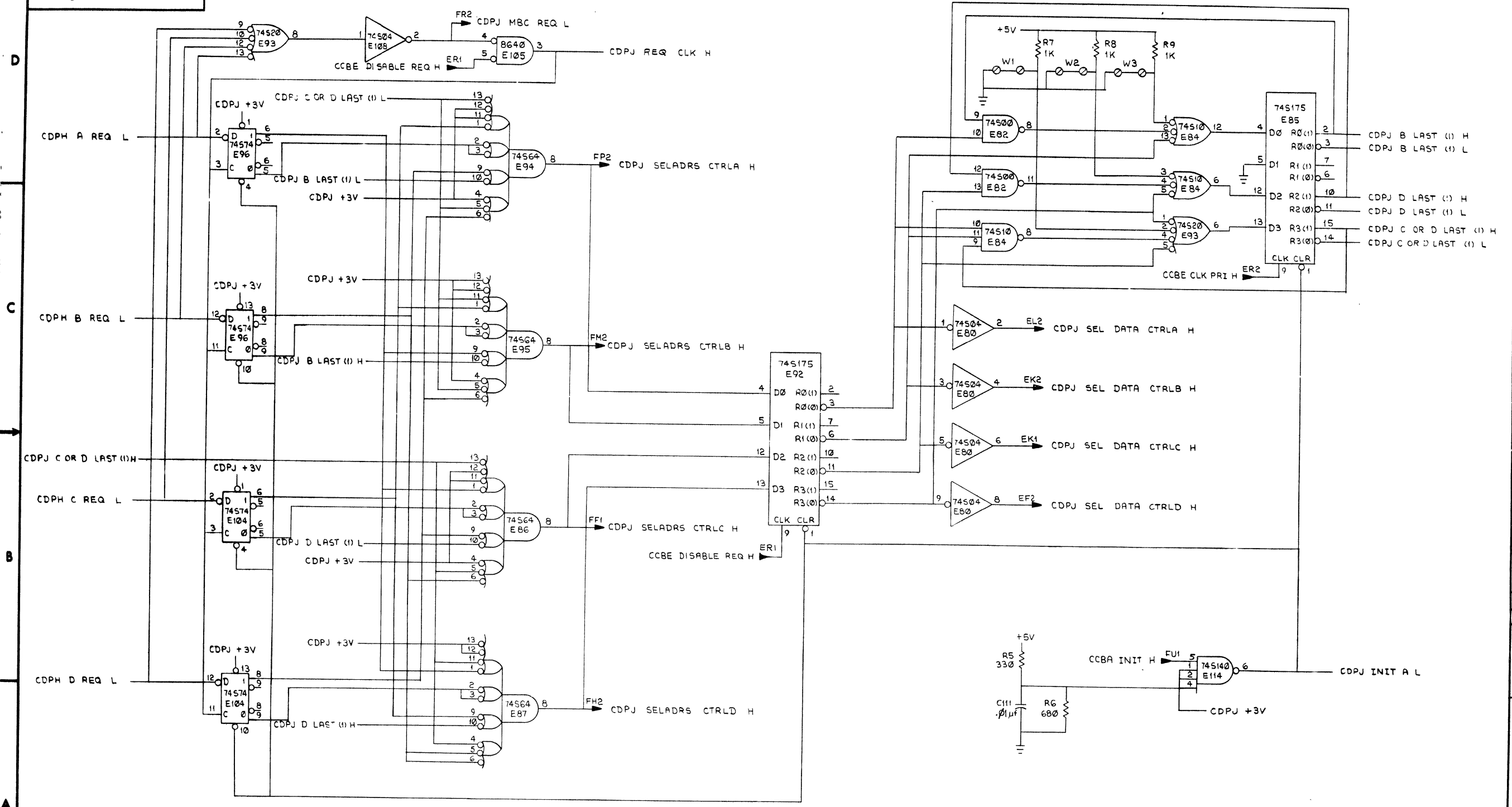
MBC REQUEST (SLOT 21)

TITLE	(CDPH)	SIZE	5000	NUMBER		REV.	
CACHE DATA PATH		D	CS	M8145-0-1		C	
SCALE		UNIT	B	OF	10	DATE	

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1-0-9718 M8145-0-1 2

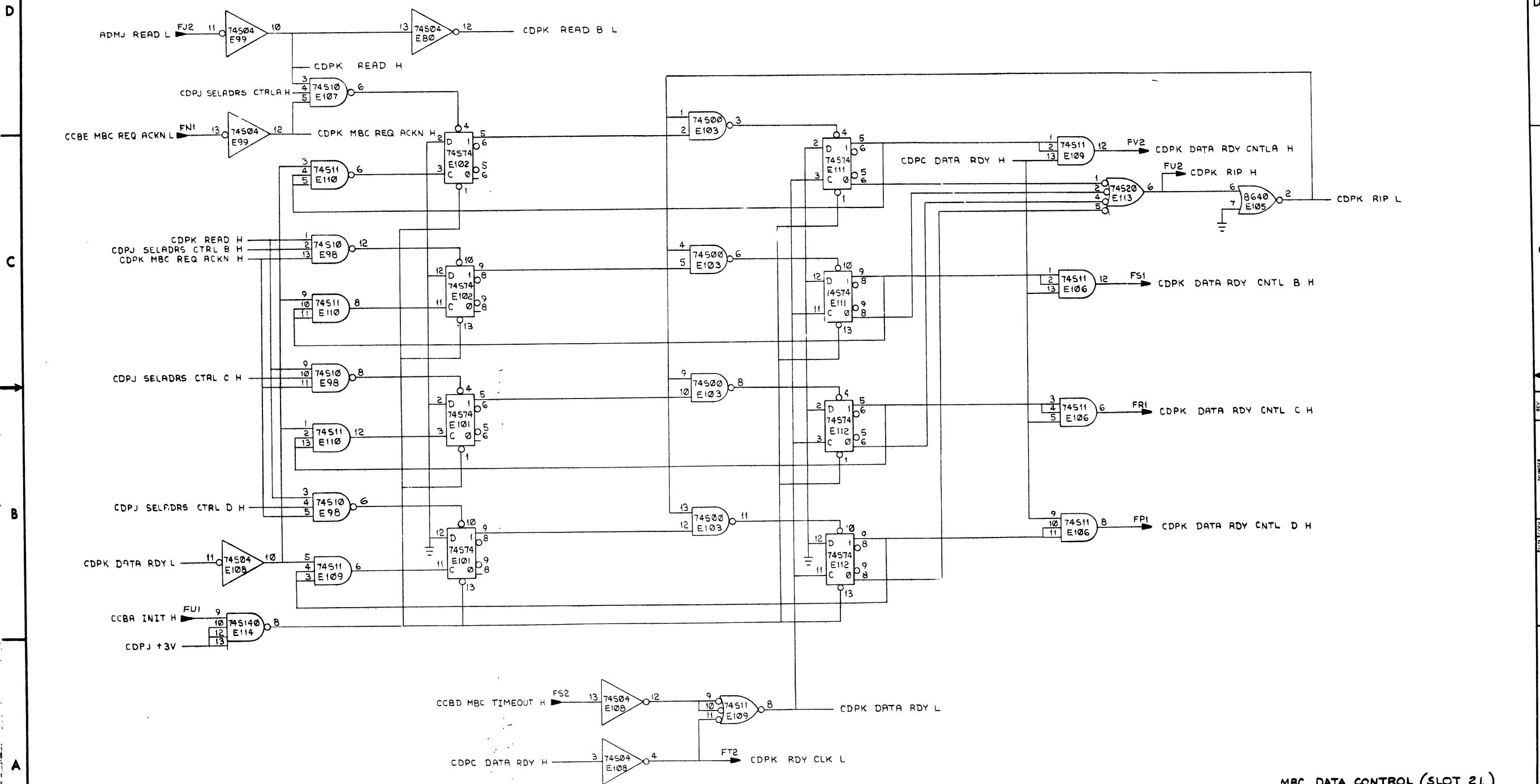


REVISIONS		
CHK	CHANGE NO.	REV.

MBC ARBITRAITOR (SLOT 21)

TITLE	CACHE DATA PATH (CDPJ)	SIZE CODE	DCS	NUMBER	M8145-0-1	REV.	C
SCALE		SHEET	9	OF 10		DIST.	

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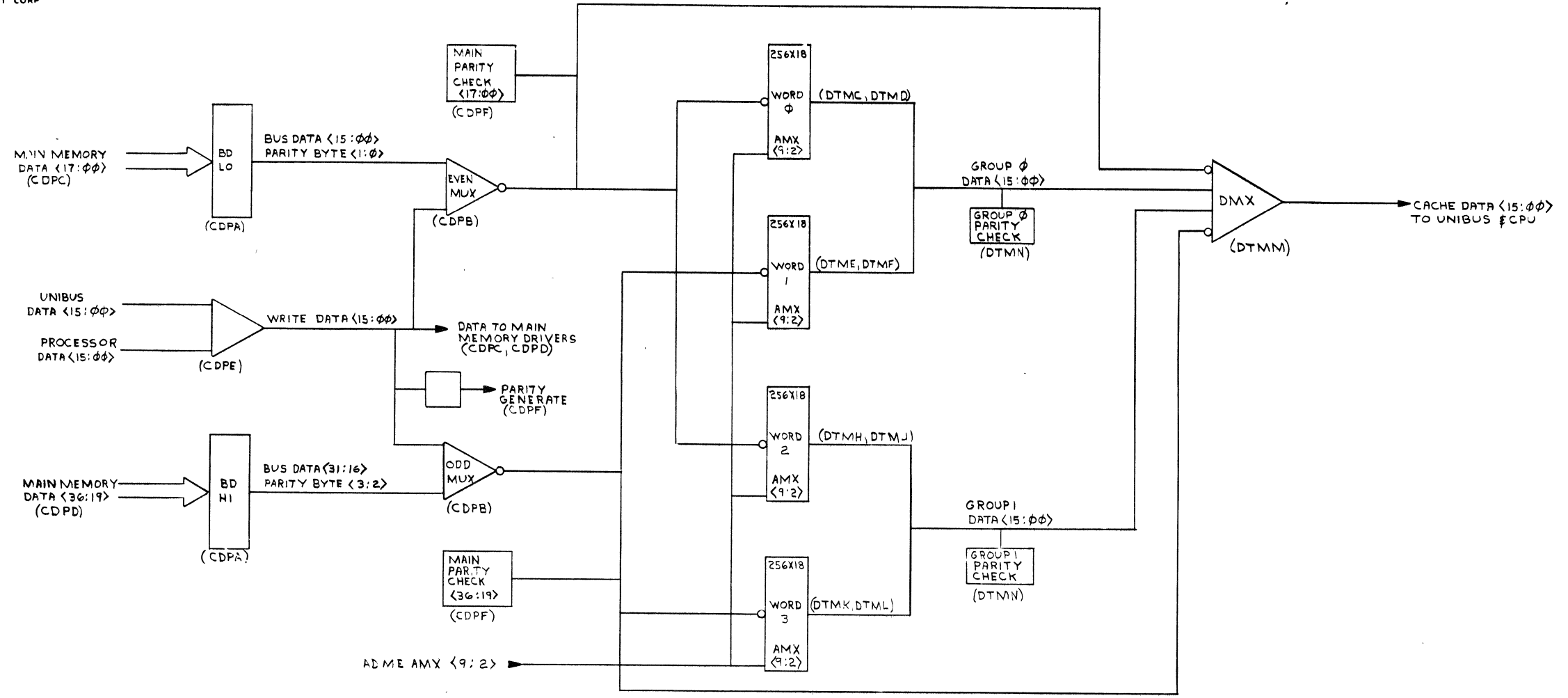
MBC DATA CONTROL (SLOT 21)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	CACHE DATA PATH (CDPK)	SIZE/SCALE	DCS	NUMBER	M8145-0-1	REV.	C
SCALE		SHEET	10	OF	10	DIST.	

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WORD SELECT

READ	A ϕ 1	MISS	RANDOM	WORD SELECT	FUNCTION
0	0	0	X	0, 2	WRITE HIT
0	1	0	X	1, 3	WRITE HIT
1	0	0	X	0, 2	READ HIT
1	1	0	X	1, 3	READ HIT
1	X	1	0	0, 1	READ MISS
1	X	1	1	2, 3	READ MISS

REV	CHG	NO

FIRST USED ON OPTION/MODEL
11/70

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS FRACTIONS ANGLES
± .005 ± 1/64 ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST			
DRN	DATE	CHK'D	DATE
11/10/75	11/10/75	11/10/75	11/10/75
ENG	DATE	PROD	DATE
11/10/75	11/10/75	11/10/75	11/10/75
TITLE		EQUIPMENT CORPORATION	
CACHE DATA PATH		MAYNARD HARBACH, CHIEF	
NEXT HIGHER ASSY		SCALE	REV
D-CS-MB145-0-1		11	*
SIZE CODE		NUMBER	DIST
D		MB145-0-7	
SHEET 1 OF 1			

D-BD-MB145-0-7

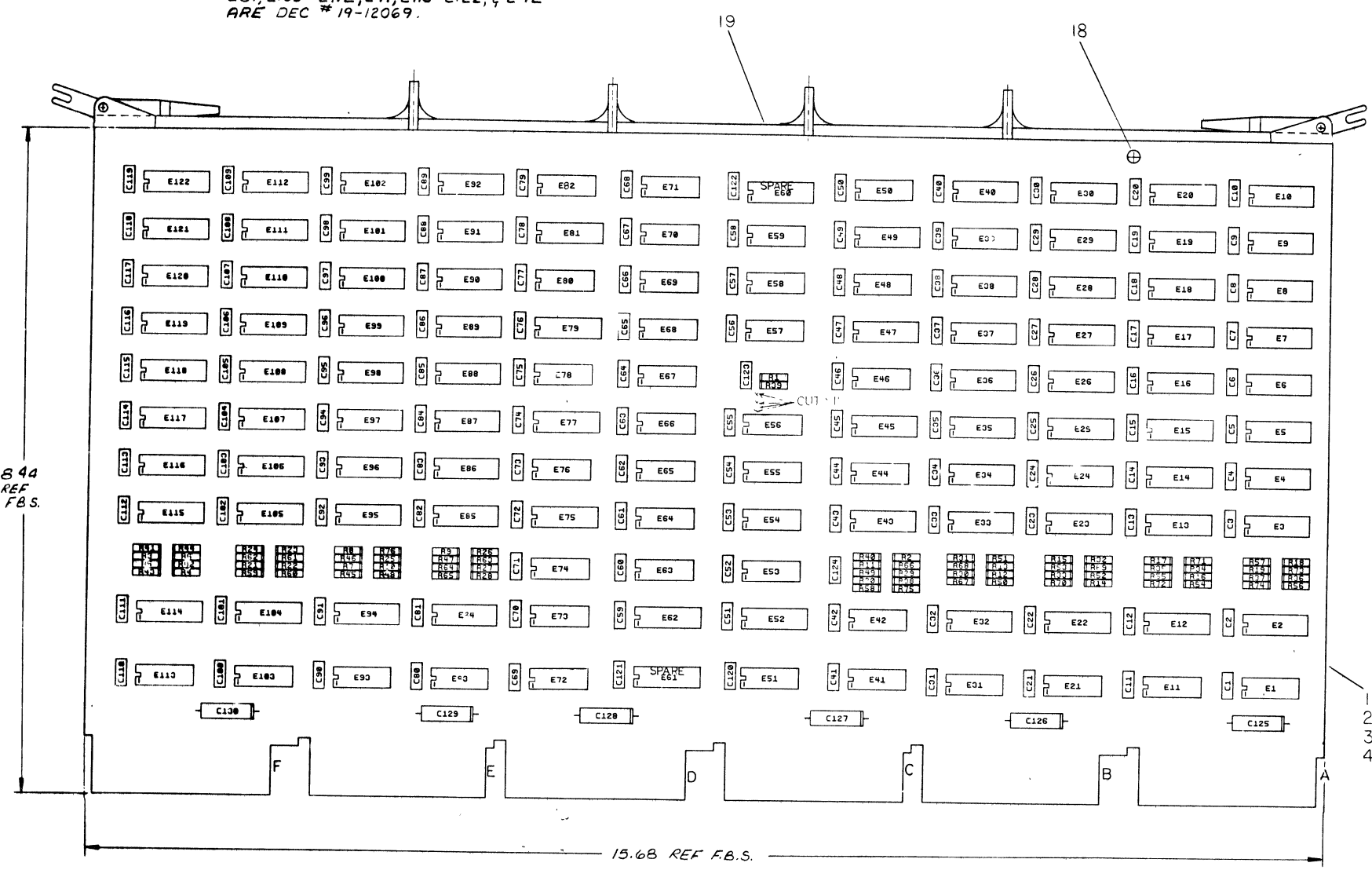
8 7 6 5 4 3

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NOTES:
 1. E3 - E10, E13 - E20, E23 - E30, E33 - E40, E43, E45, E47, E49, E75, E77, E79, E85 - E90, E95 - E102, E81, E105 - E112, E91, E115 - E122, & E92 ARE DEC # 19-12069.

* 1-0-0-18 W SC 2 1

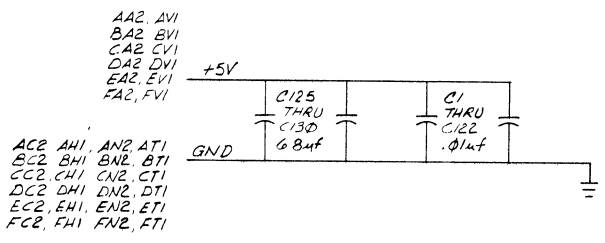
REF	X-Y COORDINATE HOLE LOC	P.C.D. 65041-0-4	ITEM NO
REF	ASSY DRILLING HOLE LAYOUT	D-AH-65041-0-5	2
REF	MODULE ECO HISTORY	E-MH-65041-0-6	3
1	ETCHED CIRCUIT BOARD	5011286	4
124	C1 THRU C124	CAP. .01uf, 100V, DISC	1001610-01
6	C125 THRU C130	CAP. 6.8uf, 35V, 10% TANT	1005306
2	R1, R2	RES. 270Ω, 1/4W, 5%	1301972
30	R3 THRU R38	RES. 330Ω, 1/4W, 5%	1300295
2	R39, R40	RES. 560Ω, 1/4W, 5%	1301890
36	R41 THRU R76	RES. 680Ω, 1/4W, 5%	1301924
8	E1, E21, E41, E53, E63, E72, E93, E113	IC DEC 74504	1910534
10	E2, E12, E22, E32, E52, E62, E84, E94, E104, E114	IC DEC 745153	1910547
72	E3 THRU E10, E13 THRU E20, E23 THRU E30, E33 THRU E40, E43, E45, E47, E49, E75, E77, E79, E85 THRU E90, E95 THRU E102, E81, E105 THRU E112, E91, E115 THRU E122, E92	SEE NOTE 1	19-12069
4	E11, E31, E83, E103	IC DEC 82562	1911291
3	E42, E73, E74	IC DEC 74500	1910532
18	E44, E46, E48, E50, E54 THRU E59, E64, E66, E68, E70, E76, E78, E80, E82	IC DEC 74540	1910541
5	E51, E65, E67, E69, E71	IC DEC 74564	1910542
12		EYELET HANDLE	9000732
1		HEX HANDLE ASSY	1210711-2



IC TYPE	GND	+5V
IC DEC 743153	B	10
IC DEC 745301	B	10

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS



QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
FIRST USED ON OPTION MODEL				
ETCH BOARD REV A				
PARTS LIST				
DRN	E. Seidman	DATE	10/4/74	
CHKD		DATE	12/28/74	
ENG	W. S. ...	DATE	1/10/75	
PROJ. ENG	W. S. ...	DATE	1/10/75	
PROP.	R. Taylor	DATE	1/13/75	
NEXT HIGHER ASSY				
DEC NO	EIA NO	DEC NO	EIA NO	
SEMICONDUCTOR CONVERSION CHART				
SCALE	1/1			
SHEET	1 OF 14			

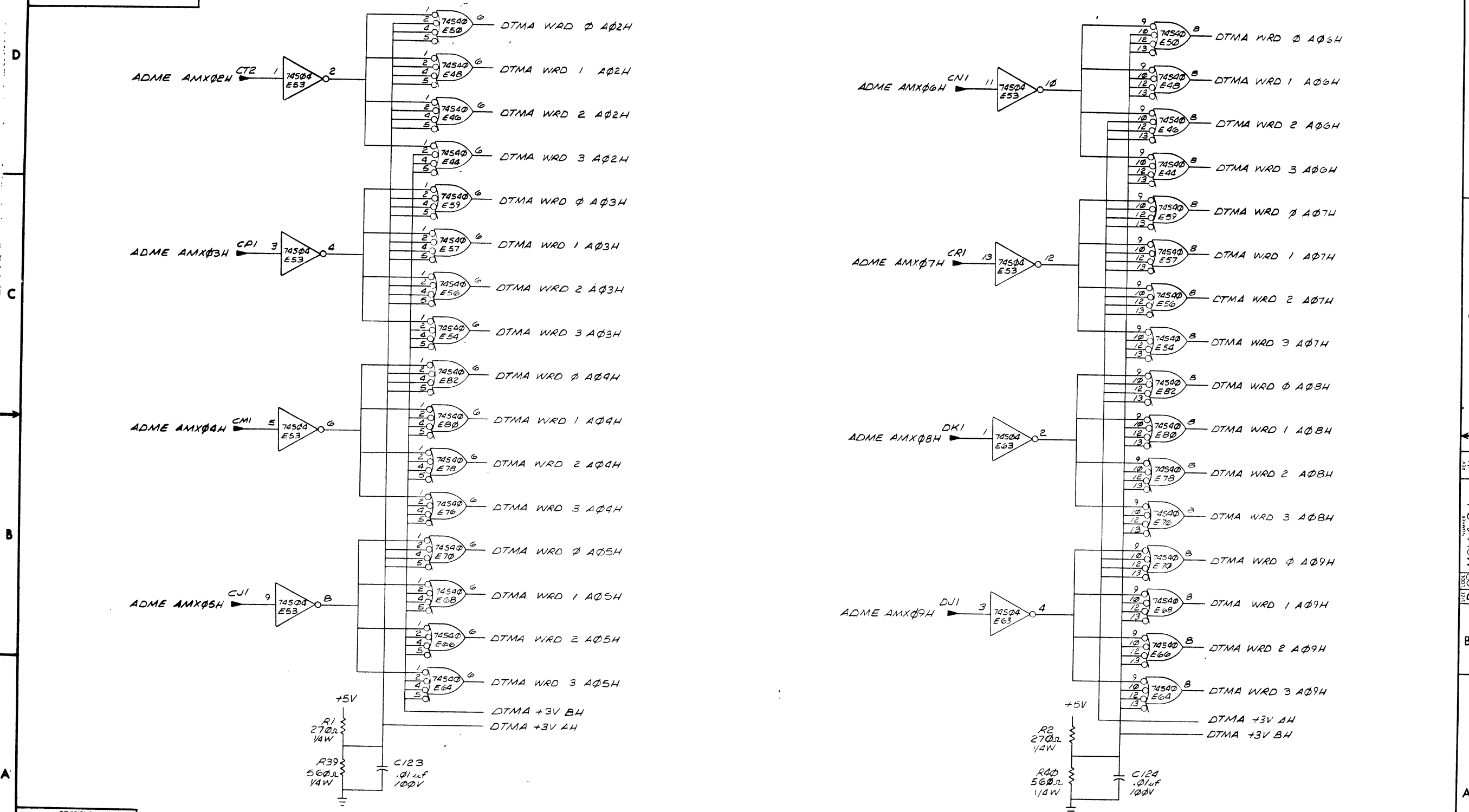
digital EQUIPMENT CORPORATION

TITLE: **DATA MEMORY**

SIZE CODE: **D** NUMBER: **M8144-0-1** REV: *****

8 7 6 5 4 3 2 1

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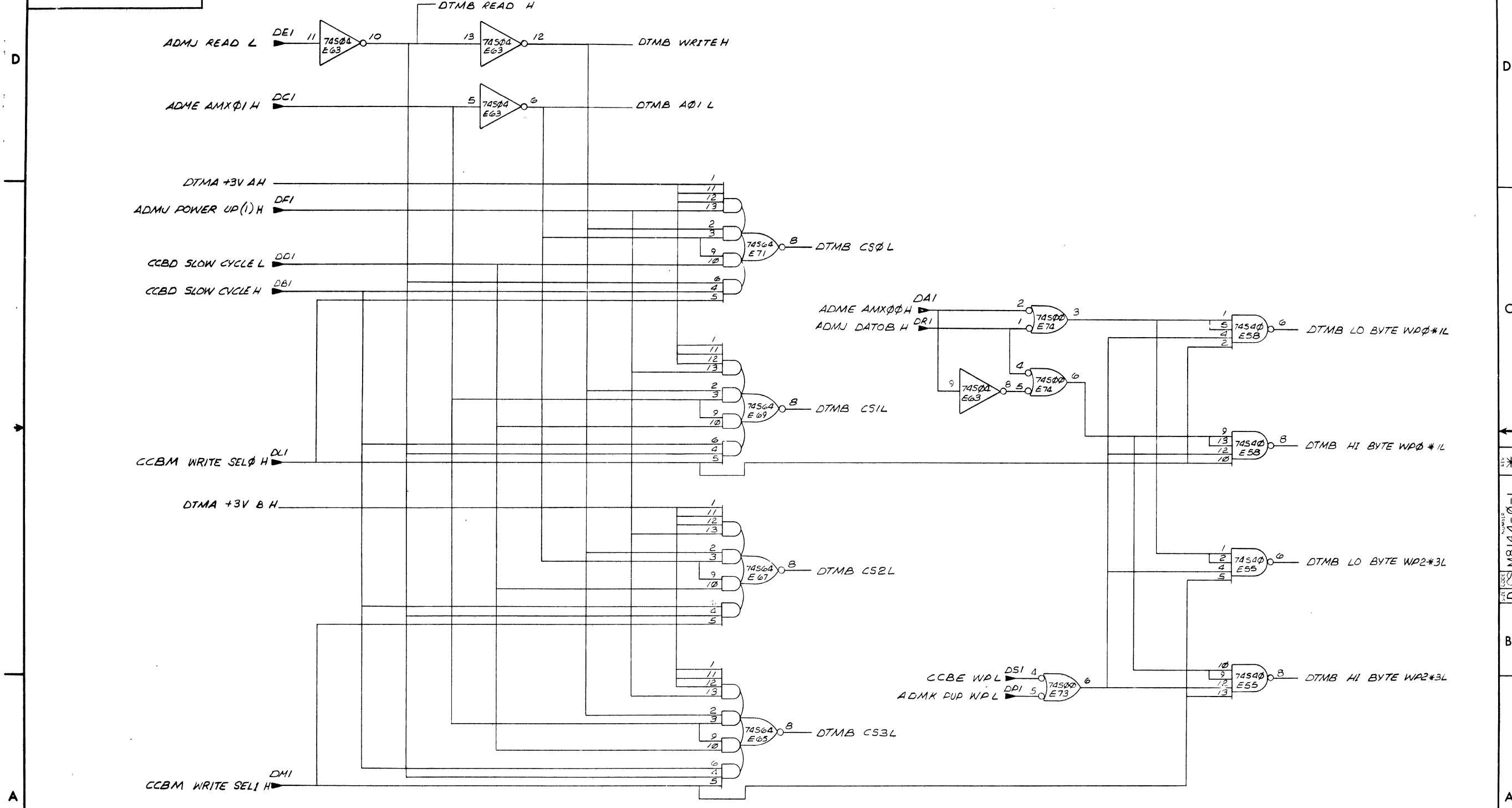


REVISIONS		
CHK	CHANGE NO	REV.

SLOT 20 (ADDRESS DRIVERS)

TITLE	DATA MEMORY (DTMA)	SIZE CODE	D CS	NUMBER	M8144-0-1	REV.	*
SCALE	1/1	SHEET	2	OF 14	DIST.		

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(WRITE PULSE DRIVERS
SLOT 20 CHIP SELECT DRIVERS)

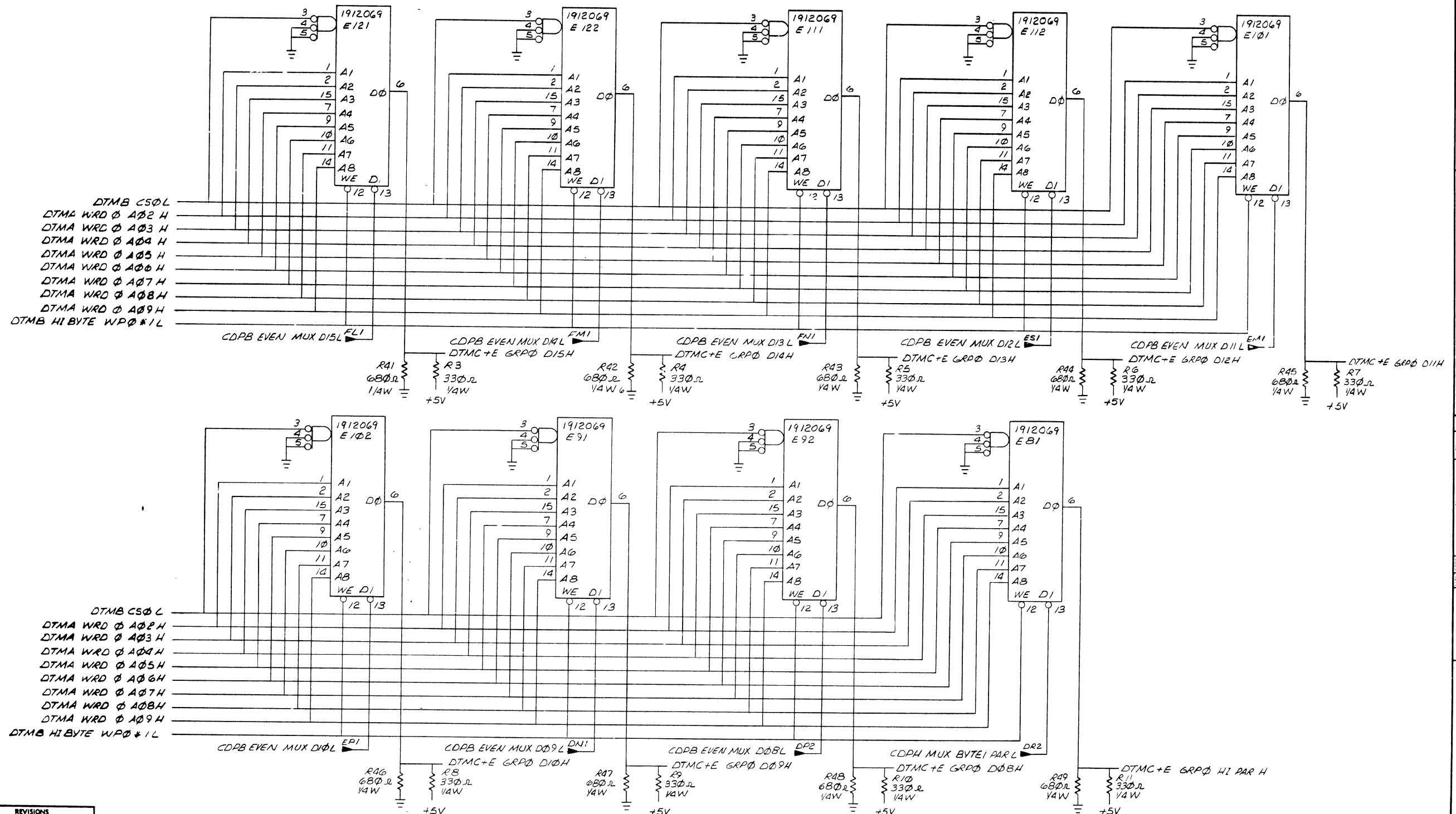
REVISIONS		
CHK	CHANGE NO	REV

TITLE	DATA MEMORY (DTMB)	SIZE CODE	D CS	NUMBER	M8144-0-1	REV.	*
SCALE	1/1	SHEET	3 OF 14	DIST.			

142

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* 1-0-14-0-1 DCS M8144-0-1 2



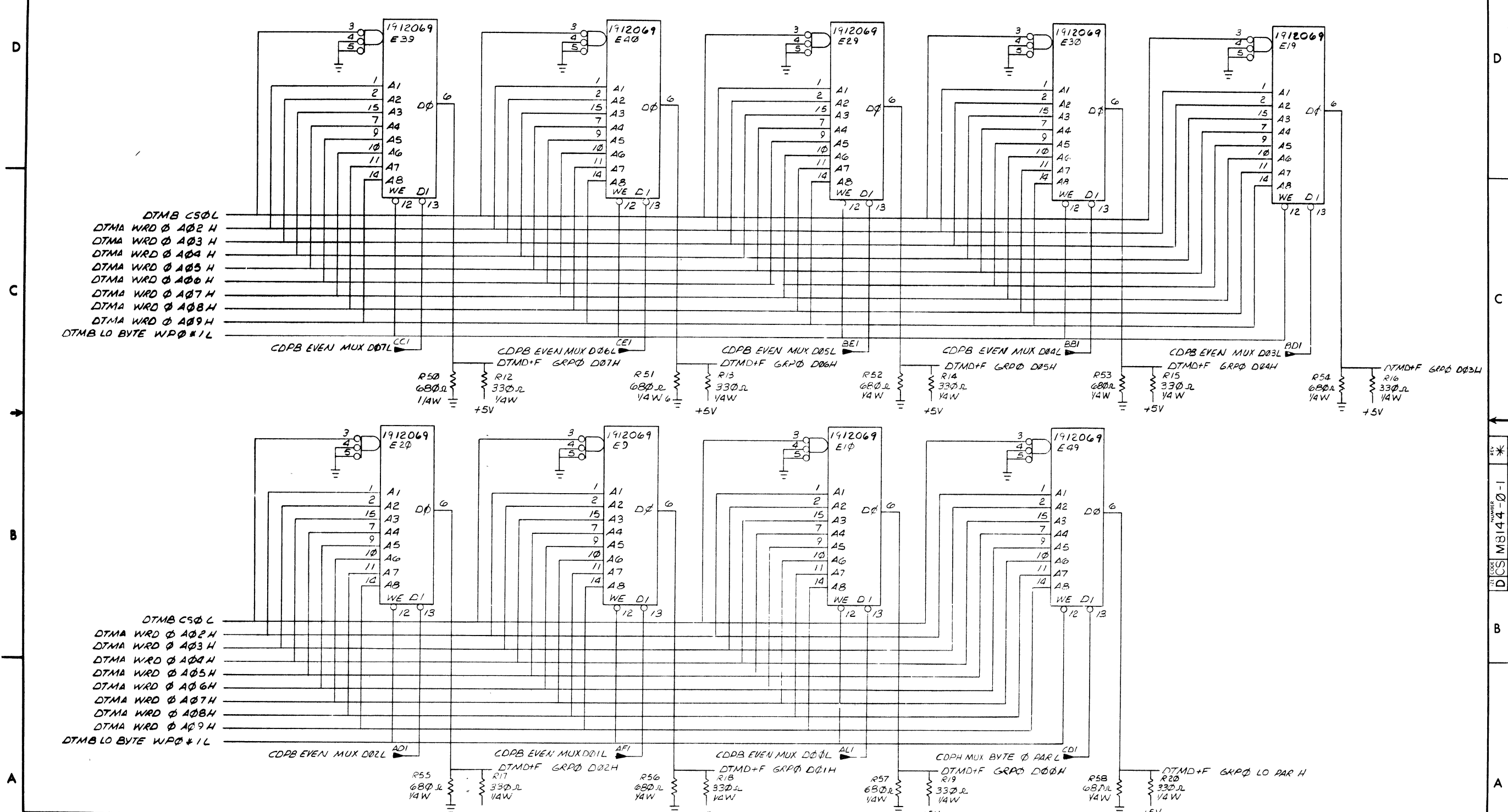
REVISIONS		
CHK	CHANGE NO	REV

SLOT 20 (WORD 0 HI BYTE)

TITLE	DATA MEMORY (DTMC)	SIZE CODE	D CS	NUMBER	M8144-0-1	REV.	*
SCALE	---	SHEET	4	OF	14	DIST.	

143

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REVISIONS		
CHK	CHANGE NO.	REV

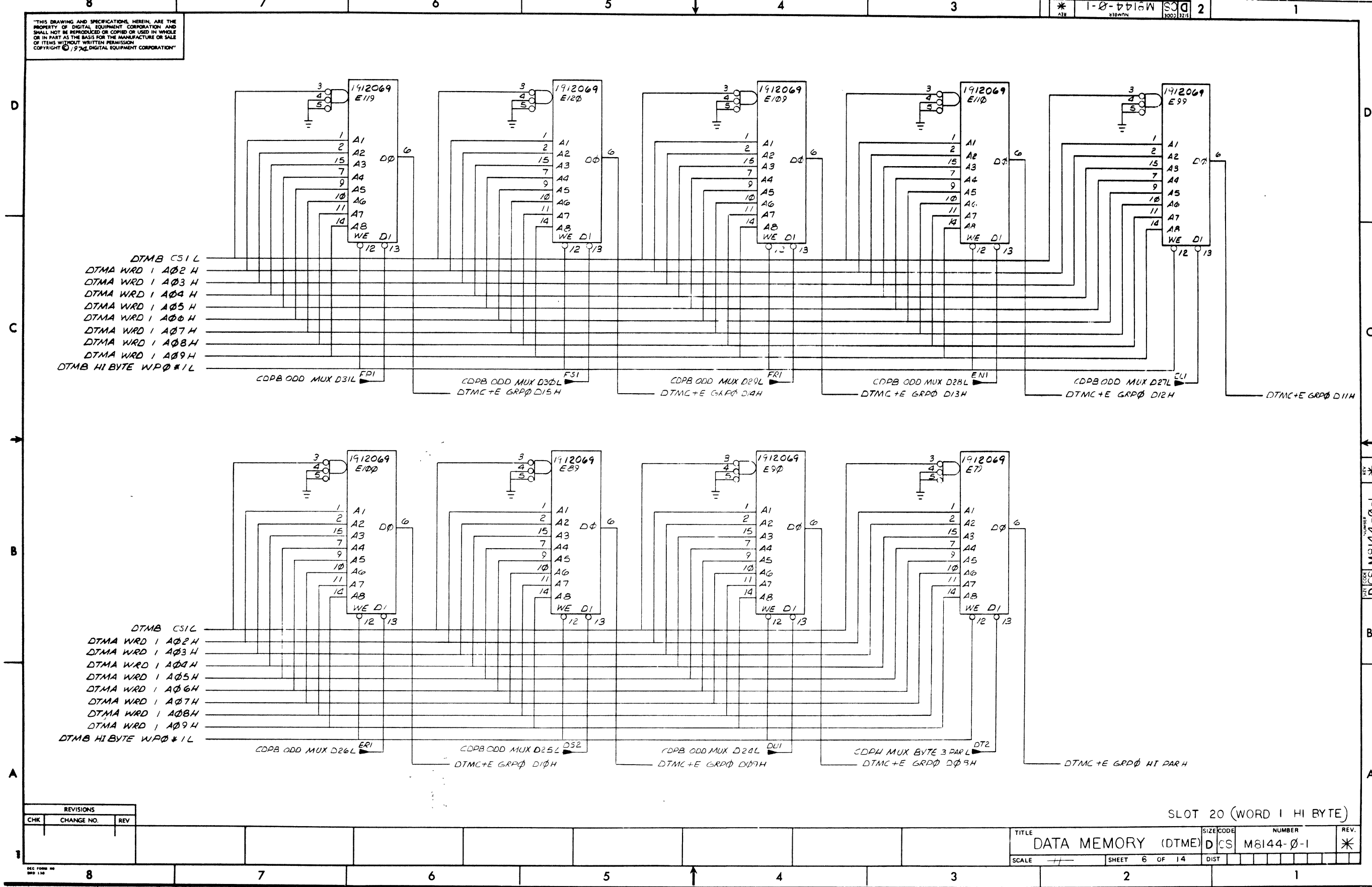
SLOT 20 (WORD 0 LO BYTE)

TITLE	DATA MEMORY (DTMD)	SIZE CODE	D (CS)	NUMBER	M8144-0-1	REV.	*
SCALE	1/1	SHEET	5	OF	14	DIST.	

144

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* M8144-0-1 DCS



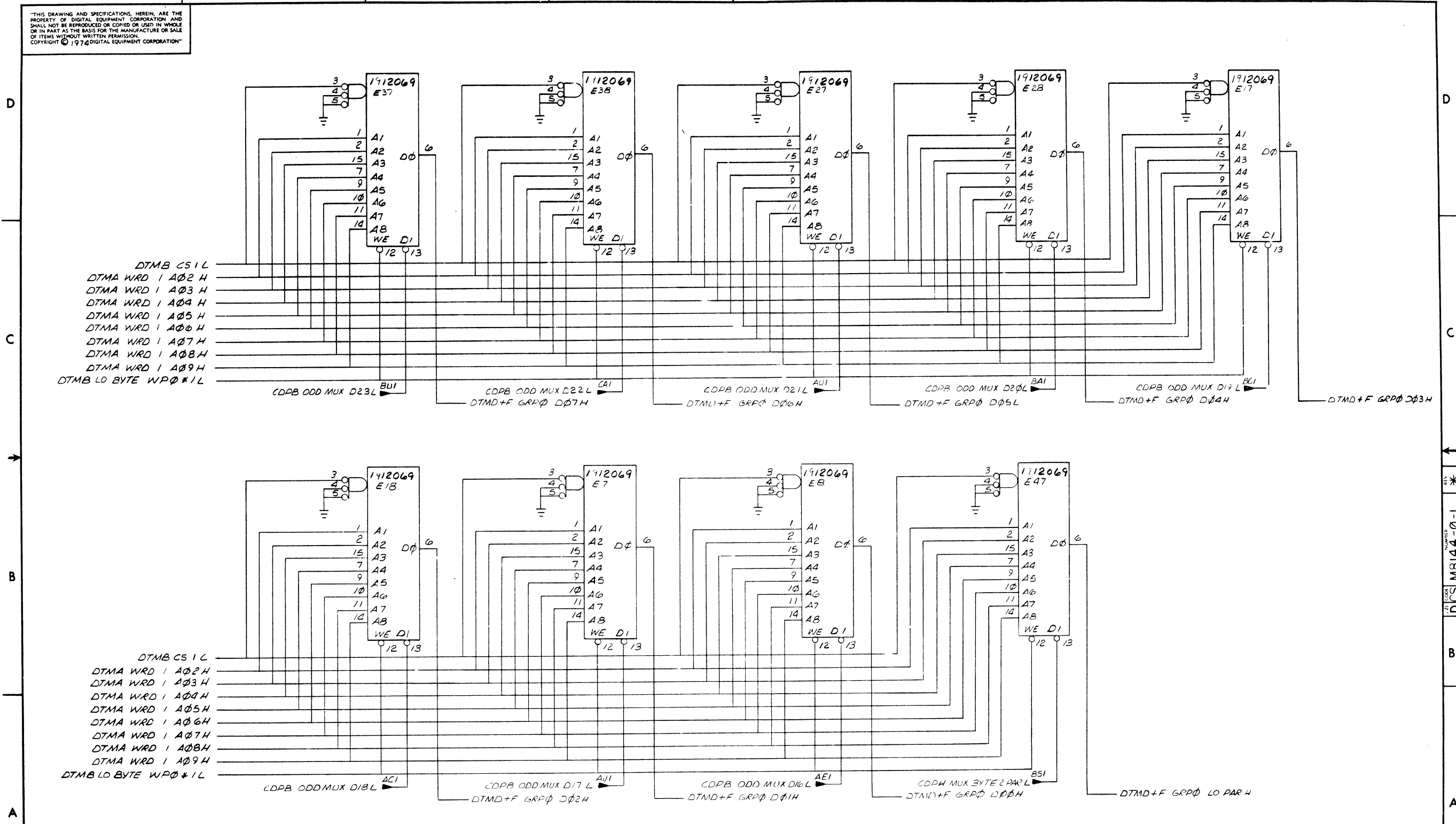
DTMB CS1L
 DTMA WRD 1 A02H
 DTMA WRD 1 A03H
 DTMA WRD 1 A04H
 DTMA WRD 1 A05H
 DTMA WRD 1 A06H
 DTMA WRD 1 A07H
 DTMA WRD 1 A08H
 DTMA WRD 1 A09H
 DTMB HI BYTE WP0#1L

DTMB CS1L
 DTMA WRD 1 A02H
 DTMA WRD 1 A03H
 DTMA WRD 1 A04H
 DTMA WRD 1 A05H
 DTMA WRD 1 A06H
 DTMA WRD 1 A07H
 DTMA WRD 1 A08H
 DTMA WRD 1 A09H
 DTMB HI BYTE WP0#1L

REVISIONS		
CHK	CHANGE NO.	REV

TITLE		SIZE CODE	NUMBER	REV.
DATA MEMORY (DTME)		D CS	M8144-0-1	*
SCALE	SHEET	OF	DIST	
	6	14		

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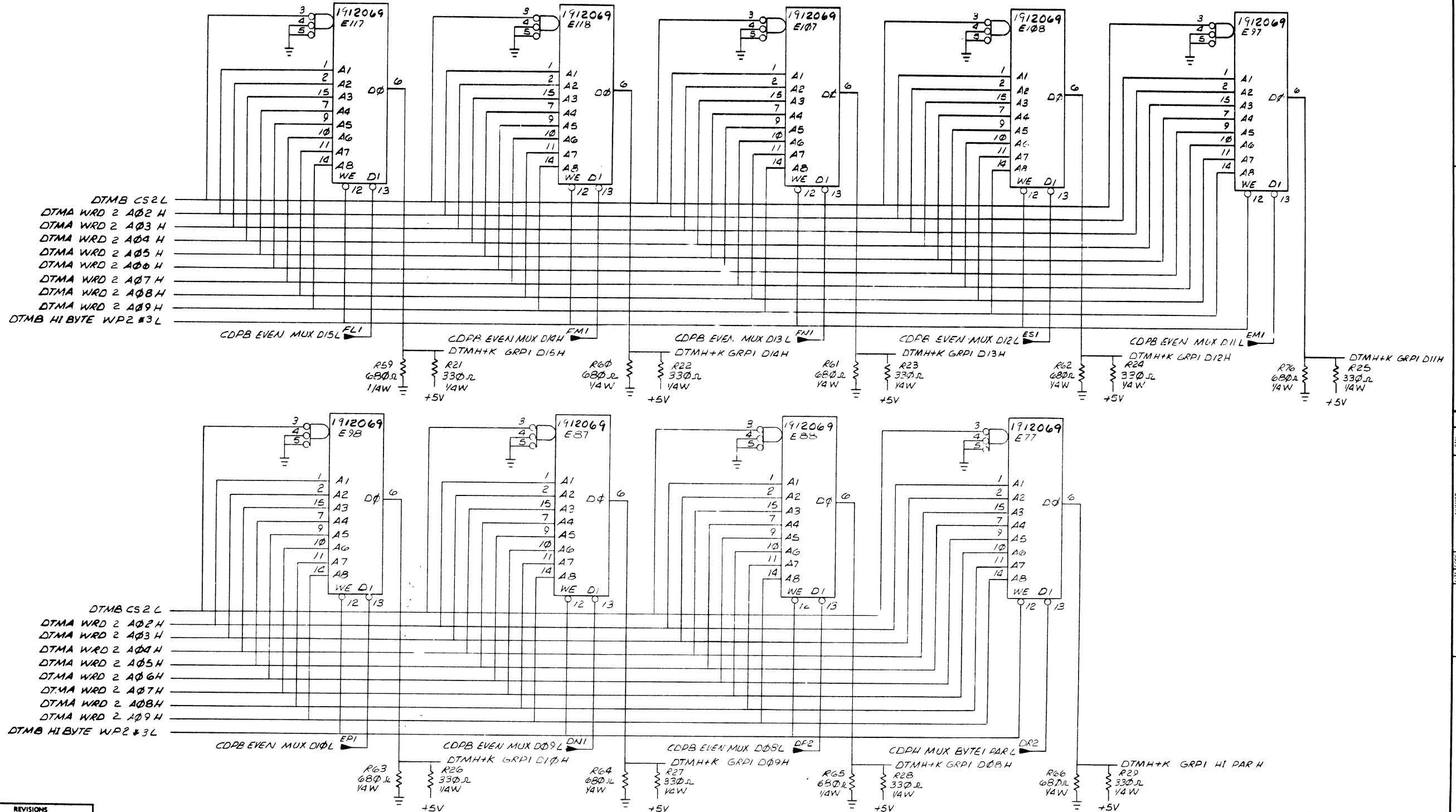


REVISIONS		
CHK	CHANGE NO	REV

TITLE		DATA MEMORY (DTMF)		SIZE	CODE	NUMBER		REV.
SCALE		SHEET 7 OF 14		D	CS	M8144-0-1		*

146

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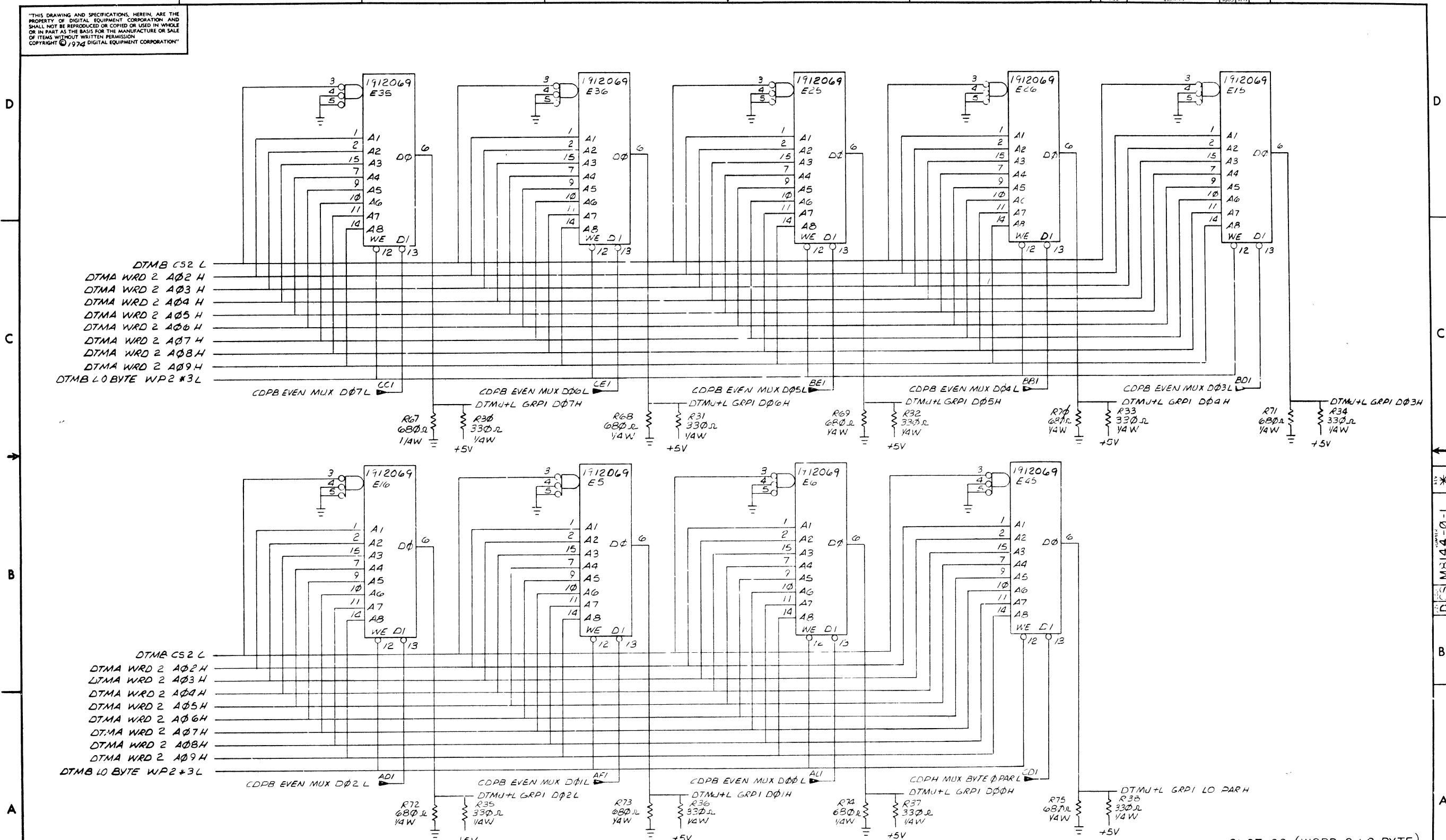
DTMB CS2L
 DTMA WRD 2 A02H
 DTMA WRD 2 A03H
 DTMA WRD 2 A04H
 DTMA WRD 2 A05H
 DTMA WRD 2 A06H
 DTMA WRD 2 A07H
 DTMA WRD 2 A08H
 DTMA WRD 2 A09H
 DTMB HI BYTE WP2 #3L

DTMB CS2L
 DTMA WRD 2 A02H
 DTMA WRD 2 A03H
 DTMA WRD 2 A04H
 DTMA WRD 2 A05H
 DTMA WRD 2 A06H
 DTMA WRD 2 A07H
 DTMA WRD 2 A08H
 DTMA WRD 2 A09H
 DTMB HI BYTE WP2 #3L

REVISIONS		
CHK	CHANGE NO	REV.

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* 1-0-4716W SCD 2

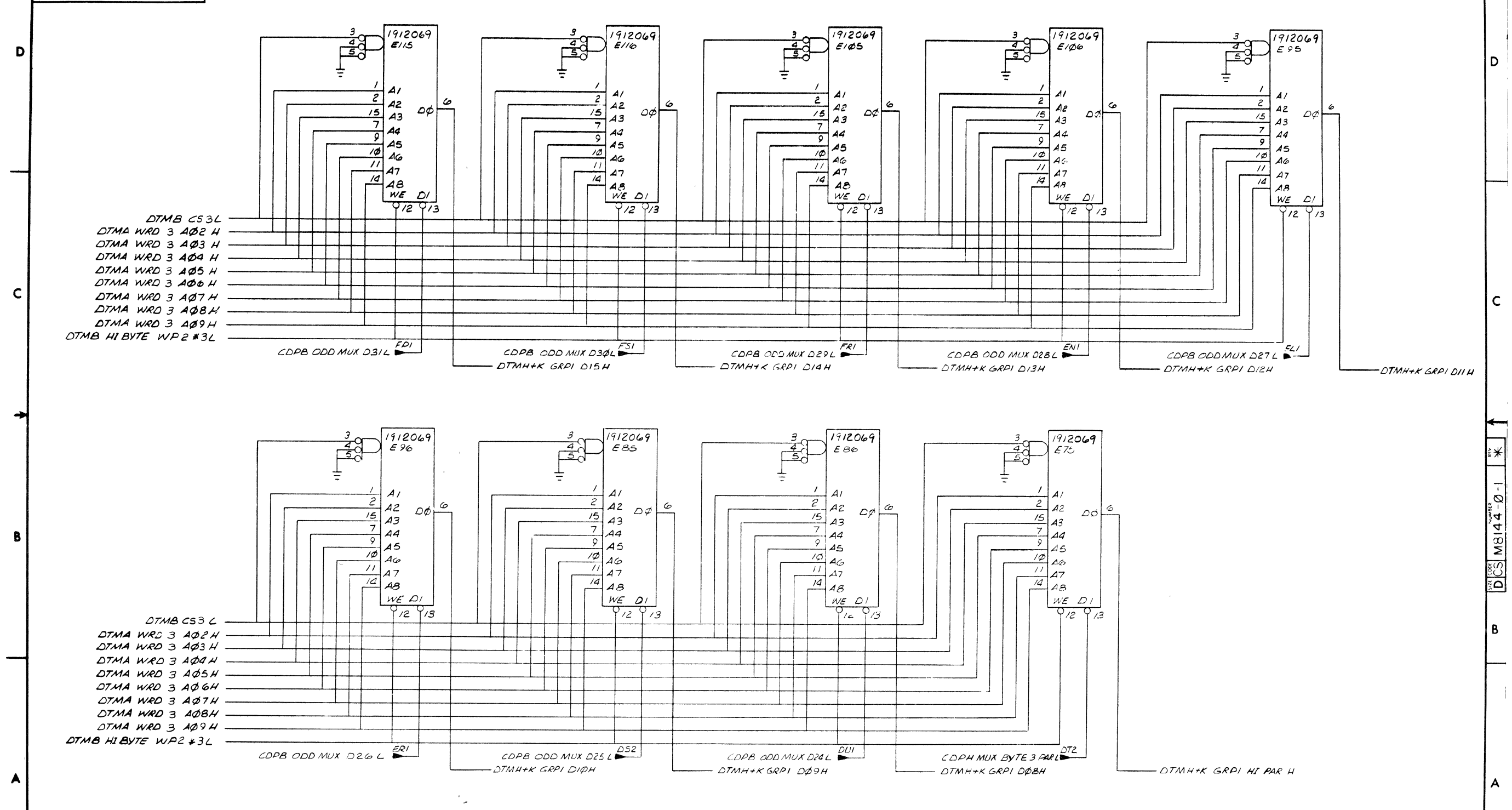


REVISIONS		
CHK	CHANGE NO	REV

SLOT 20 (WORD 2 LO BYTE)

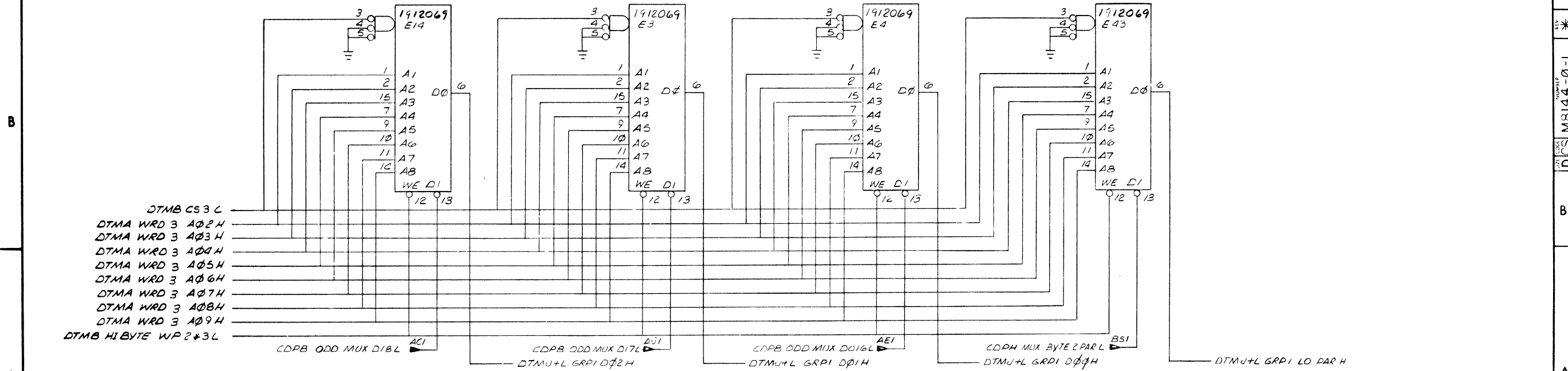
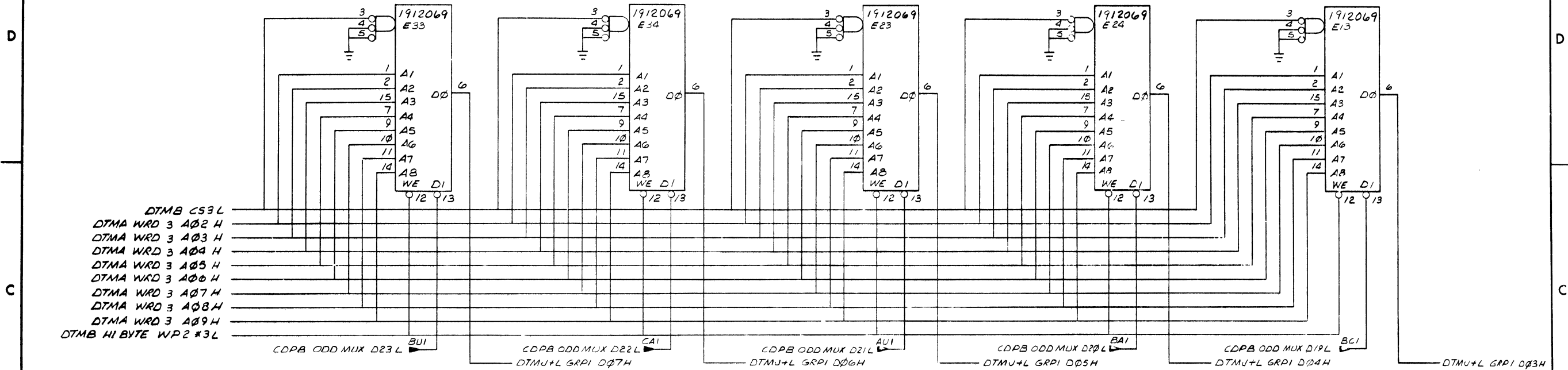
TITLE	DATA MEMORY (DTMJ)	SIZE CODE	D CS	NUMBER	M8144-0-1	REV.	*
SCALE	1/1	SHEET	9 OF 14	DIST			

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REVISIONS		
CHK	CHANGE NO	REV

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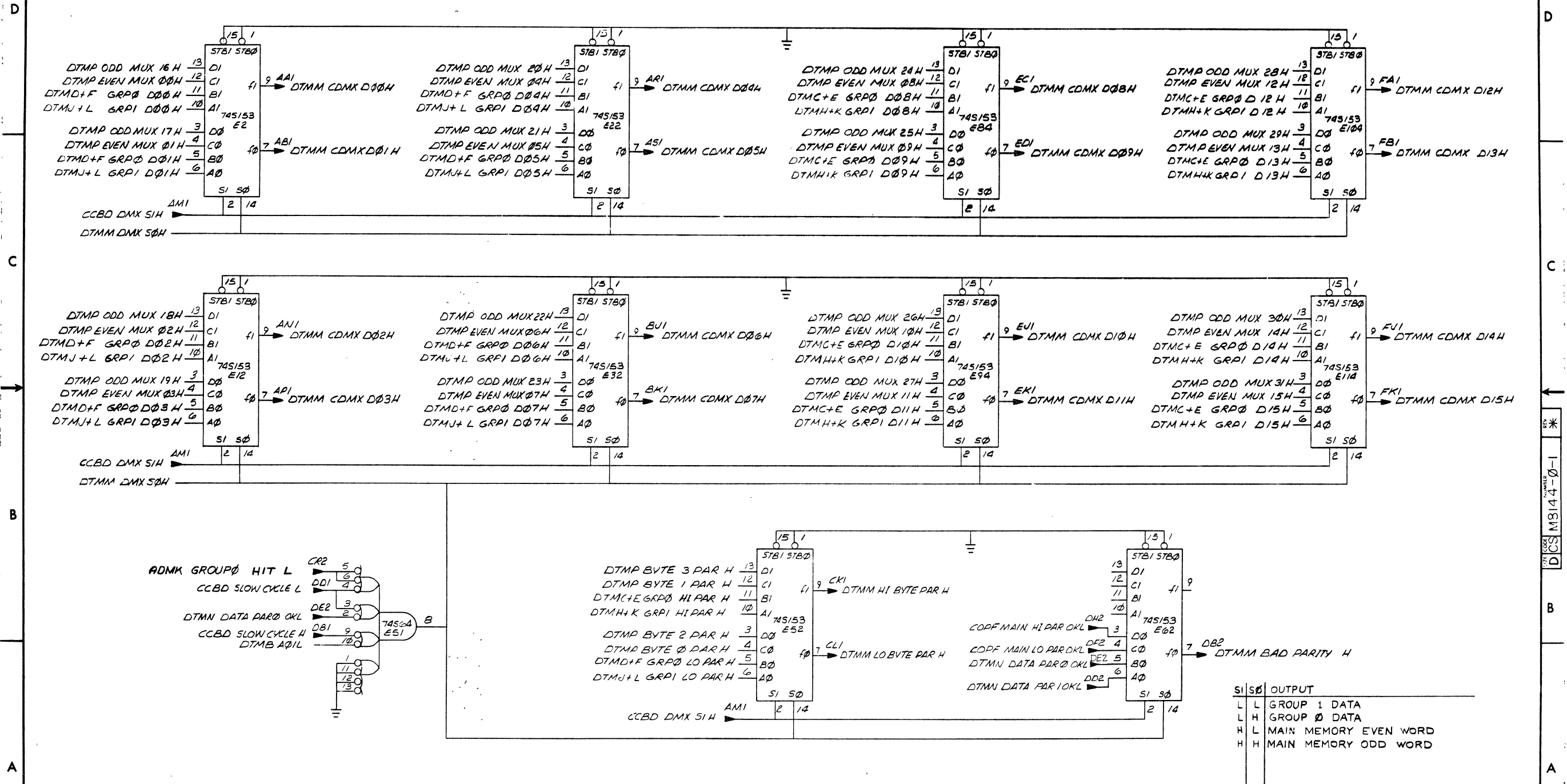
* M8144-0-1 DCS

REVISIONS		
CHK	CHANGE NO	REV

SLOT 20 (WORD 3 LO BYTE)

TITLE	DATA MEMORY (DTML)	SIZE CODE	DCS	NUMBER	M8144-0-1	REV.	*
SCALE		SHEET	11 OF 14	DIST			

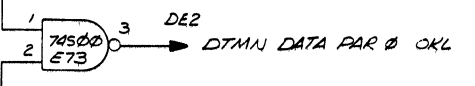
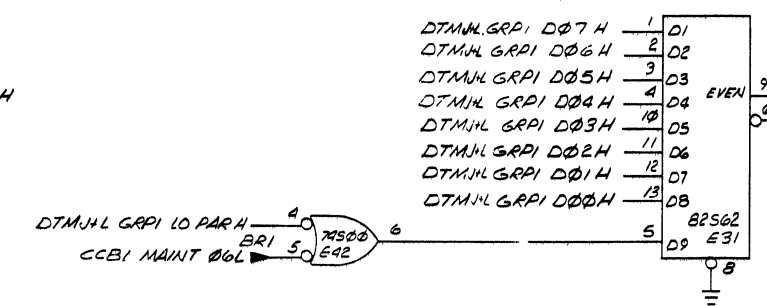
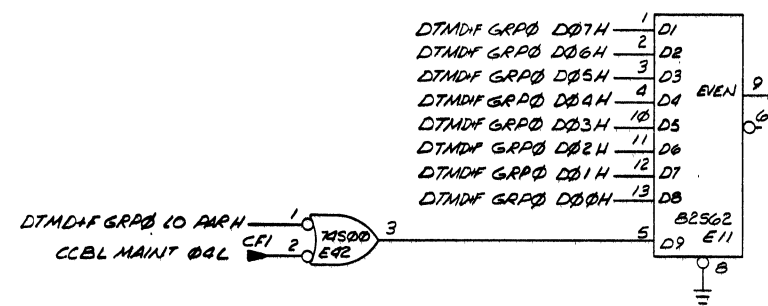
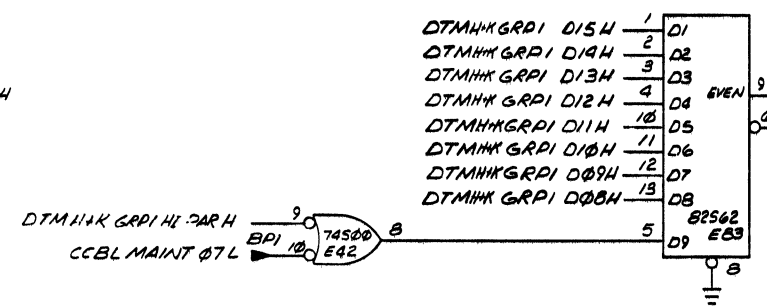
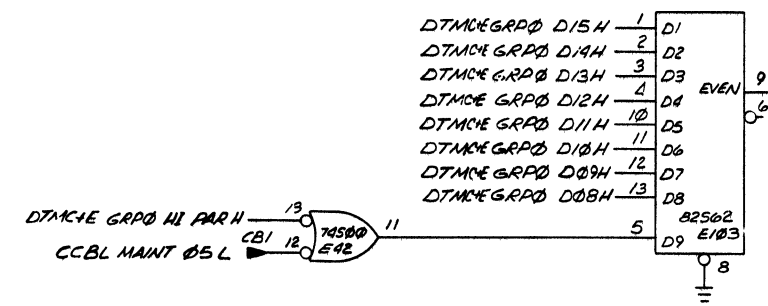
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REVISIONS		
CHK	CHANGE NO	REV

SLOT 20 (DATA OUTPUT MULTIPLEXER)			
TITLE	SIZE CODE	NUMBER	REV.
DATA MEMORY (DTMM)	D CS	M 8144-0-1	*
SCALE	SHEET	OF	DIST.
	12	14	

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REVISIONS		
CHK	CHANGE NO.	REV.

SLOT 20 (FAST MEMORY PARITY CHECKERS)

TITLE	DATA MEMORY (DTMN)	SIZE CODE	DCS	NUMBER	M8144-0-1	REV.	*
SCALE	//	SHEET	13	OF	14	DIST.	

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1-0-448 M8144-0-1 DCS 2



REVISIONS		
CHK	CHANGE NO	REV

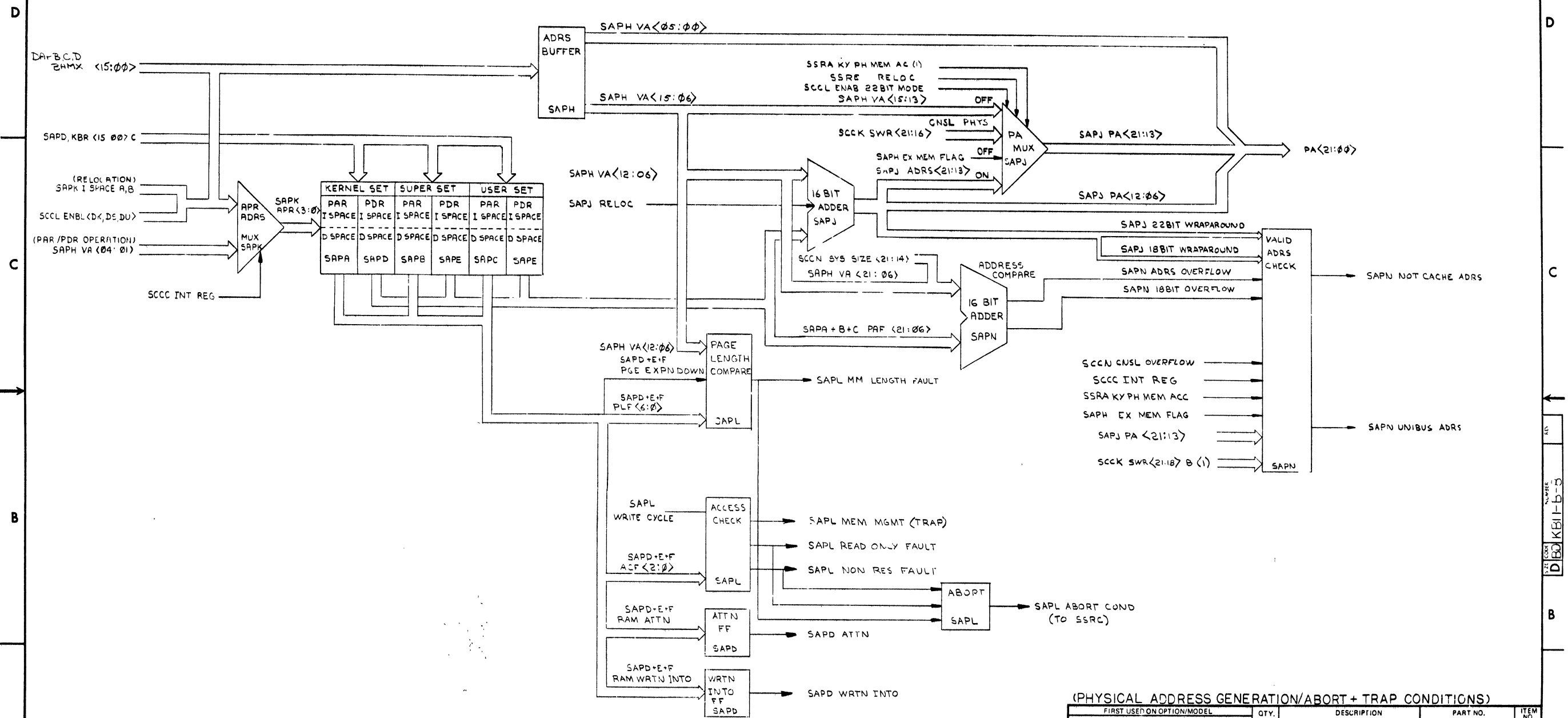
SLOT 20 (MAIN MEMORY DATA INVERTERS)

TITLE	DATA MEMORY (DTMP)	SIZE CODE	DCS	NUMBER	M8144-0-1	REV.	*
SCALE	1/1	SHEET	14	OF	14	DIST.	

DEC FORM NO 089 139

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REV. NO. 2
 D B D K B I - B - 8



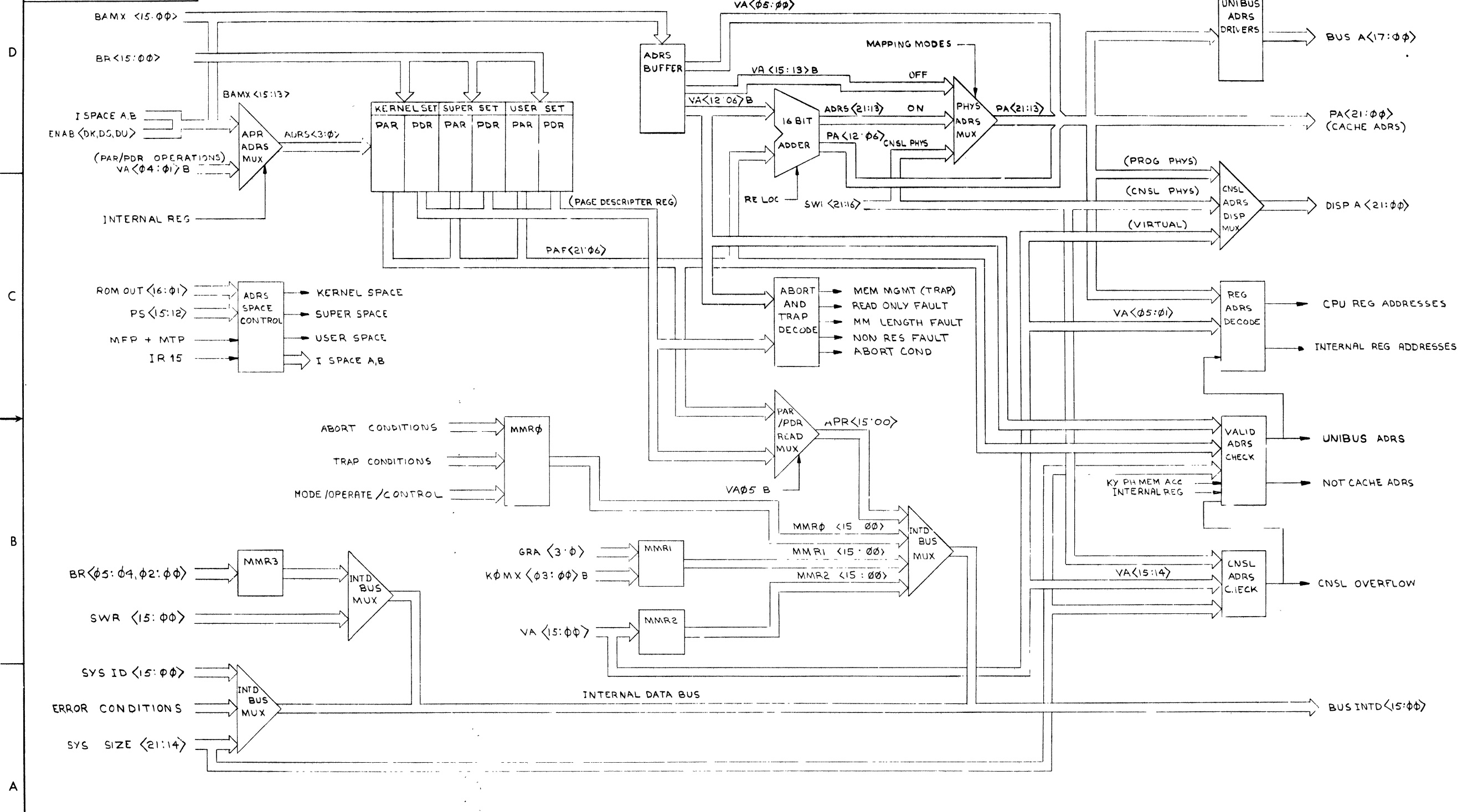
(PHYSICAL ADDRESS GENERATION/ABORT + TRAP CONDITIONS)

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
K F 11-B				
PARTS LIST				
DIMENSIONAL TOLERANCE		URN	DATE	
DIMENSIONS ARE MILLIMETERS		CHK'D	DATE	
INCHES		ENG.	DATE	
UNLESS OTHERWISE SPECIFIED		PRJ. ENG.	DATE	
MILLIMETERS	INCHES	PROD.	DATE	
.XX ± 0.10	.XX ± 0.05			
X.X ± 0.5	.XX ± 0.02			
X ± 2	.X ± 0.1			
THIRD ANGLE PROJECTION		NEXT HIGHER ASSY.		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL		SIZE CODE	NUMBER	REV.
FINISH		B-D-D-K-B-I-B	D B D K B I - B - 8	
		SCALE		
		SHEET	OF 2	

REV.	CHANGE NO.	REVISIONS

154

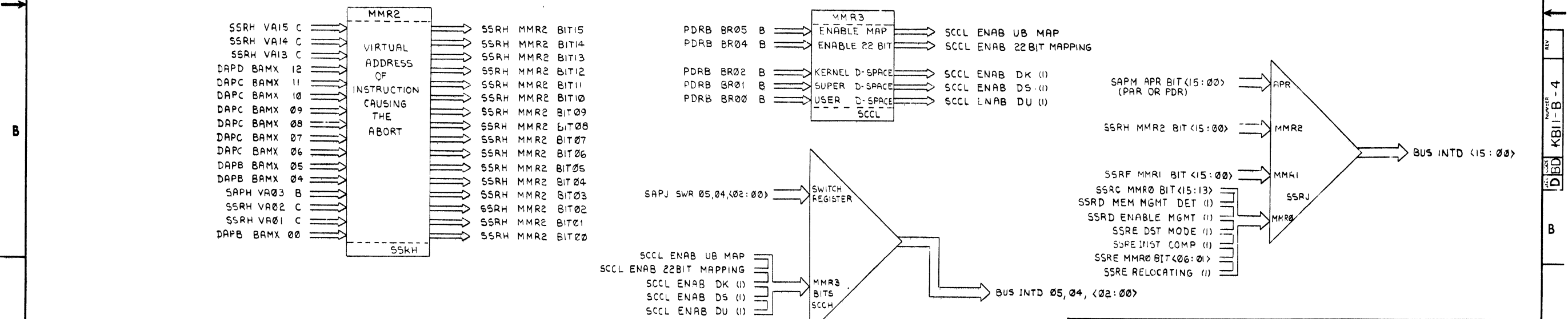
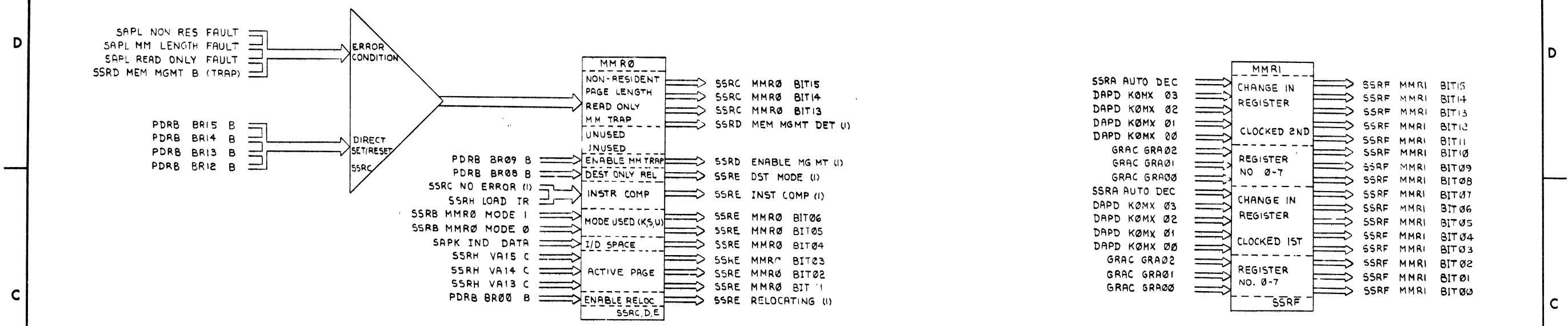
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REVISIONS		
CHK	CHANGE NO	REV

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REV. NO. 2
 D B D
 K B I I - B - 4

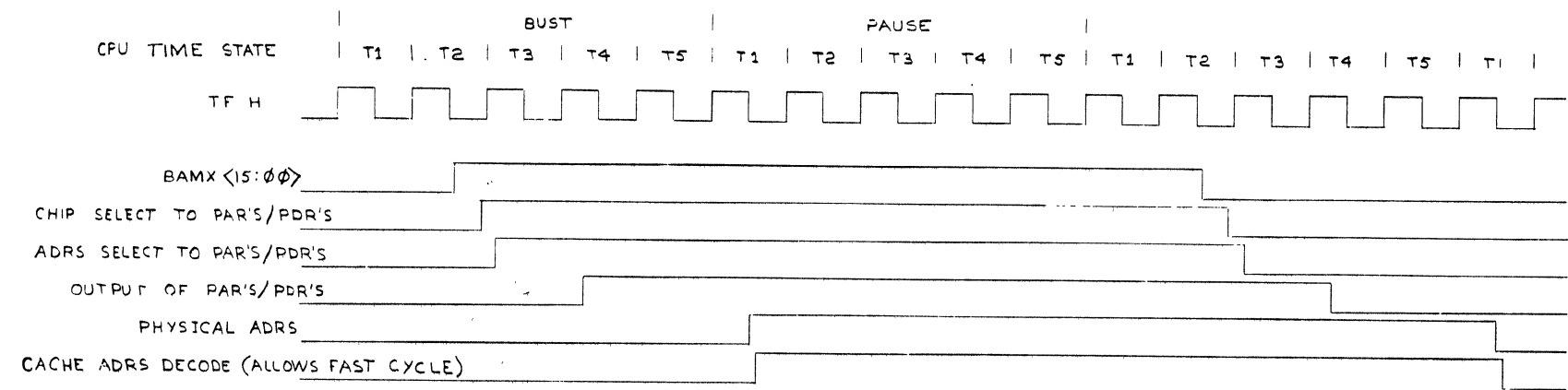


FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
K311-B				
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN	DATE	
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		CHK'D	DATE	
MILLIMETERS	INCHES	ENG.	DATE	
X.XX ±0.10	.XXX ±.005	PHD. ENG.	DATE	
X.X ±0.5	.XX ±.02	WARRANTY	DATE	
X ±2	.X ±.1	PRD.	DATE	
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.		
MATERIAL		B-DD-KB11-B	SIZE CODE	NUMBER
FINISH			D B D	KB11-B-4
		SCALE		REV.
		SHEET	1 OF	

REV.	CHANGE NO.	DATE

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NOTES:
 1 THE PURPOSE OF THIS DIAGRAM IS TO ILLUSTRATE THE FLOW OF DATA. THE TIME DELAYS INDICATED ARE WORST CASE PROPAGATION DELAYS OF GATES AND MAY VARY
 2 THE TIMING DIAGRAM REPRESENTS THE TIME PERIOD IN WHICH THE CHANGE TAKES PLACE BUT NOT NECESSARILY THE ACTUAL CHANGE IN POLARITY OF THE SIGNAL. A HIGH LEVEL OR PULSE ON THE DIAGRAM REPRESENTS AN ASSERTED SIGNAL.



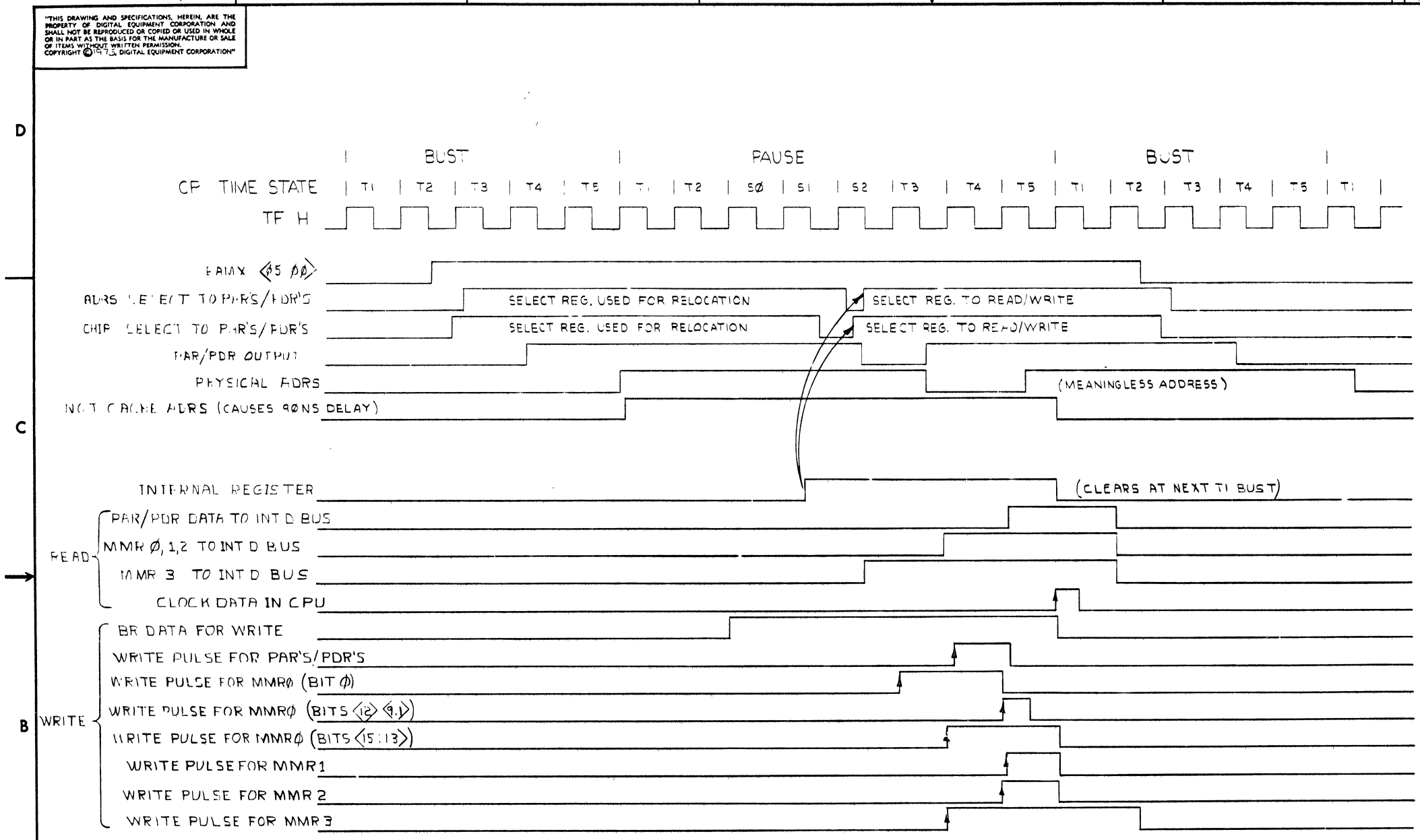
REV.	
CHANGE NO.	
CHK	

THIRD ANGLE PROJECTION		DRN <i>M. J. [unclear]</i> 3/10/75	3/10/75	FIRST USED ON	<i>digital</i>
REMOVE BURRS AND BREAK SHARP CORNERS		CHK'D <i>[unclear]</i> 3/11/75	3/11/75	TITLE	
DO NOT SCALE DWG		ENG. <i>[unclear]</i> 3/11/75	3/11/75	CACHE ADDRESS	
MATERIAL		PROJ. ENGR. <i>[unclear]</i> 3/11/75	3/11/75	TIMING	
FINISH		PROD. <i>[unclear]</i> 3/24/75	3/24/75	NEXT HIGHER ASSY	
MATERIAL		B-DD-KB1-B		SIZE	D
FINISH		SCALE		CODE	TD
SHEET		1 OF 1		NUMBER	KB11-B-10
SHEET		1 OF 1		REV	

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6-8-1181 DTD 2

- NOTES:
- 1 THE PURPOSE OF THIS DIAGRAM IS TO ILLUSTRATE THE FLOW OF DATA. THE TIME DELAYS INDICATED ARE WORST CASE PROPAGATION DELAYS OF GATES AND MAY VARY.
 - 2 CLOCKED SIGNALS ARE INDICATED BY AN \uparrow .
 - 3 THE TIMING DIAGRAM REPRESENTS THE TIME PERIOD IN WHICH THE CHANGE TAKES PLACE BUT NOT NECESSARILY THE ACTUAL CHANGE IN POLARITY OF THE SIGNAL. A HIGH LEVEL OR PULSE ON THE DIAGRAM REPRESENTS AN ASSERTED SIGNAL.



REV.	CHANGE NO.

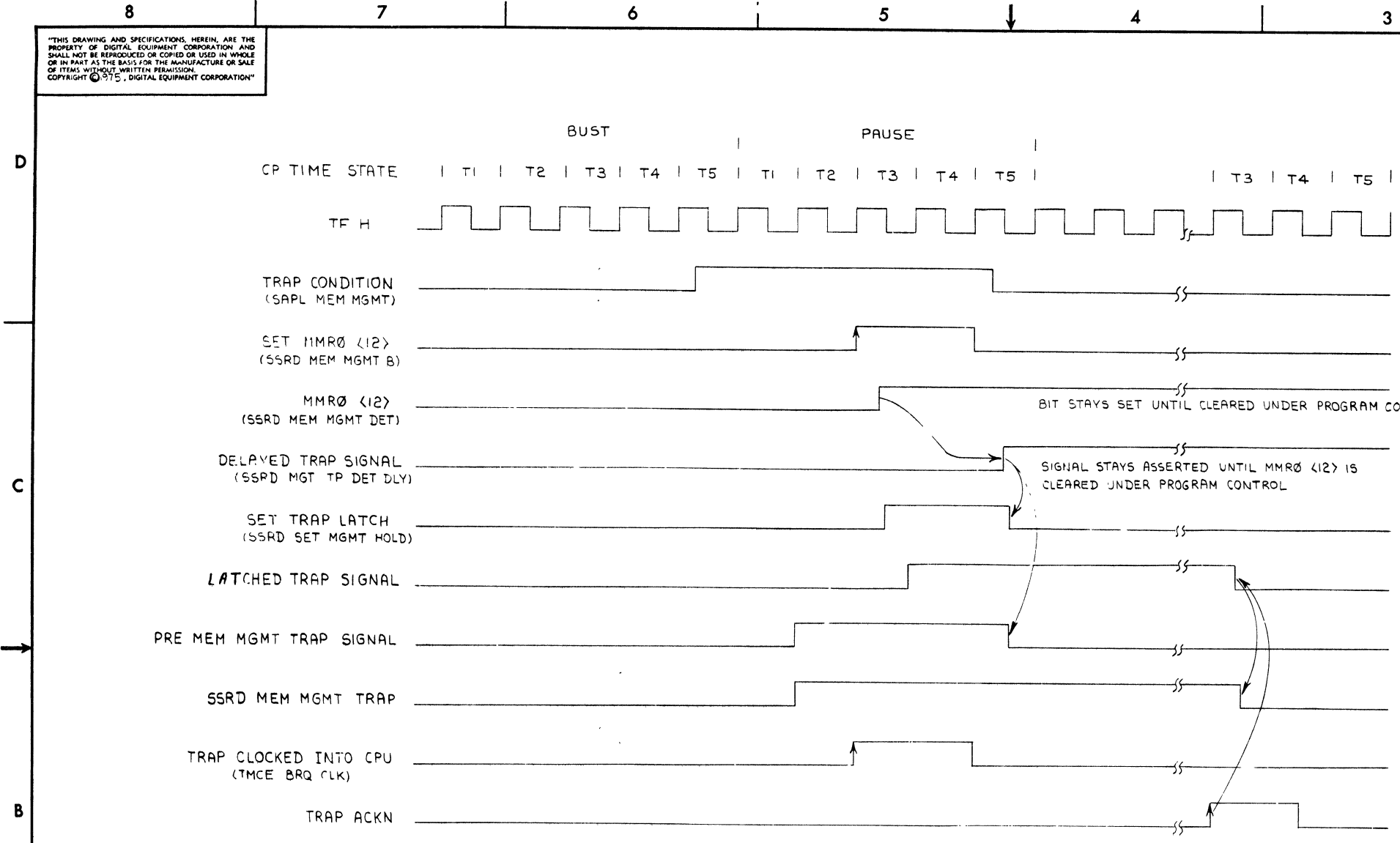
FIRST USED ON OPTION/MODEL KB11-B	QTY	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
DIMENSIONAL TOLERANCE		DWN. <i>Abel/Maple</i>	DATE <i>1/13/75</i>	DIGITAL
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		CHK'D. <i>St. George</i>	DATE <i>5/21/75</i>	
MILLIMETERS	INCHES	ANGLES	DATE	
X.XX = ±0.10 X.X = ±0.5 X = ±2	.XXX = ±.005 .XX = ±.02 .X = ±.1	10° 30'	DATE <i>5/21/75</i>	
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	NEXT HIGHER ASSY.	DATE <i>5/21/75</i>	TITLE INTERNAL REGISTERS CYCLE TIMING
FINISH	MATERIAL	SIZE CODE	NUMBER	REV.
	B-DD-KB11-B	D TD	KB11-B-9	
SCALE	SHEET 1 OF 1	DIST		

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DTD KB11-B-5

NOTES:

1. THE PURPOSE OF THIS DIAGRAM IS TO ILLUSTRATE THE FLOW OF DATA. THE TIME DELAYS INDICATED ARE WORST CASE PROPAGATION DELAYS OF GATES AND MAY VARY.
2. CLOCKED SIGNALS ARE INDICATED BY AN ↑
3. THE TIMING DIAGRAM REPRESENTS THE TIME PERIOD IN WHICH THE CHANGE TAKES PLACE BUT NOT NECESSARILY THE ACTUAL CHANGE IN POLARITY OF THE SIGNAL. A HIGH LEVEL OR PULSE ON THE DIAGRAM REPRESENTS AN ASSERTED SIGNAL.

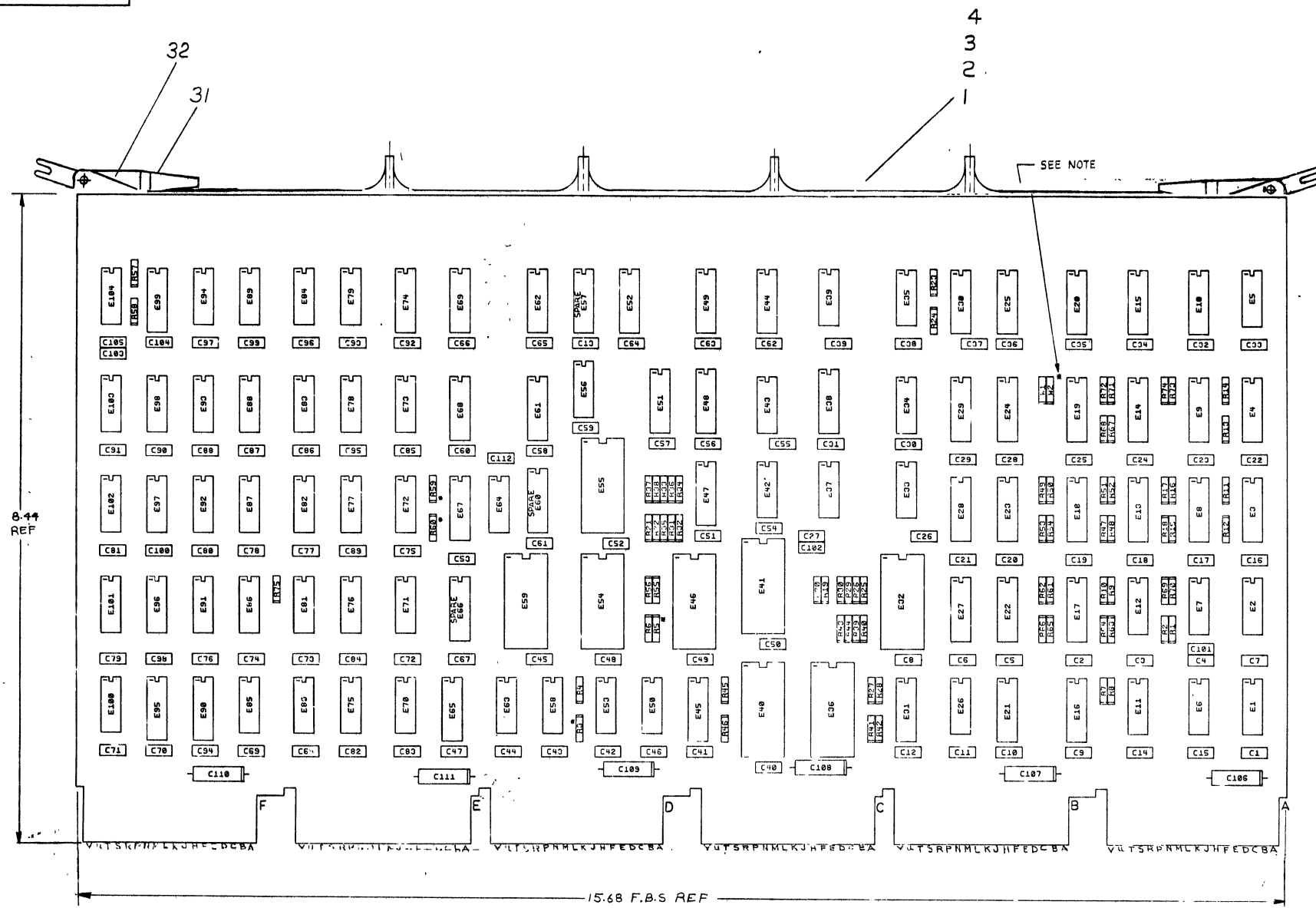


REV.	NO.
CHK.	CHANGE NO.

FIRST USED ON OPTION/MODEL KB11-B	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN.	DATE	
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		CHKD.	DATE	
MILLIMETERS	INCHES	ANGLES	ENT.	DATE
.XX ±0.10	.XXX ±.005	30° 30'	PL. J. ENG.	DATE
.X ±0.5	.XX ±.02		PRG.	DATE
.X ±.2	.X ±.1			
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	TITLE	
			MEM MGMT TRAP TIMING	
MATERIAL	B-DD-KB1-B	SIZE CODE	NUMBER	REV.
FINISH		SCALE	DTD	KB11-B-5
		SHEET 1 OF 1	DIST	

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NOTES: *OPTIONAL COMPONENTS

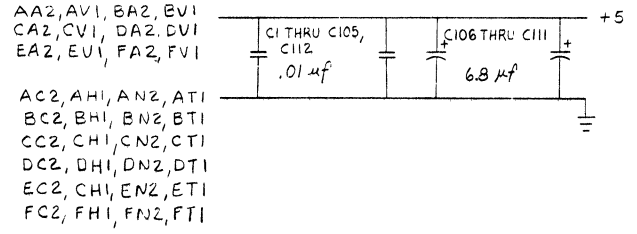


REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8137-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8137-0-5	2
REF	MODULE ECO HISTORY	B-AH-M8137-0-6	3
1	ETCHED CIRCUIT BOARD	5011313	4
106	C1 THRU C105 C112	CAP .01uf 100V 20%	1001610-1
6	C106 THRU C111	CAP 6.8uf 35V 10%	1008306
2	R4, R6	RESISTOR 150 OHM 1/4W 5%	1300250
34	R1, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65, R67, R69, R71, R73	RESISTOR 380 OHM 1/4W 5%	1300295
1	R75	RESISTOR 1K 1/4W 5%	1300365
34	R2, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R62, R64, R66, R68, R70, R72, R74	RESISTOR 680 OHM 1/4W 5%	1301424
1	E100	IC DEC 74H21	1908058
1	E101	IC DEC 7437	1910091
4	E50, E56, E70, E79	IC DEC 7408	1910155
2	E17, E13	IC DEC 7485	1910224
6	E36, E40, E55, E54, E32, E41, E59, E46	IC DEC 74S181	1910531
5	E103, E76, E93, E73, E85	IC DEC 74S00	1910532
9	E97, E78, E5, E43, E39, E71, E37, E91, E35	IC DEC 74S04	1910534
1	E96	IC DEC 74S05	1910535
2	E75, E83	IC DEC 74S10	1910536
11	E82, E87, E26, E98, E2, E7, E80, E11, E6, E1, E92	IC DEC 74S11	1910537
3	E34, E33, E42	IC DEC 74S20	1910539
6	E84, E77, E72, E84, E89, E94	IC DEC 74S40	1910541
6	E53, E88, E12, E81, E86, E104	IC DEC 74S64	1910542
3	E58, E102, E63	IC DEC 74S74	1910544
3	E65, E90, E95	IC DEC 74S153	1910547
7	E27, E21, E18, E16, E8, E22, E31	IC DEC 74S157	1910548
3	E3, E99, E4	IC DEC 74S158	1910549
2	E45, E47	IC DEC 74182-1	1910551
24	E69, E74, E44, E38, E88, E62, E52, E49, E67, E61, E51, E48, E14, E30, E29, E28, E9, E20, E19, E23, E10, E15, E25, E24	IC DEC 3101A	1910653
1	W1	INSULATED JUMPER	9009185
1		HANDLE ASSEMBLY	1210711-2
12		EYELET HANDLE	9006732

IC TYPE	GND	+5V
IC DEC 3101A	8	13
IC DEC 74182-1	8	16
IC DEC 74S158	8	16
IC DEC 74S157	8	16
IC DEC 74S153	8	16
IC DEC 74S181	12	24
IC DEC 7485	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS



SEMICONDUCTOR CONVERSION CHART

DEC NO. EIA NO. DEC NO. EIA NO.

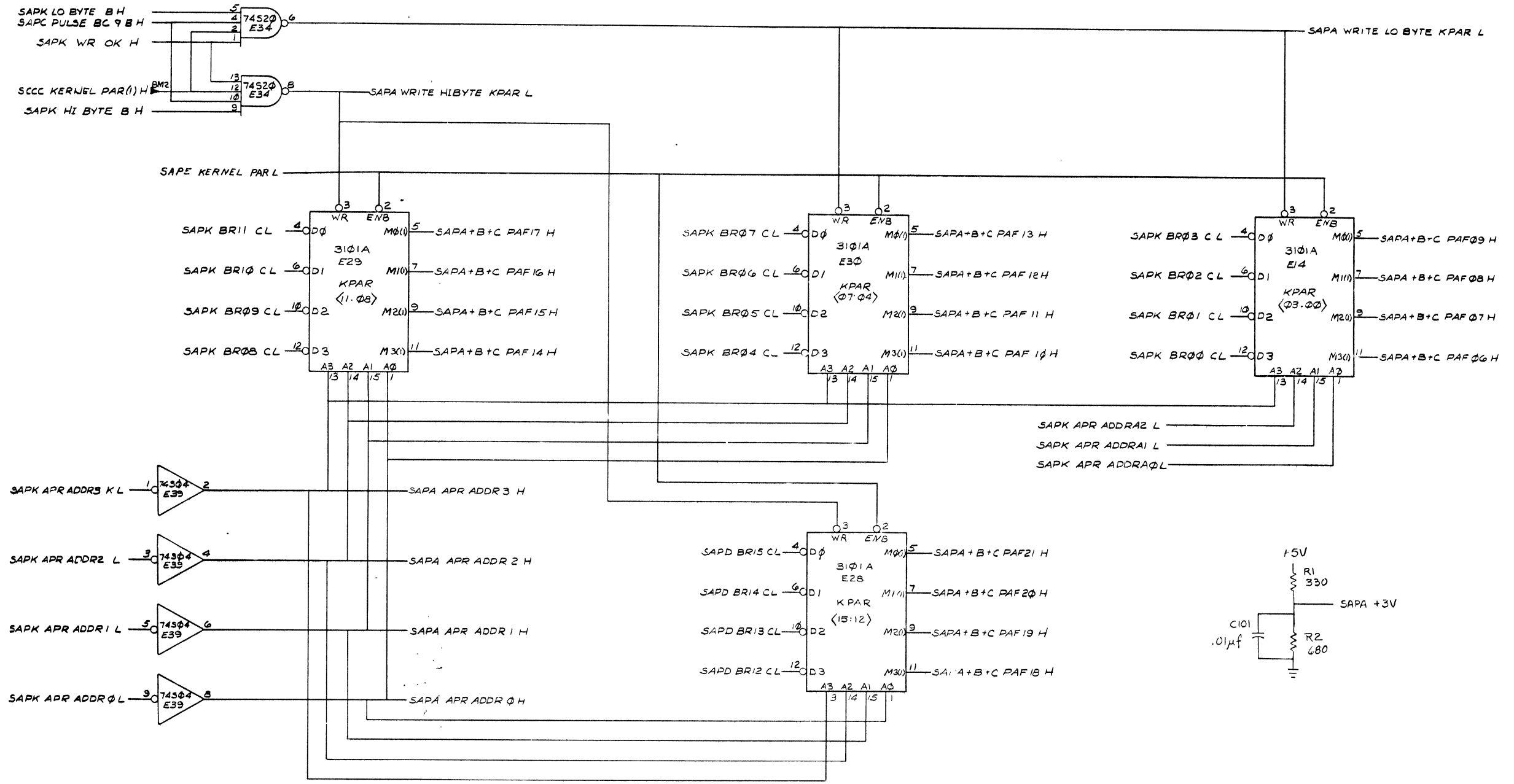
SCALE: 1 OF 13 SHEET

DRW: [Signature] DATE: 10/22/74
CHKD: [Signature] DATE: 11/22/74
PRD: [Signature] DATE: 11/22/74
NEXT HIGHER ASSY

digital EQUIPMENT CORPORATION
TITLE: SYS ADRS PATH
SIZE CODE: DCS M8137-0-1
NUMBER: 1
REV. A

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REV A 1-0-7-018W DCS M8137-0-1 2



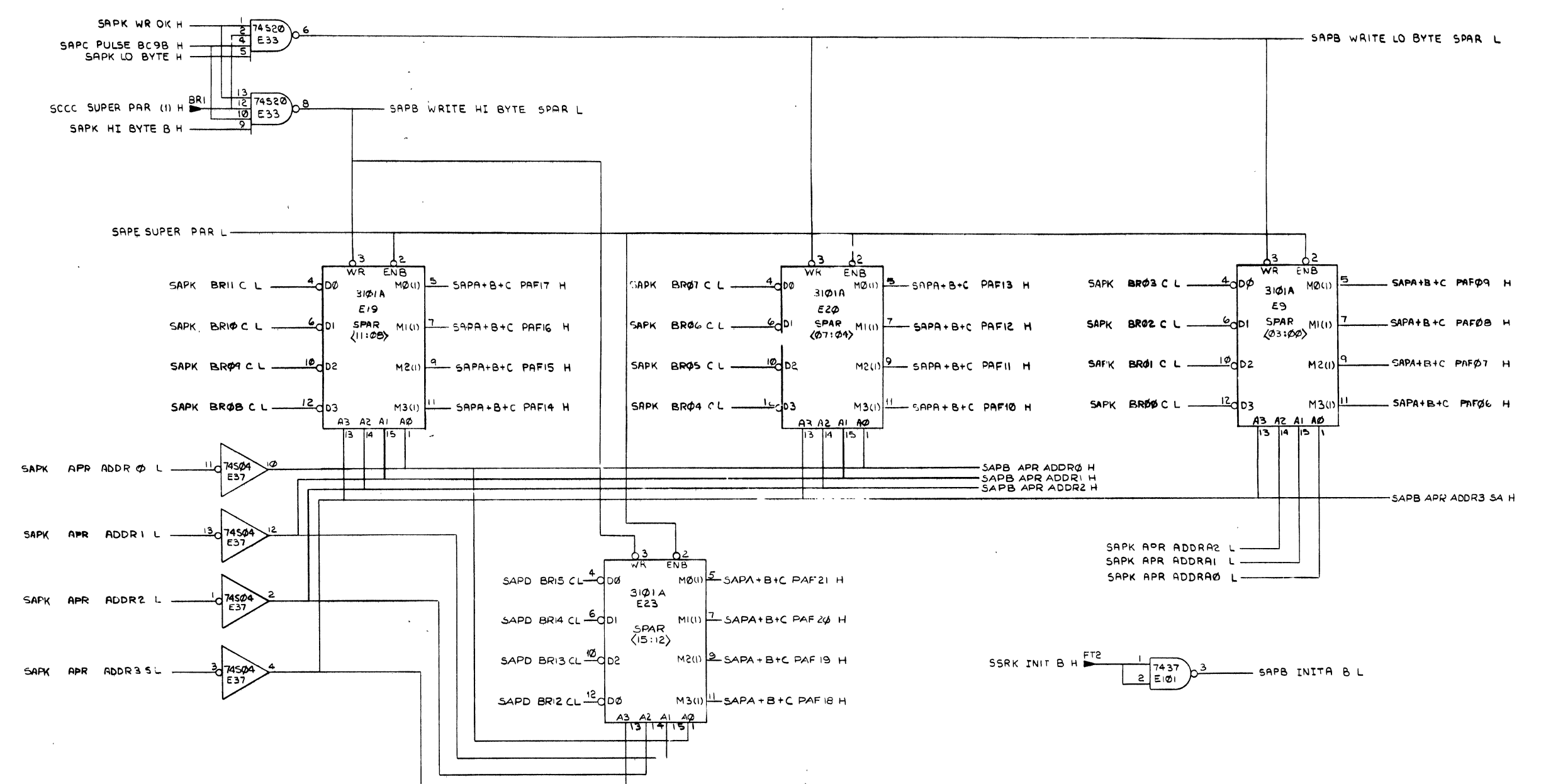
REVISIONS		
CHK	CHANGE NO.	REV.

KERNEL PAGE ADDRESS REGISTERS (PAR) SLOT 14		SIZE CODE	NUMBER	REV.
SYS. ADRS PATH (SAPA)		DCS	M8137-0-1	A
SCALE	SHEET	DIST.		
	2 OF 13			

065 FORM NO. 100 100

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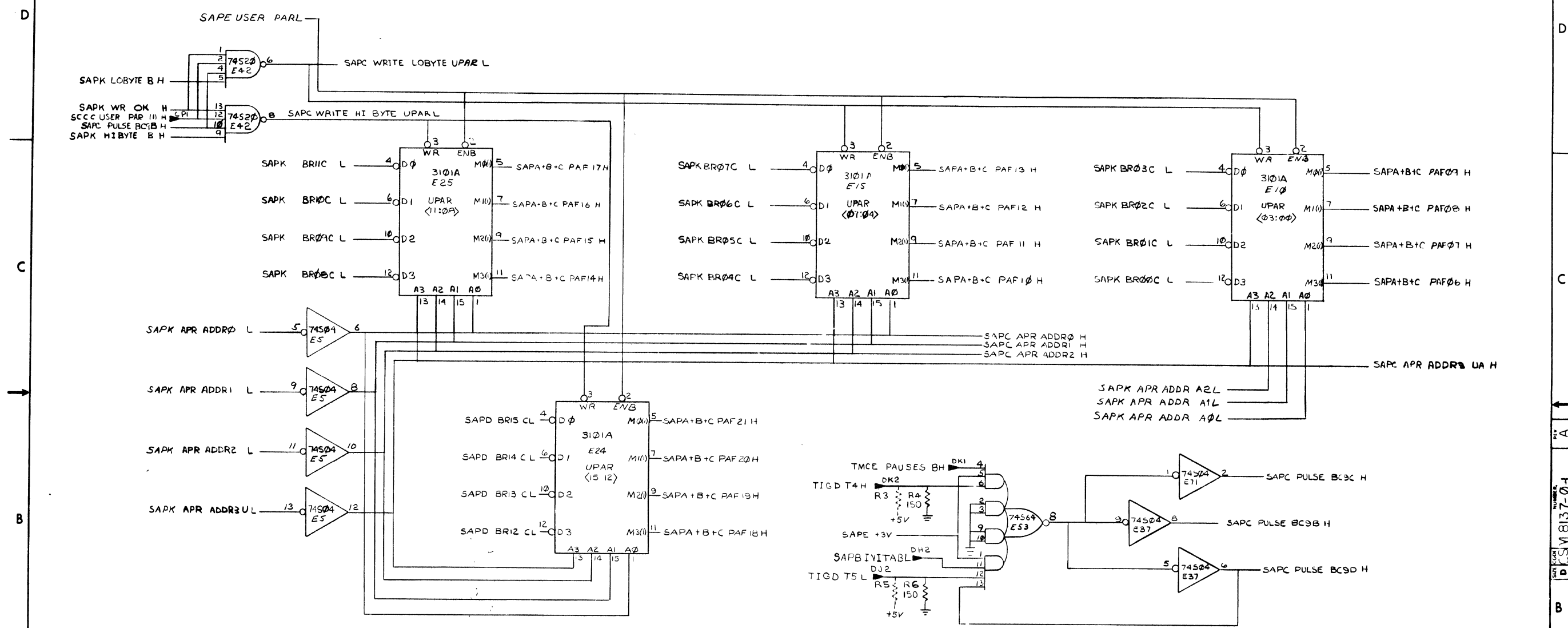
SUPERVISOR PAGE ADDRESS REGISTERS (PAR) SLOT 14

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE 10/13/70	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
DECIMALS	ANGLES	DATE 10/13/70		
XXX - 006	10° 30'	DATE 10/13/70	TITLE SYS. ADRS. PATH	
.XX - 02		DATE 10/13/70		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE 10/13/70	SIZE CODE DCS M8137-0-1	
		DATE 10/13/70		
MATERIAL	NEXT HIGHER ASSY	SCALE	NUMBR	REV.
FINISH		SHEET		
		3 of 13		A

REV	CHANGE NO	DATE

DIC FORM NO. 102-B

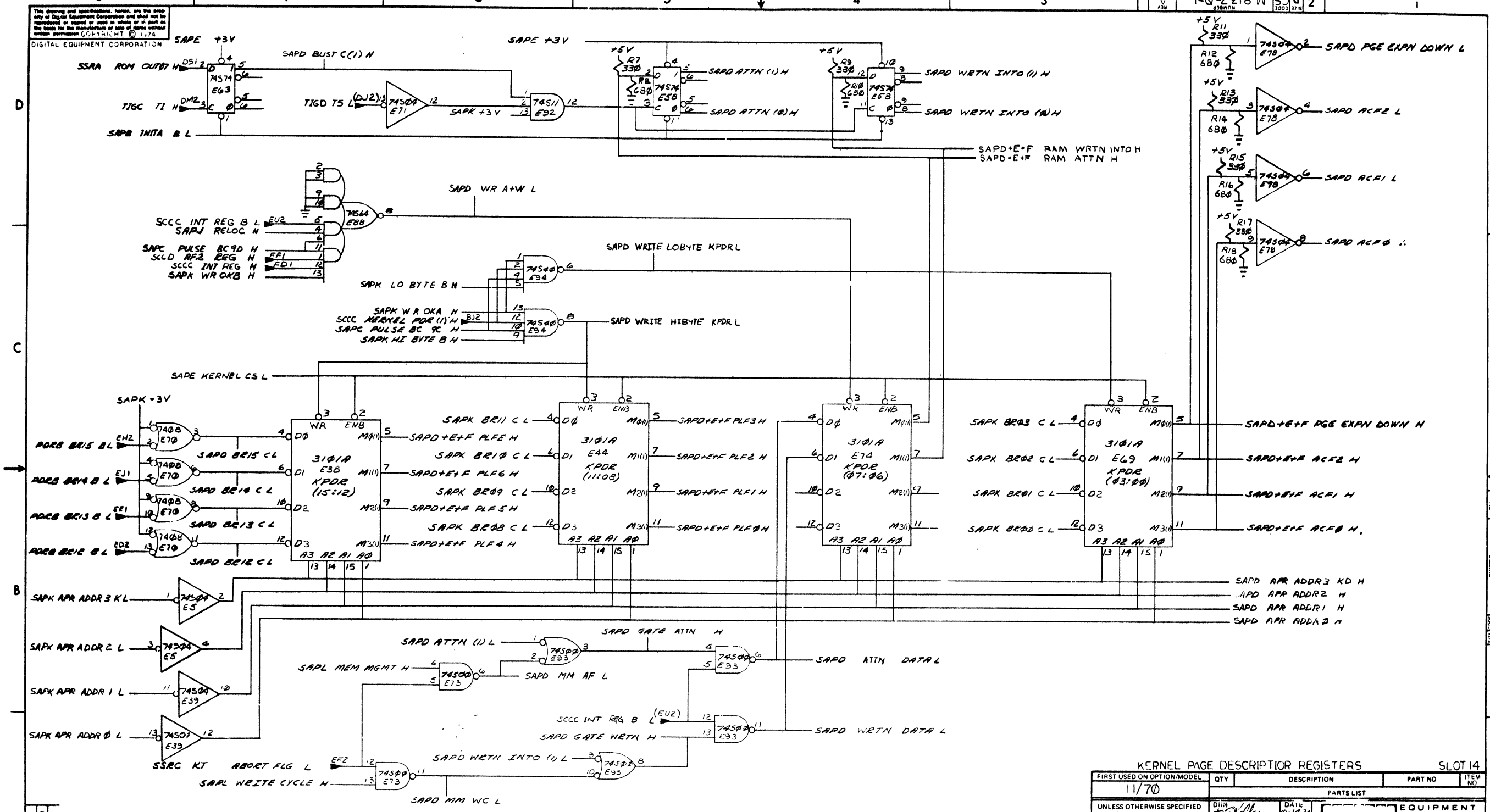
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REV	CHANGE NO
CHK	

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO.	ITEM NO.
11/70					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN J KELLEY	DATE 10 10 74	EQUIPMENT CORPORATION SYSTEMS MANUFACTURING	
DECIMALS	ANGLES	CHK'D J Ferguson	DATE 11 22 74		
XXX - 005	± 0° 30'	ELG J N ENG	DATE 11 22 74	TITLE SYS. ADRS. PATH	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PRD Taylor	DATE 11 21 75	(SAPC)	
MATERIAL	++	NEXT HIGHER ASSY		SIZE CODE	NUMBER
FINISH	++	SCALE		D C S M 8137-0-1	REV A
		SHEET	4 of 13	DIST	

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KERNEL PAGE DESCRIPTOR REGISTERS SLOT 14

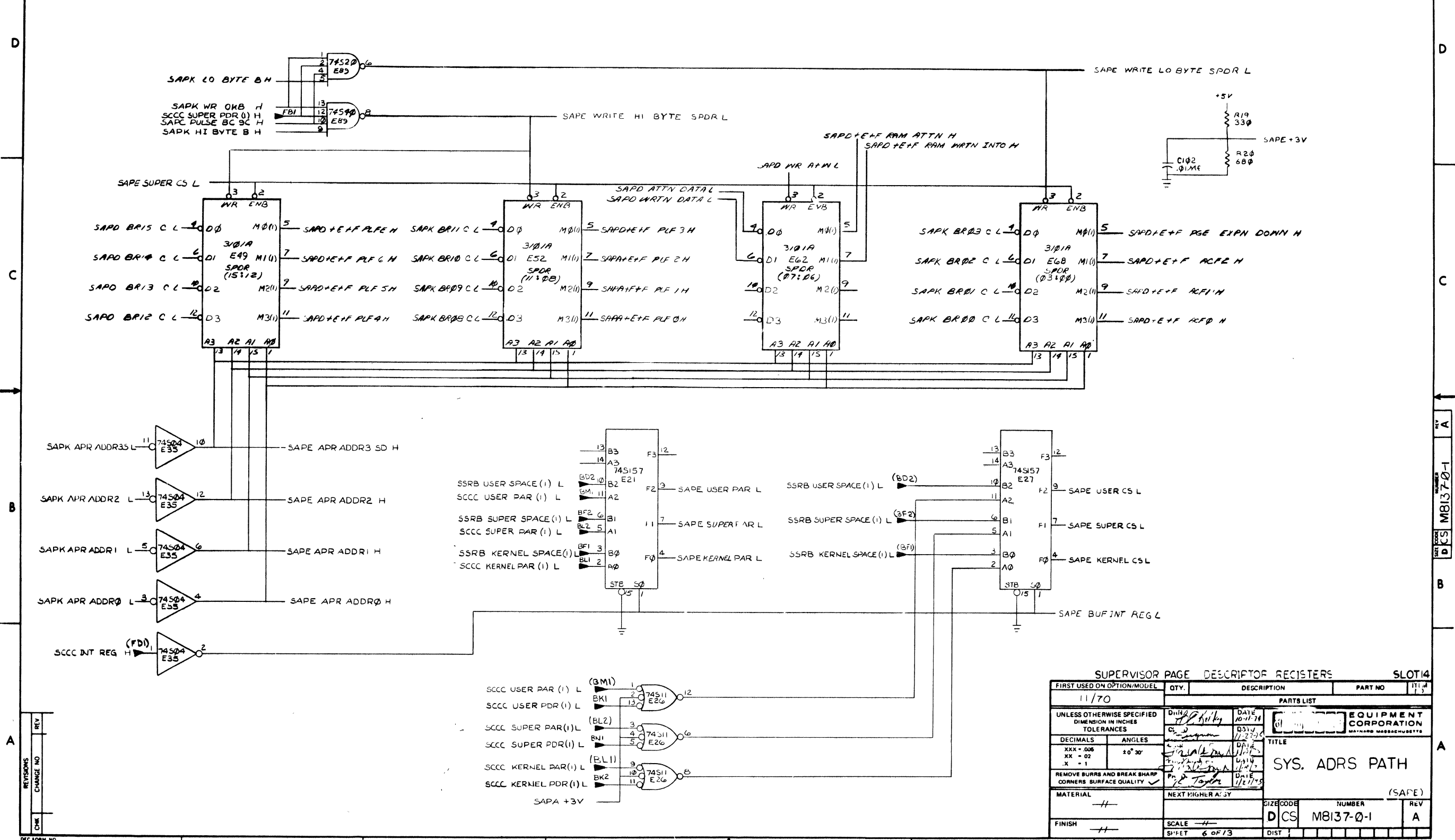
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE: 10-14-74	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE: 11-22-74		
XXX - .005	10' 30"	DATE: 1-15-75	TITLE: SYS. ADRS. PATH (SAPD)	
XX - .02		DATE: 1-24-75		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE: 11-24-75		
MATERIAL	NEXT HIGHFR ASSY	SIZE CODE	NUMBER	REV
FINISH	SCALE	DCS	M8137-0-1	A
	SHEET			

REV	CHANGE NO	DATE

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1974

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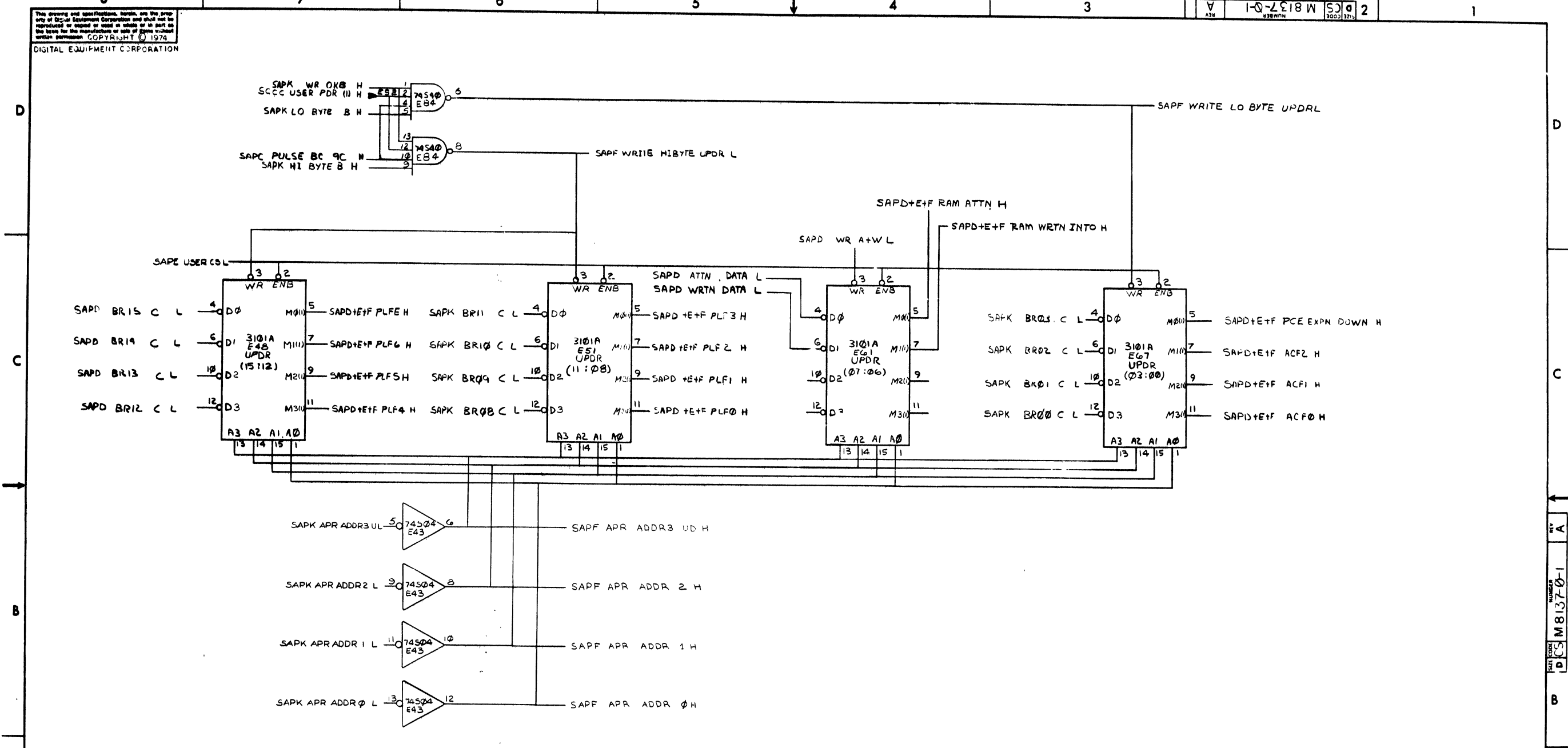


SUPERVISOR PAGE DESCRIPTOR REGISTERS SLOT 14			
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.
11/70			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE 10-11-74	EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
DECIMALS	ANGLES	DATE 11-27-76	
XXX = .005	XX = .02	X = .1	TITLE SYS. ADRS PATH
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE 12/21/75	REV (SAFE)
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER
FINISH	SCALE	D C S	M B I 3 7 - 0 - 1
SHEET 6 OF 13		DIST	

REV	
CHANGE NO	
CHK	

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V 1-0-2-18 W SCS 2 1



USER PAGE DESCRIPTOR REGISTERS SLOT 14

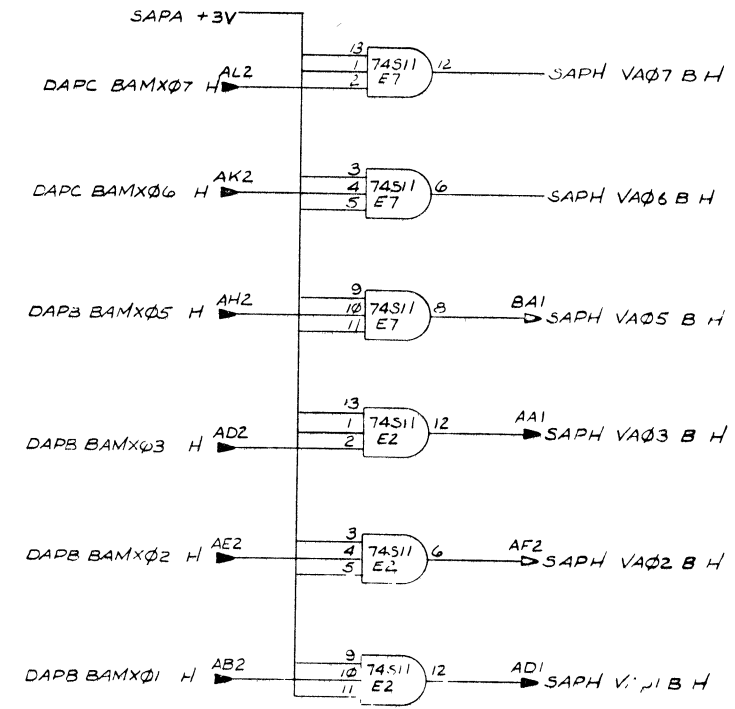
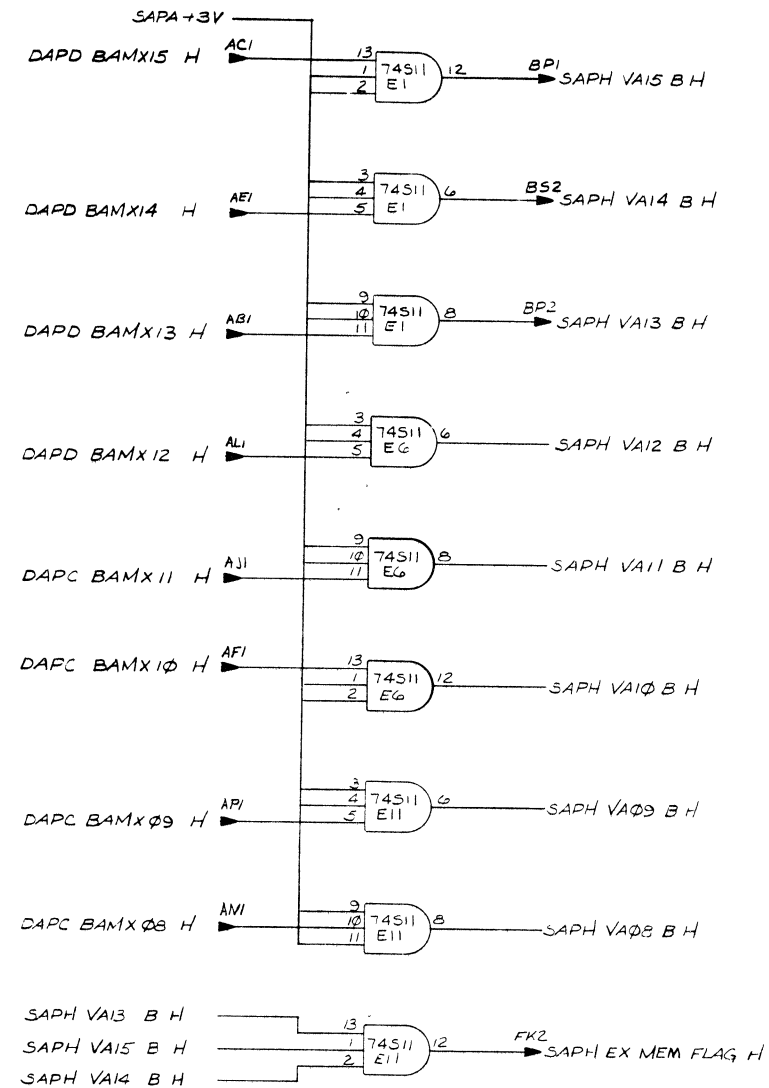
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITL#
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES:		EQUIPMENT CORPORATION		
DECIMALS	ANGLES	TITLE		
XXX - .006	±0° 30'	SYS. ADDR'S. PATH (SAPF)		
X - .1				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		MATERIAL		
		FINISH		
		SCALE		
		D.C.S. M 8137-0-1		

REV	
CHANGE NO	
CHK	

REV A DCS M 8137-0-1

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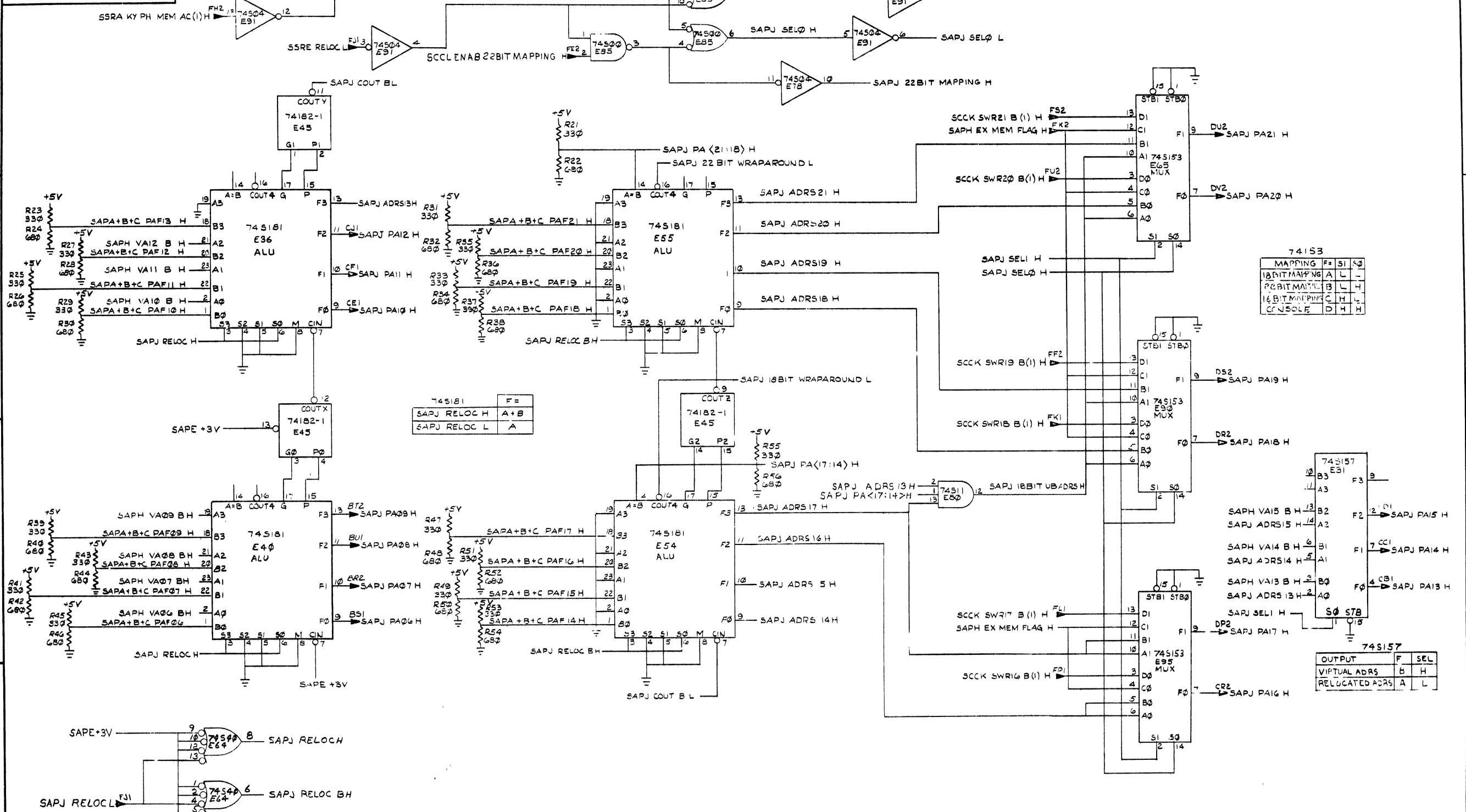
REV A 1-0-238W DCS M8137-0-1 2



REVISIONS		
CHK	CHANGE NO	REV

ADDRESS BUFFERS SLOT 14
 TITLE SYS ADRS PATH(SAPH) SIZE CODE DCS NUN'NER M8137-0-1 REV. A
 SCALE # SHEET 8 OF 13 DIST.

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74S153 MAPPING

MAPPING	F	S	S
18 BIT MAPPING	A	L	-
16 BIT MAPPING	B	L	H
16 BIT MAPPING	C	H	L
CONSOLE	D	H	H

74S181 F=

SAPJ RELOC H	A+B
SAPJ RELOC L	A

74S157

B3	F3	9
A3	F2	12
B2	F1	7
A2	F1	7
B1	F1	7
A1	F1	7
B0	F0	4
A0	F0	4

74S157

OUTPUT	F	SEL
VIRTUAL ADRS	B	H
RELOCATED ADRS	A	L

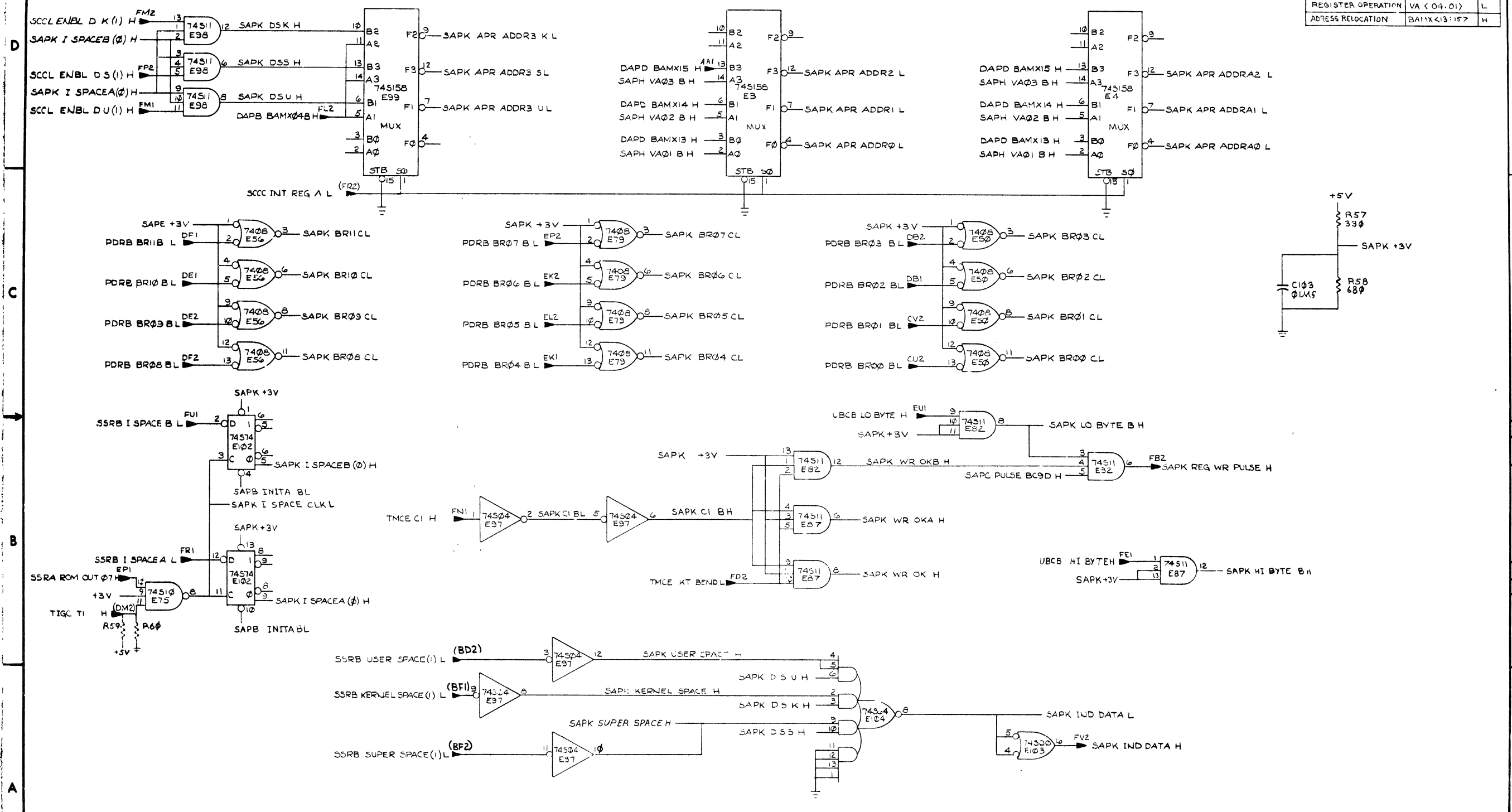
REVISIONS

CHK	CHANGE NO	REV

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1-0-2-19	MS	2	1
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74S158		
FUNCTION	APR ADDR SELECT	SEL
MEM MGMT REGISTER OPERATION	VA < 04.01>	L
ADDRESS RELOCATION	BA11X < 13:15>	H



REVISIONS		
CHK	CHANGE NO	REV.

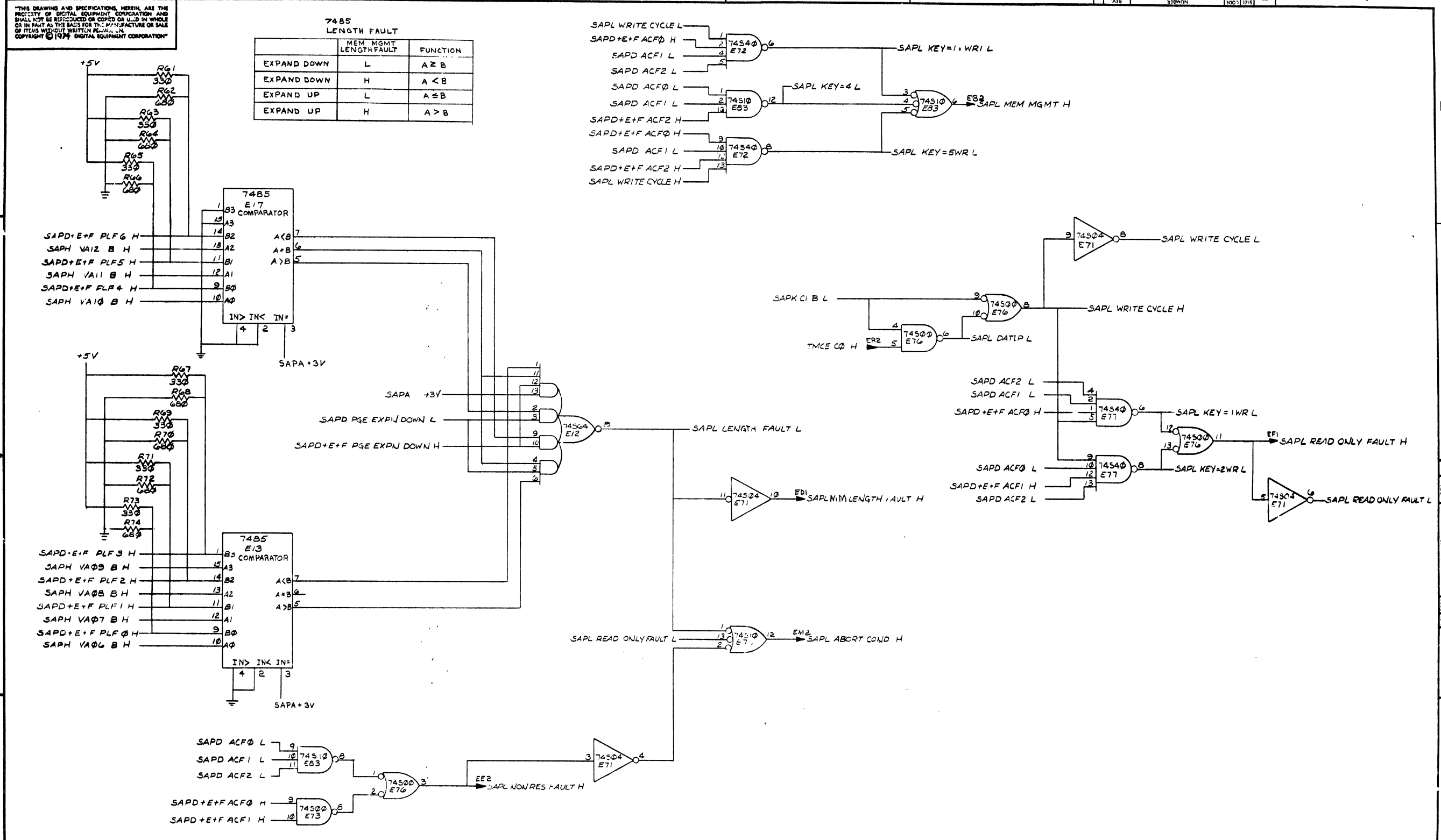
REGISTER SELECT AND CONTROL		SLOT 14	
TITLE	SIZE CODE	NUMBR	REV.
SYS. ADRS PATH(SAPK)	DCS	M8137-0-1	A
SCALE	SHEET	10 OF 13	DIGT.

REV. A
DCS M8137-0-1

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7485 LENGTH FAULT

	MEM MGMT LENGTH FAULT	FUNCTION
EXPAND DOWN	L	A ≥ B
EXPAND DOWN	H	A < B
EXPAND UP	L	A ≤ B
EXPAND UP	H	A > B



REVISIONS

CHK	CHANGE NO.	REV.

ABORT AND TRAP DECODE SLOT 14

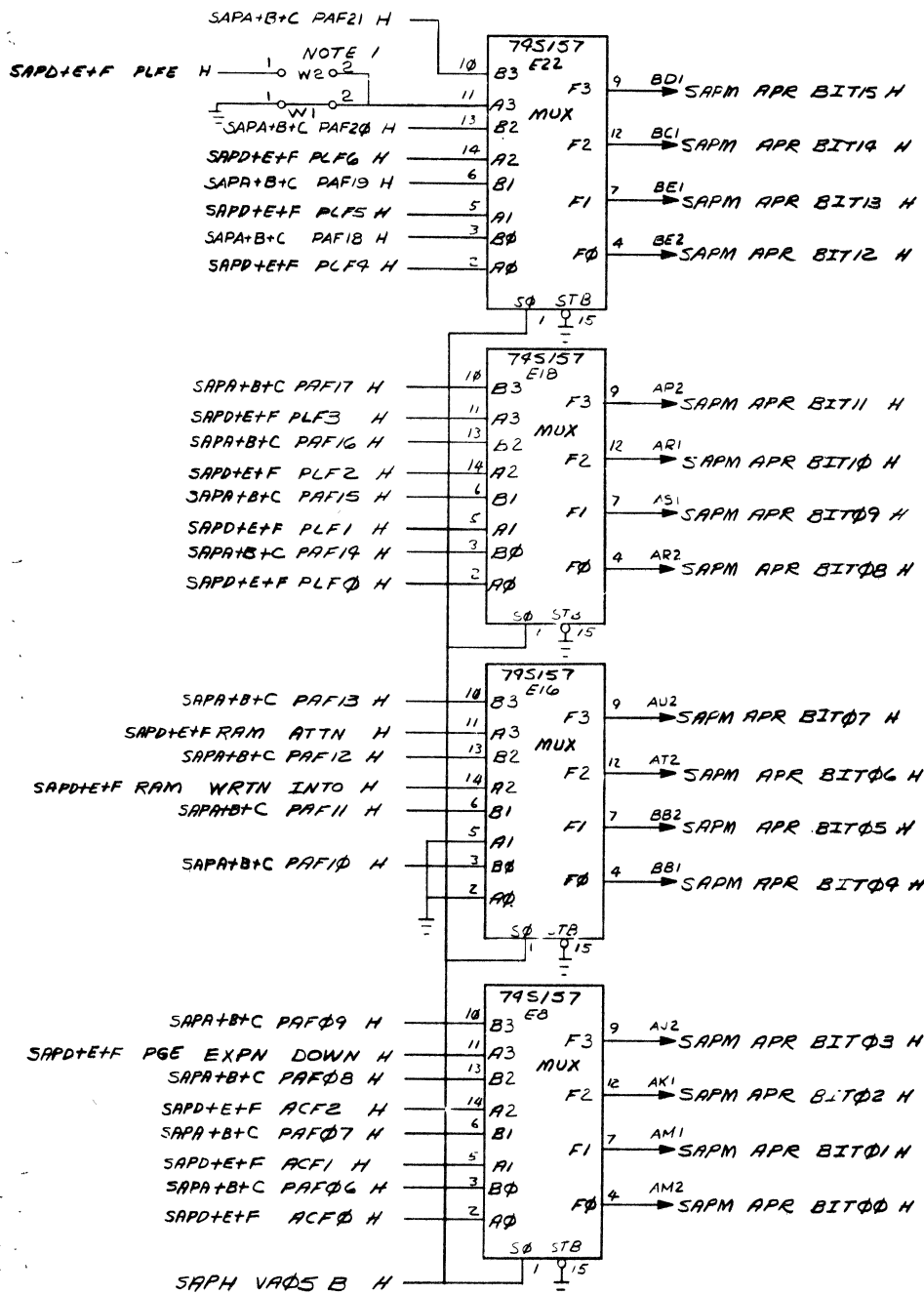
TITLE	SYS. ADRS PATH(SAPL)	SIZE CODE	D CS	NUMBER	M 8137-01	REV.	A
SCALE	---	SHEET	11 OF 13	Dist.			

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1-0-71318W 2



74S157

OUTPUT	INPUT LINES SELECTED				SEL
PDR'S	A3	A2	A1	A0	0
PAR'S	B3	B2	B1	B0	1

NOTES:
1. PROVISIONS FOR WIRE JUMPER. JUMPER 15 NORMALLY INSERTED TO CONNECT "A3" TO GROUND.

PAR/PDR READ MULTIPLEXERS SLOT 14

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM
11/70				10
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		EQUIPMENT CORPORATION		
DECIMALS	ANGLES	TITLE		
XXX + .00	±0° 30'	SYS. ADRS. PATH		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		(SAPM)		
MATERIAL	NEXT HIGHER ALTY.	SIZE CODES	NUMBER	REV.
+		D	CS M8137-0-1	A
FINISH	SCALE	D: T		
+	12 of 13			

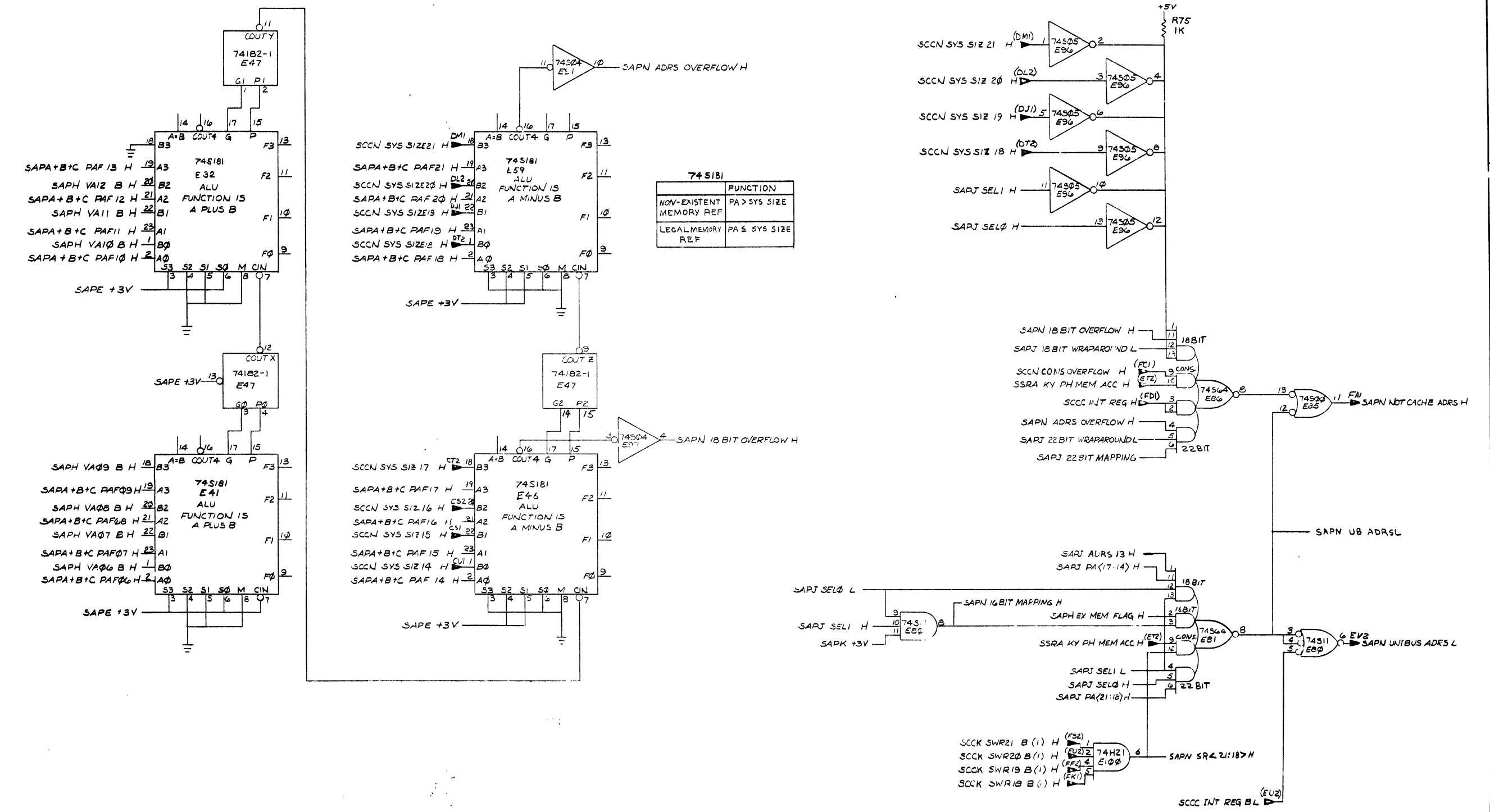
REVISIONS

NO.	DATE	DESCRIPTION
1		

DEC FORM NO 010 100-0

D CS M8137-0-1

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74S181	
FUNCTION	FUNCTION
NOV-EXISTENT MEMORY REF	PA > SYS SIZE
LEGAL MEMORY REF	PA ≤ SYS SIZE

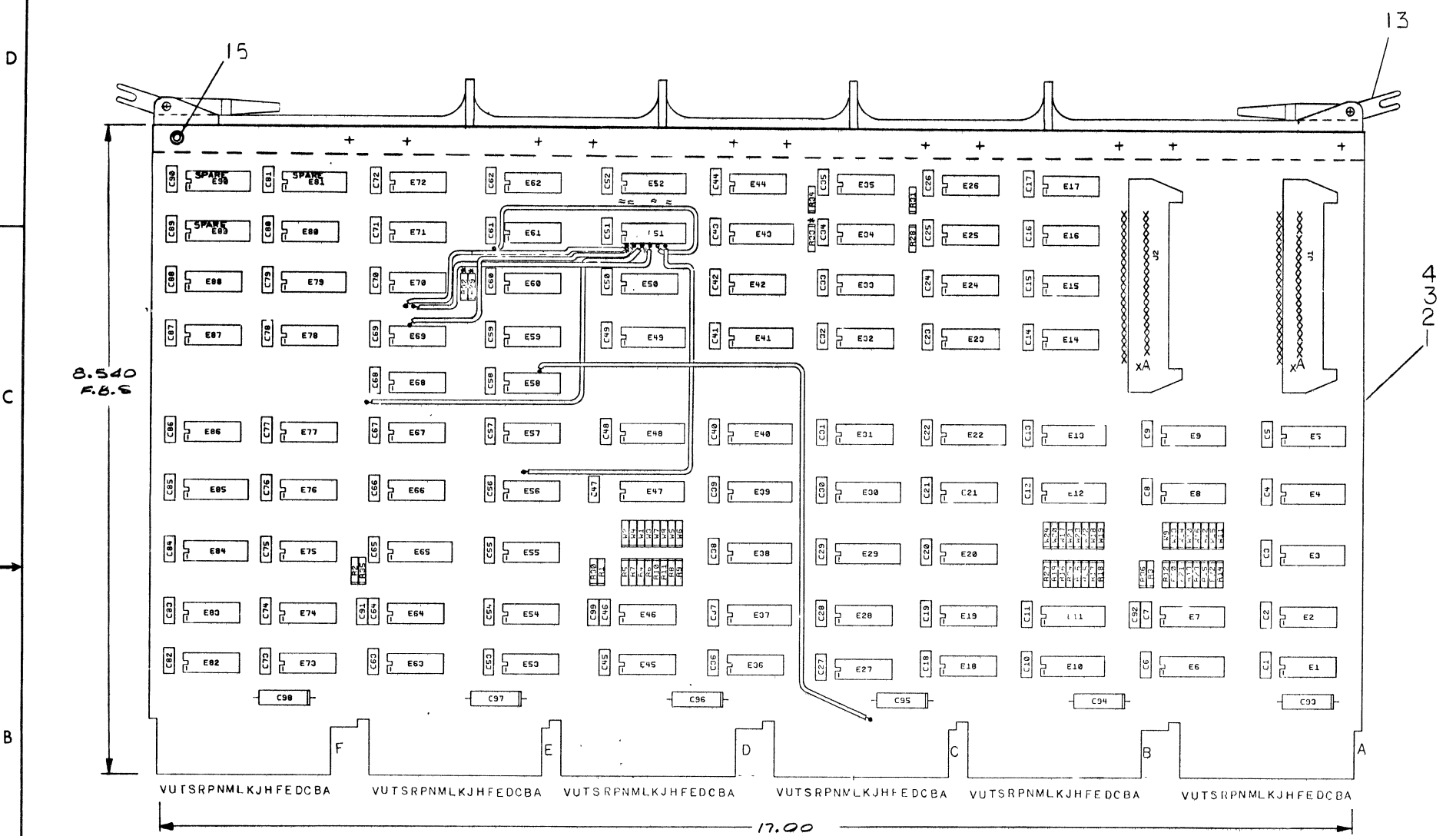
REVISIONS		
CHK	CHANGE NO.	REV.

VALID ADDRESS CHECK		SLOT 14	
TITLE	SIZE CODE	NUMBER	REV.
SYS ADRS PATH (SAPN)	DCS	M8137-0-1	A
SCALE	SHEET	DIST.	

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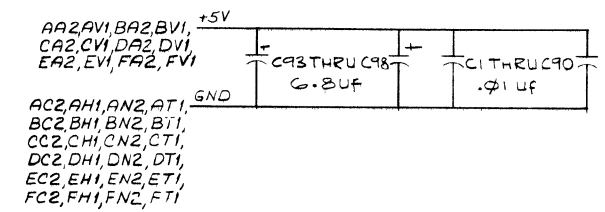
NOTES:
 1 * OPTIONAL COMPONENTS.
 2 E81, E89, & E90 ARE SPARE IC LOCATIONS.



IC TYPE	QTY	REV
IC, DEC 74157	8	16
IC, DEC 74S133	8	16
IC, DEC 8234	8	16
IC, DEC 74155	8	16
IC, DEC 74S174	8	16
IC, DEC 74S158	8	16
IC, DEC 74153	8	16
IC, DEC 7483	12	5
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS



REF	DESCRIPTION	PART NO	ITEM NO
REF	X-Y COORDINATE HOLE LOCATION	K-CO-M8140-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AH-M8140-0-5	2
REF	MODULE ECO HISTORY	B-MH-M8140-0-6	3
1	ETCHED CIRCUIT BOARD	5011355	4
6	C93 THRU C98	CAPACITOR 6 8uf 35V 20% TANT	1005306
93	C1 THRU C92	CAPACITOR .01uf 100V DISC 20%	1001610-01
2	J1, J2	CONN RIGHT ANGLE HEADER BERG	1209941
1	R34	RESISTOR 150, 1/4 W, 5%	1300250
3	R1, R2, R3	RESISTOR 330, 1/4 W, 5%	1300295
1	R28	RESISTOR 390, 1/4 W, 5%	1300309
25	R4 THRU R27, R31	RESISTOR 1K, 1/4 W, 5%	1300365
3	R30, R35, R36	RESISTOR 880 1/4 W 5%	1301424
1		HANDLE ASSY HEX	1113711-0
3	W1 THRU W24	SW, PKR DIP PKG W/8 SW	121164-04
12		EYELET HANDLE	9006730
1	E24	IC DEC 7474	1905547
3	E1, E2, E14	IC 7404	1909696
5	E63, E73, E74, E82, E83	IC DEC 8881	1909705
1	E23	IC DEC 8815	1909713
7	E18, E19, E27, E29, E38, E45, E48	IC DEC 74H01-1	1909849
2	E6, E7	IC 7403	1909932
7	E3, E4, E5, E39, E40, E47, E48	IC 74153	1909937
3	E15, E16, E17	IC 7408	1910155
2	E60, E77	IC 74S00	1910532
12	E20, E50, E59, E61, E66, E67, E75, E76, E78, E80, E86, E87	IC 74S04	1910534
1	E62	IC 74S10	1910538
9	E64, E25, E26, E31, E33, E42, E44, E54, E59	IC 74S11	1910537
5	E21, E70, E71, E72, E88	IC 74S20	1910539
1	E57	IC 74S40	1910541
3	E32, E34, E35	IC 74S64	1910542
3	E8, E9, E12	IC 74S15B	1910549
2	E13, E29	IC 74S174	1910550
1	E79	IC 74155	1910858
2	E37, E38	IC 8234	1911315
10	E22, E30, E41, E43, E51, E52, E65, E84, E85, E49	IC 74S133	1911983
2	E10, E11	IC 74157	1910855
5	E53, E55, E56, E68, E69	IC 74S74	1910544
30		WIRE #30 AWG BUSS (RETROFIT)	9105740-55
3		SWITCH XER	121284-4

QTY REF DESIGNATION DESCRIPTION PART NO ITEM NO

FIRST USED ON OPTION MODEL 11/70

ETCH BOARD REV A

PARTS LIST

DRN	DATE	BY	DATE
CHK'D	DATE	BY	DATE
PROJ. ENG	DATE	BY	DATE
PRD	DATE	BY	DATE

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TITLE: SYS DESC / CNSL CABLES

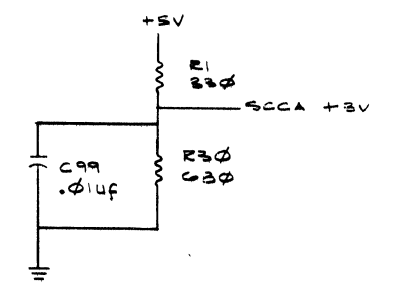
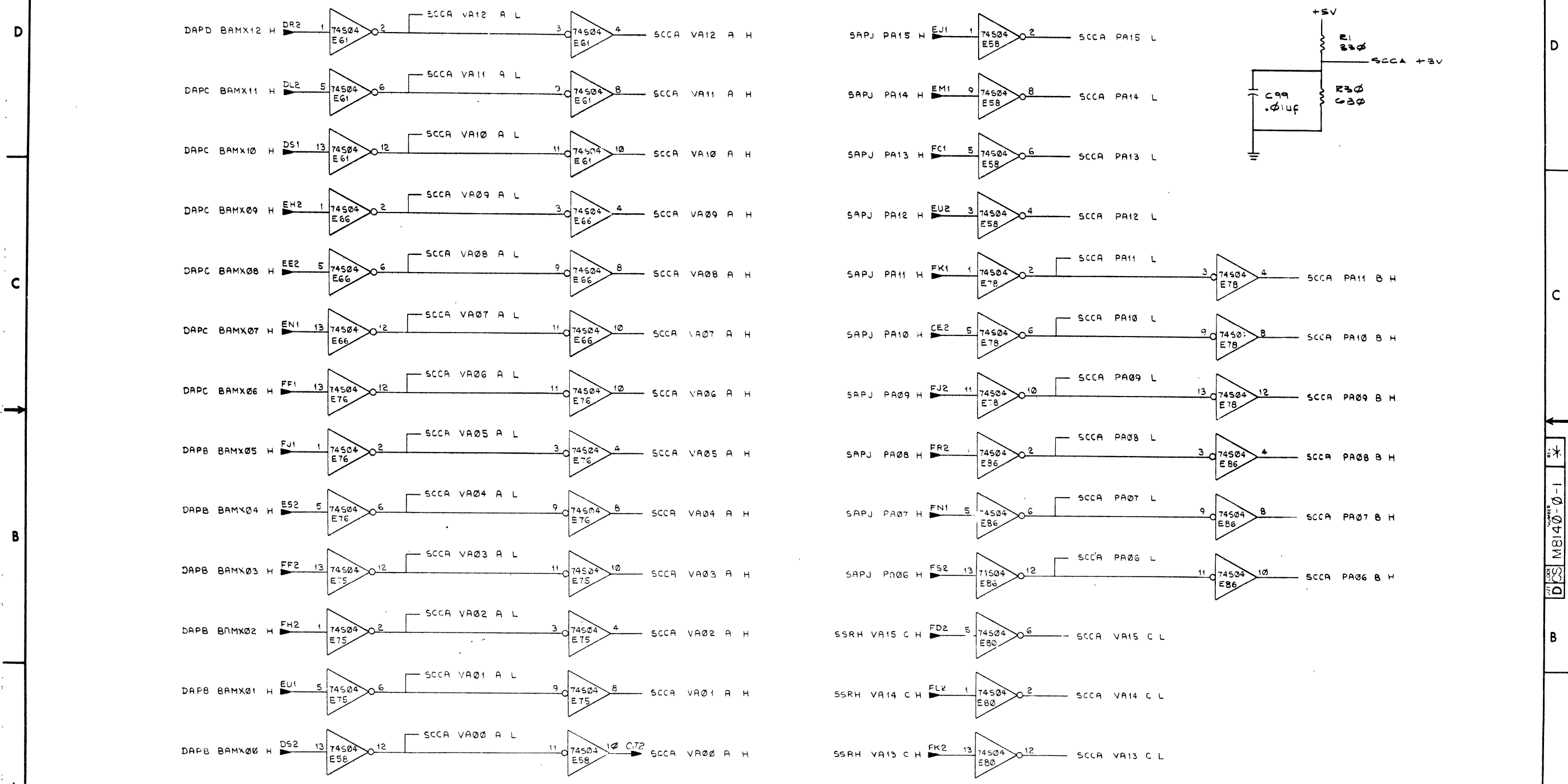
SIZE CODE: DCS NUMBER: M8140-0-1

SCALE: 1 OF 13 SHEET

SEMICONDUCTOR CONVERSION CHART

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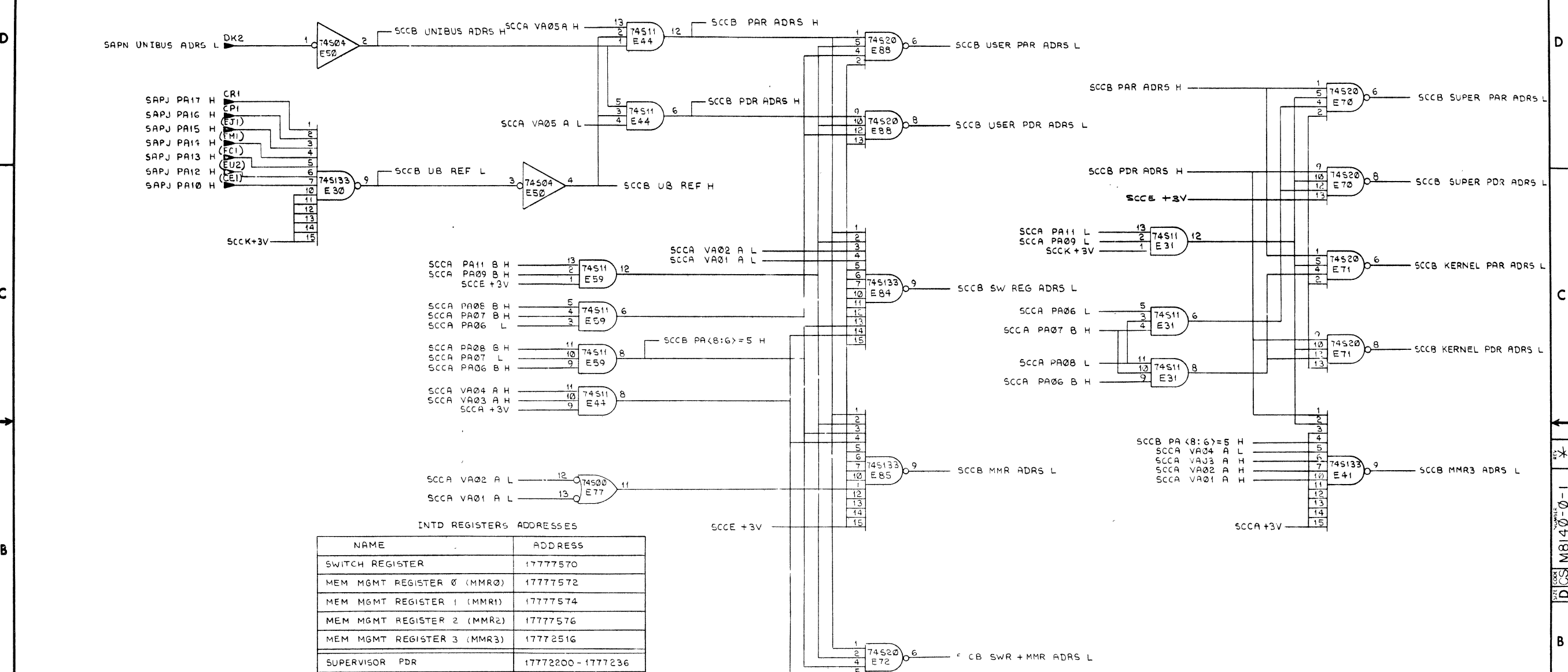
1-0-018W SC D 2



REVISIONS		
CHK	CHANGE NO.	REV.

ADDRESS BUFFERS SLOT 16
 TITLE: SYS DESC/CNSL CABLES (SCCA) SIZE CODE: D CS NUMBER: M8140-0-1 REV. *
 SCALE: SHEET 2 OF 13 DIST.

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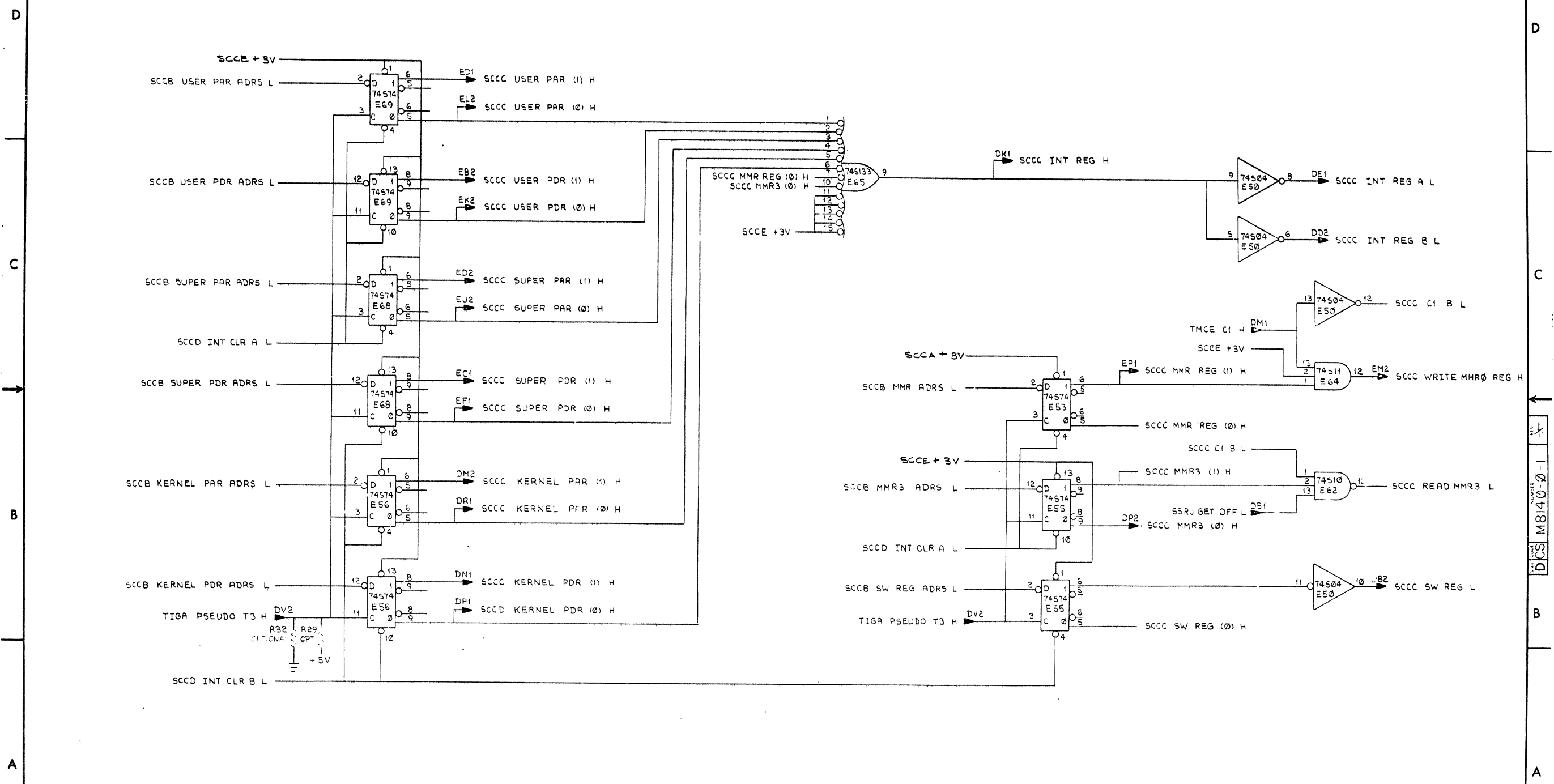
INTD REGISTERS ADDRESSES

NAME	ADDRESS
SWITCH REGISTER	17777570
MEM MGMT REGISTER 0 (MMR0)	17777572
MEM MGMT REGISTER 1 (MMR1)	17777574
MEM MGMT REGISTER 2 (MMR2)	17777576
MEM MGMT REGISTER 3 (MMR3)	17772516
SUPERVISOR PDR	17772200 - 17772236
SUPERVISOR PAR	17772240 - 17772276
KERNEL PDR	17772300 - 17772336
KERNEL PAR	17772340 - 17772376
USER PDR	17777600 - 17777636
USER PAR	17777640 - 17777676

REVISIONS		
CHK	CHANGE NO	REV

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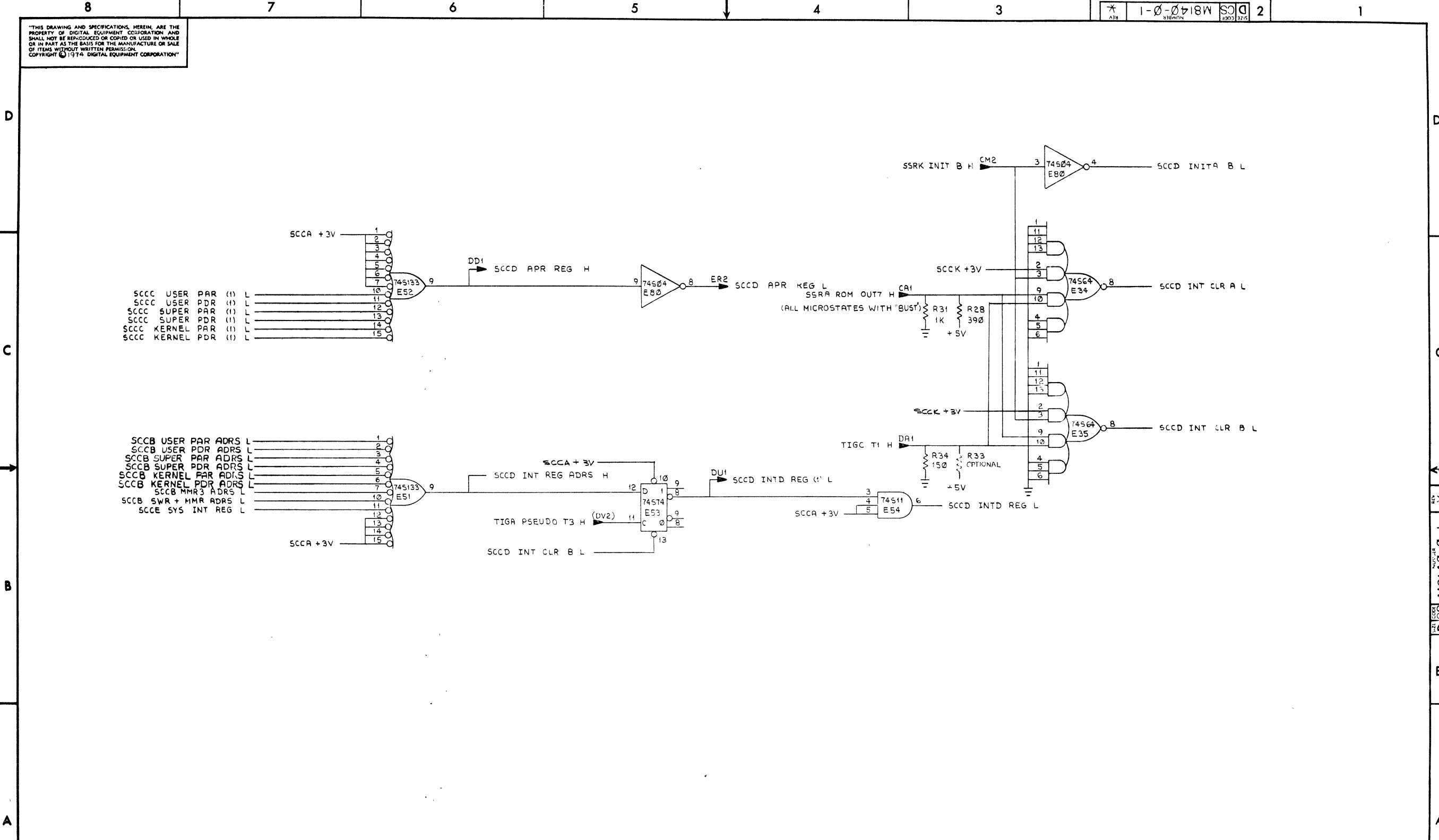
1-0-0719W SCS 2



REVISIONS		
CHK	CHANGE NO	REV

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1-0-0718W SO D 2



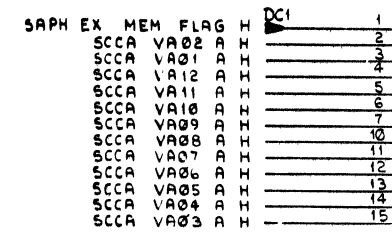
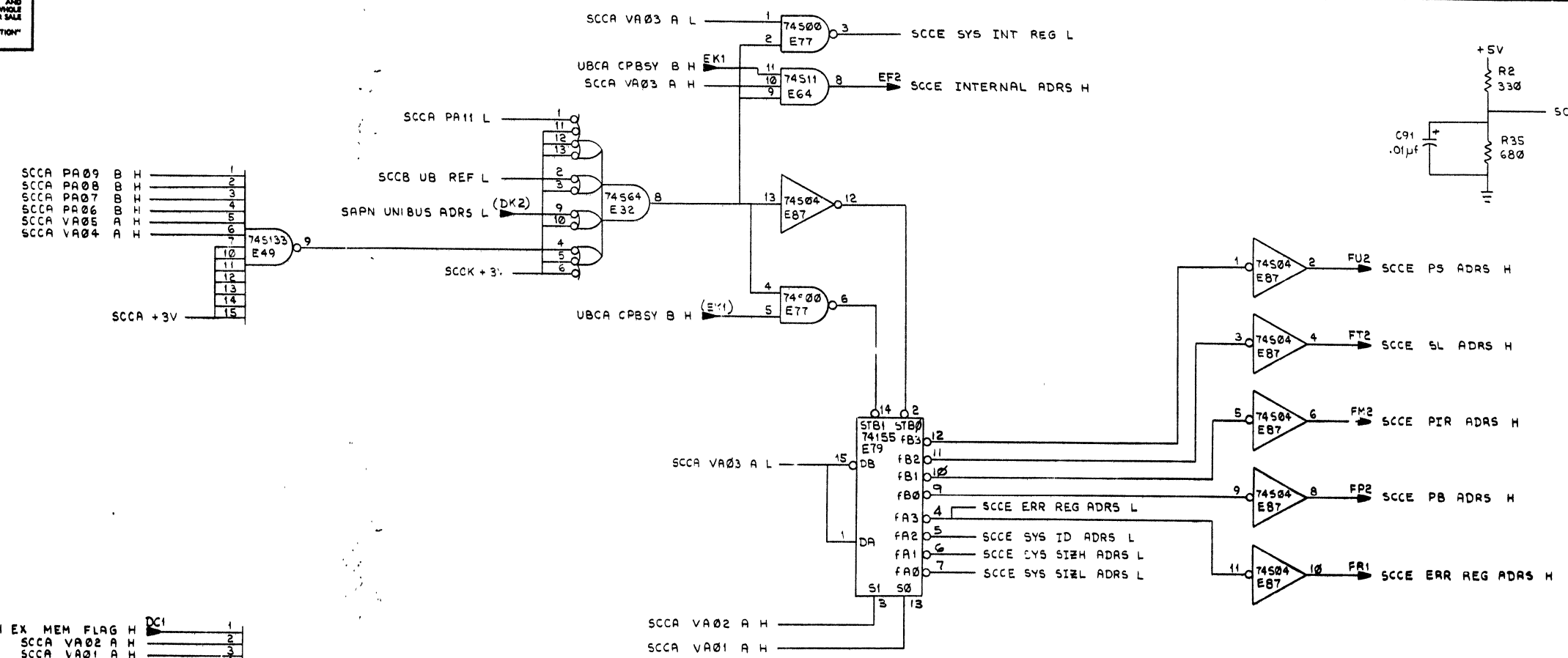
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
SYS DESC/CNSL CABLES (SCCD)		D	CS	M8140-0-1	*
SCALE	SHEET 5 OF 13	D.T.			

REV. 1 M8140-0-1

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1-0-078W SOD 2

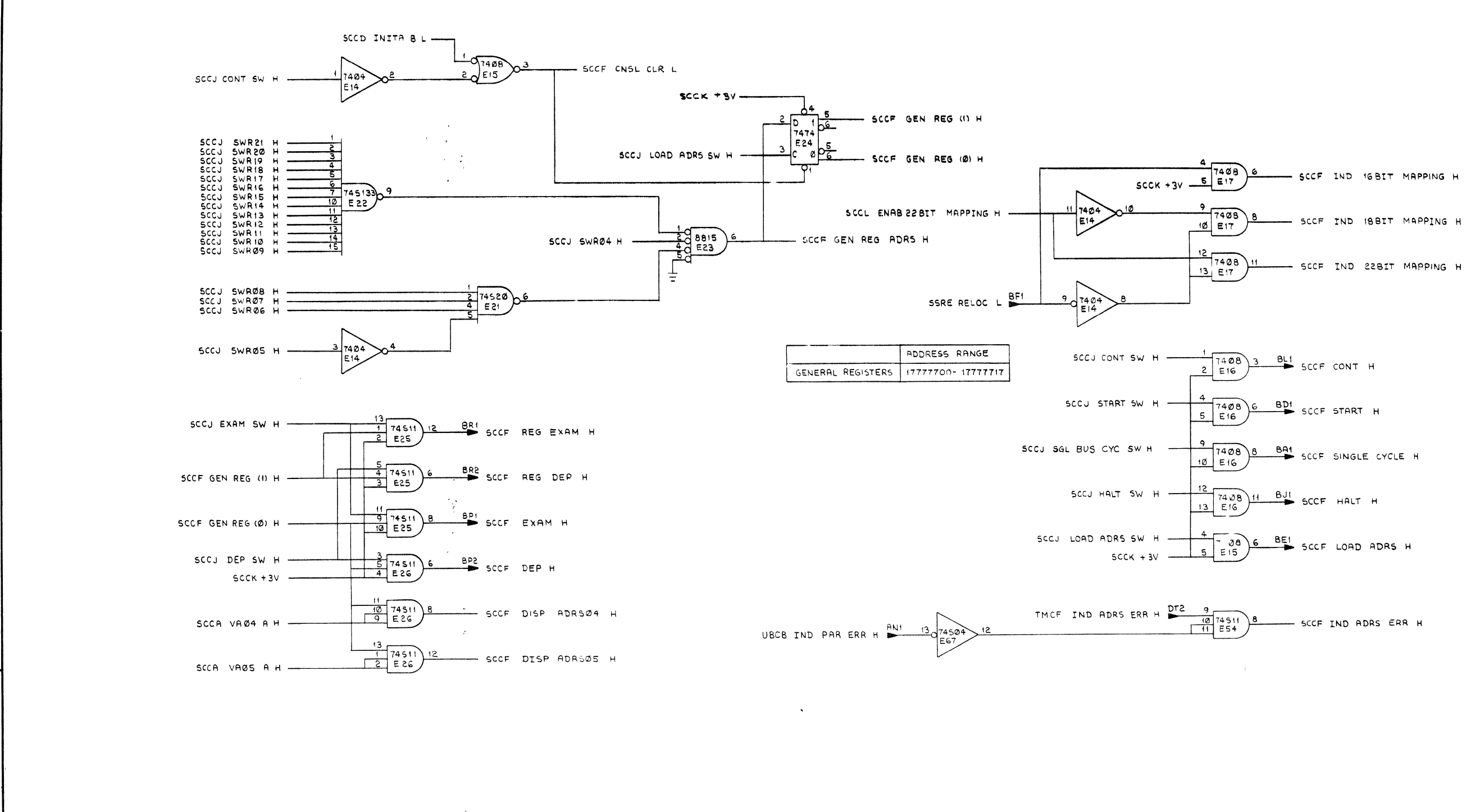


SYSTEM REG (STB0)	UNIBUS REG (STB1)	SCCA VA03 A	SCCA VA02 A (S1)	SCCA VA01 A (S0)	TRUE OUTPUT SIGNAL (F OUTPUTS)	REGISTER ADDRESS
H	H	X	X	X	NONE	NONE
L	L	H	L	L	SCCE PB ADRS	1777770
L	L	H	H	L	SCCE PIR ADRS	1777772
L	L	H	H	H	SCCE SL ADRS	1777774
L	L	H	L	L	SCCE PS ADRS	1777776
L	H	L	L	L	SCCE SYS SIZL ADRS	17777760
L	H	L	L	H	SCCE SYS SIZH ADRS	17777762
L	H	L	H	L	SCCE SYS ID ADRS	17777764
L	H	L	H	H	SCCE ERR REG ADRS	17777766

REVISIONS		
CHK	CHANGE NO.	REV.

SYSTEM REG ADDRESS DECCOE SLOT 16
 SYS DESC/CNSL CABLES(SCCE) DCS M8140-0-1
 SCALE SHEET 6 OF 13 DIST.

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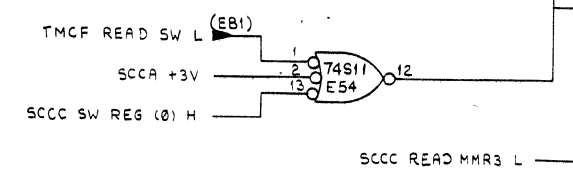
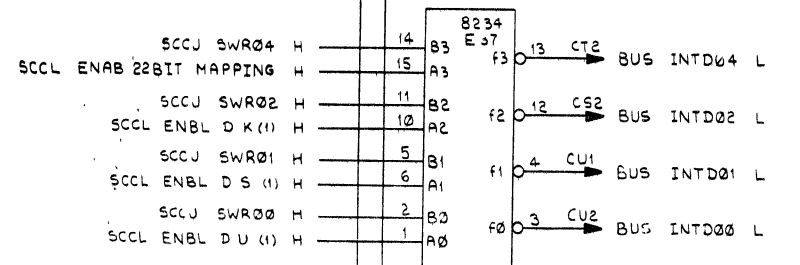
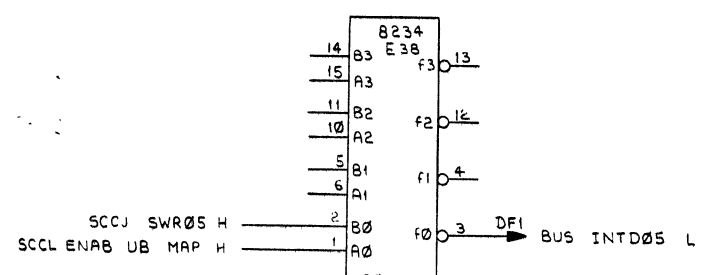
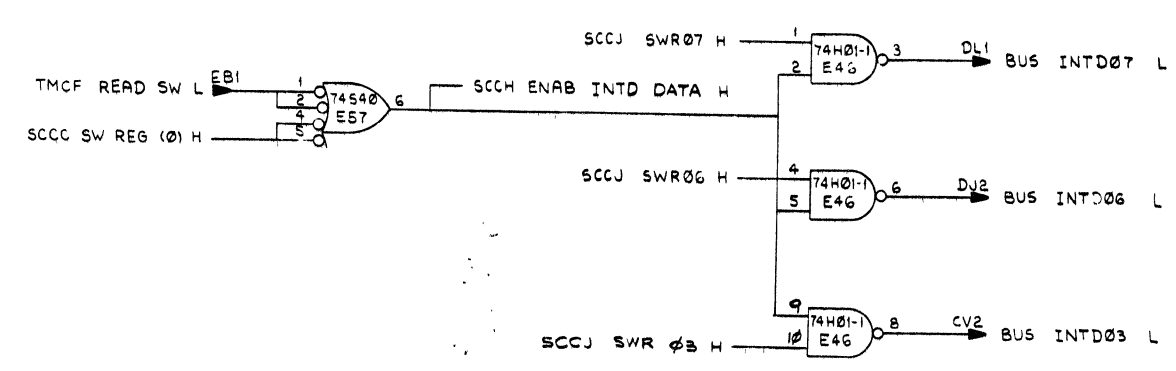
GENERAL REGISTERS	ADDRESS RANGE
	17777700-17777717

REVISIONS		
CHK	CHANGE NO	REV

GENERAL REGISTER DECODE SLOT 16			
TITLE	SIZE CODE	NUMBER	REV.
SYS DESC/CNSL CABLES(SCCF)	D CS	M8140-0-1	*
SCALE	SHEET 7 OF 13	DIST.	

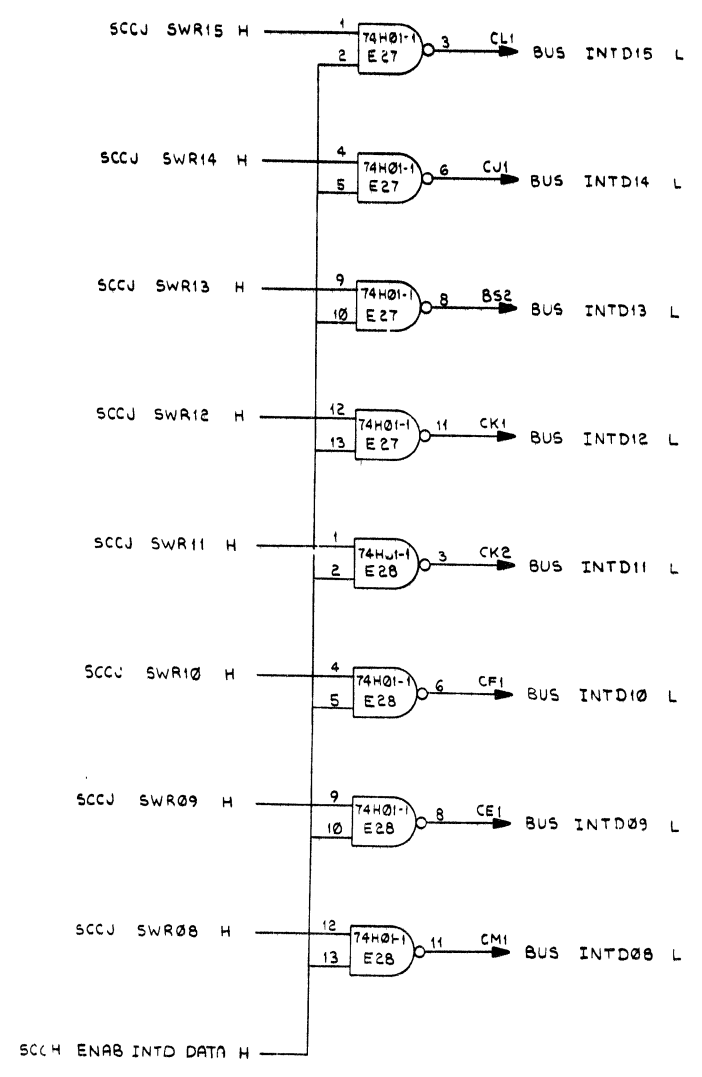
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1-0-0718W SQD 2



8234

S0	S1	fN	OUTPUT
L	L	B	SWITCH REGISTER
H	L	A	MEM MGMT REG3
L	H	B	SWITCH REGISTER
H	H	H	NONE

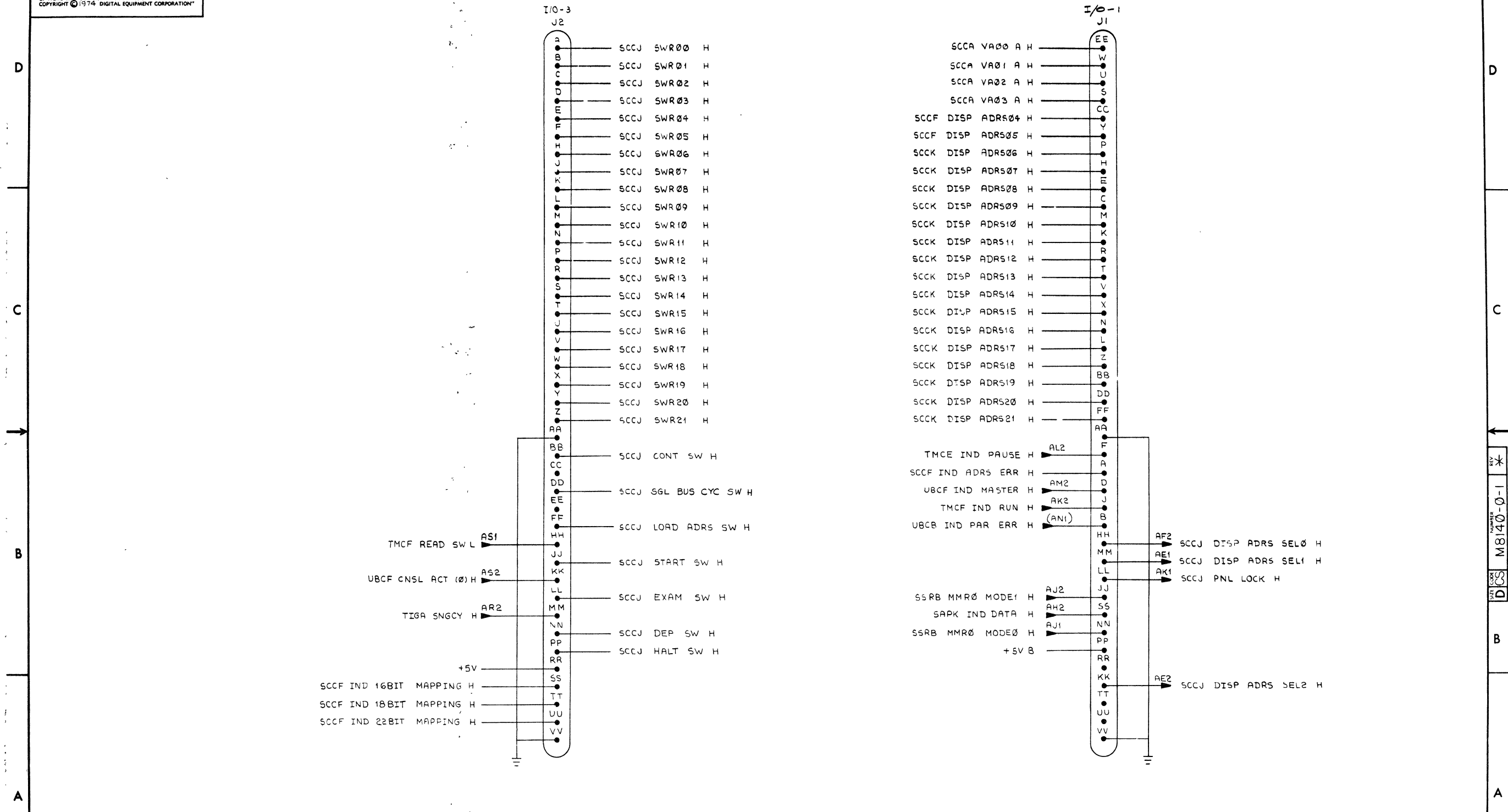


REVISIONS		
CHK	CHANGE NO.	REV.

INTERNAL BUS DRIVERS SLOT 16
 TITLE: SYS DESC/CNSL CABLES(SCCH) SIZE/ CODE: D CS NUMBER: M8140-0-1 REV: *

180

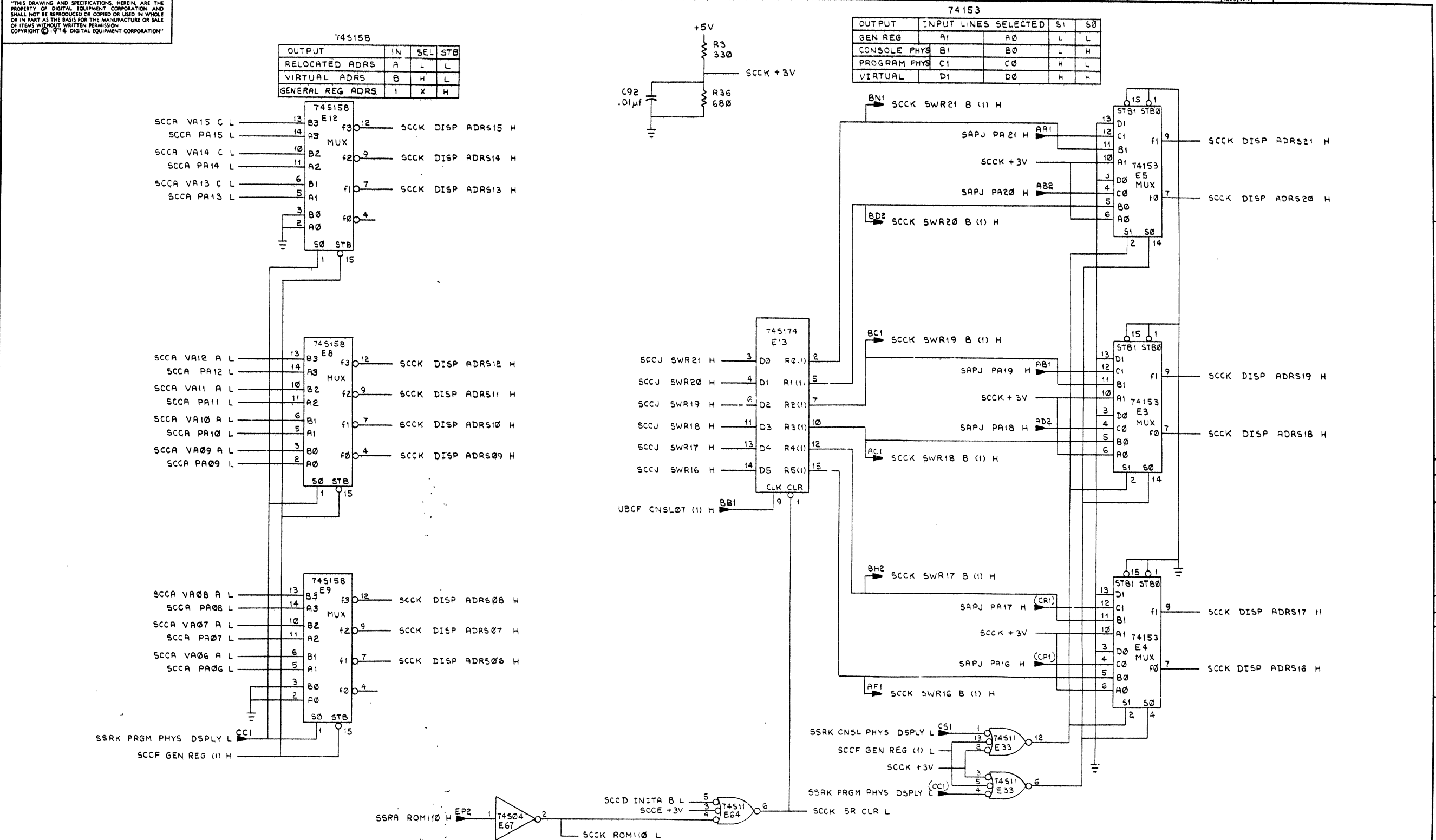
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REVISIONS		
CHK	CHANGE NO	REV

TITLE		SIZE	CODE	NUMBER	REV.
SYS DESC/CNSL CABLES(SCCJ)		D	CS	M8140-0-1	*
SCALE	SHEET	9 OF 13		DIST	

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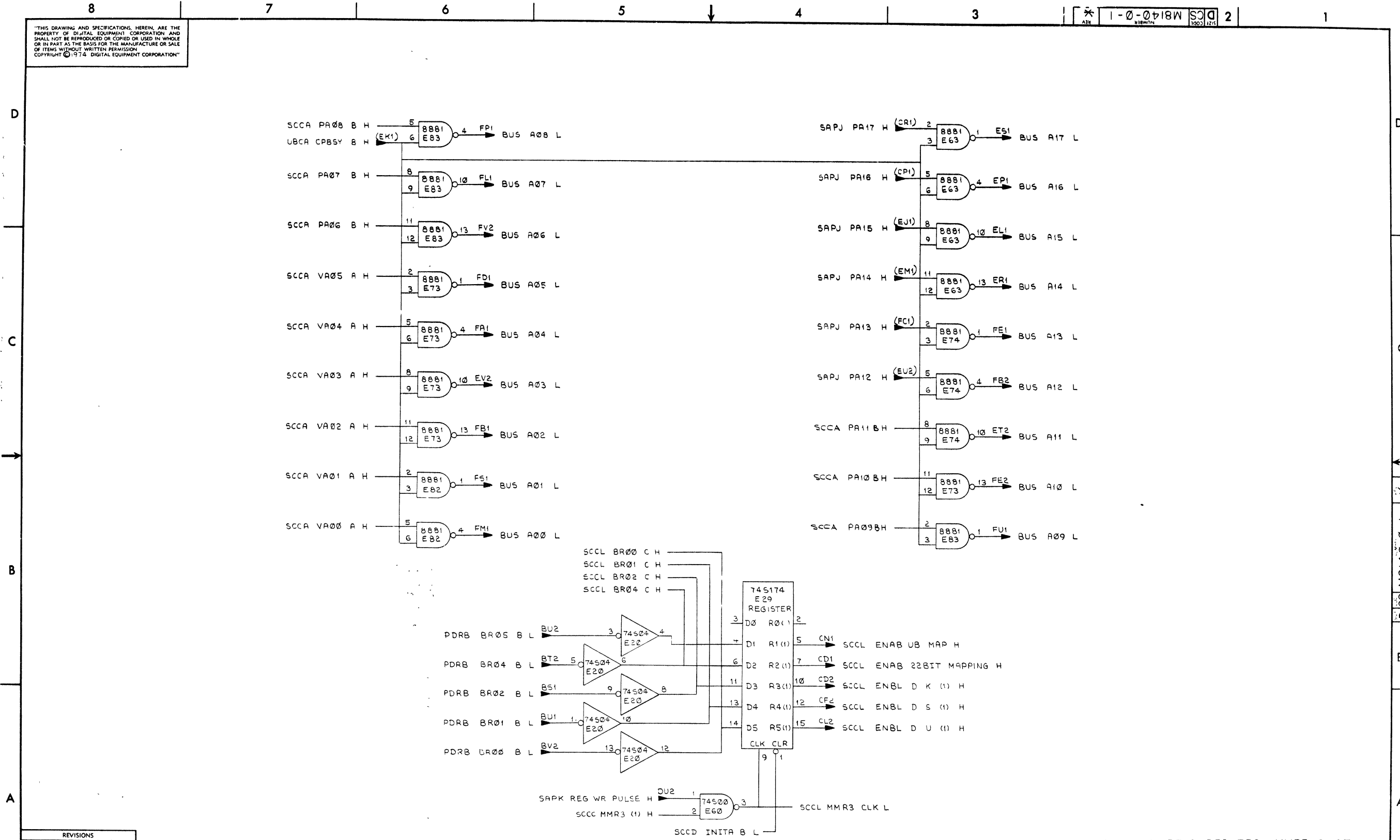
REVISIONS		
CHK	CHANGE NO	REV

TITLE				SIZE	CODE	NUMBER	REV.
SYS DESC/CNSL CABLES(SCKK)				D	CS	M8140-0-1	*
SCALE	SHEET	10	OF	13	DIST.		

182

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1-0-0-18W DCS 2

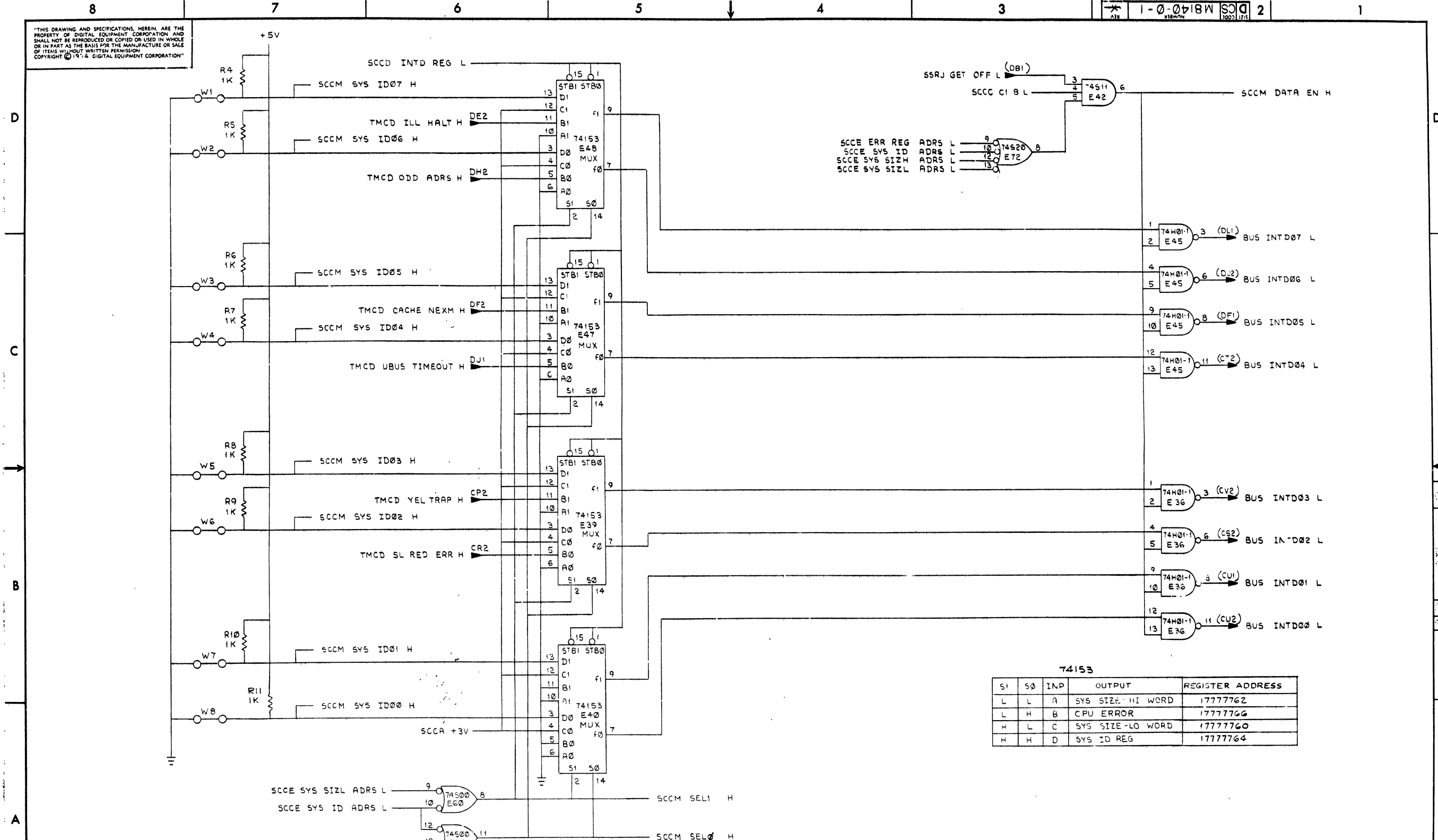


REVISIONS		
CHK	CHANGE NO	REV

UNIBUS ADDRESS DRIVERS +MMR3 SLOT 16			
TITLE	SIZE CODE	NUMBER	REV
SYS DESC/CNSL CABLES(SCCL)	DCS	M8140-0-1	*
SCALE	SHEET 11 OF 13	DIST	

DCS M8140-0-1

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S1	S0	INP	OUTPUT	REGISTER ADDRESS
L	L	A	SYS SIZE - HI WORD	1777762
L	H	B	CPU ERROR	1777766
H	L	C	SYS SIZE - LO WORD	1777760
H	H	D	SYS ID REG	1777764

REVISIONS		
CHK	CHANGE NO	REV

SYSTEM REGISTER BITS (07:00) SLOT 16
 TITLE: SYS DESC/CNSL CABLES(SCCM) DCS M8140-0-1
 SCALE: # SHEET 12 OF 13 DIST: #

8

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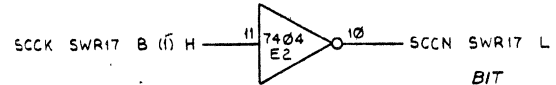
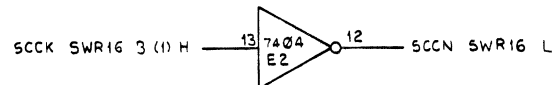
4

3

1-0-0718 W SC 2

1

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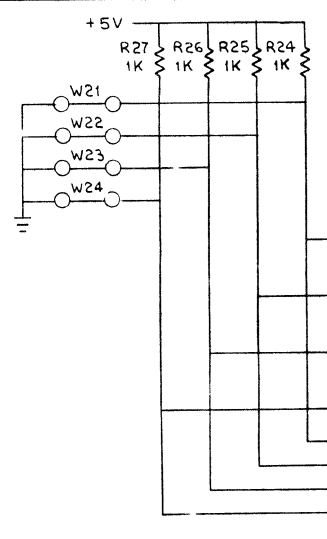
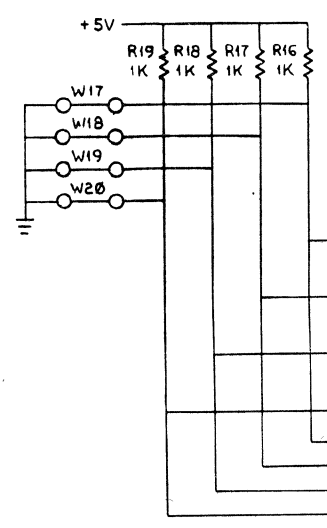
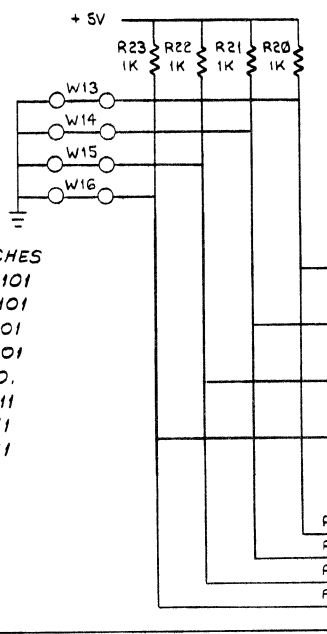
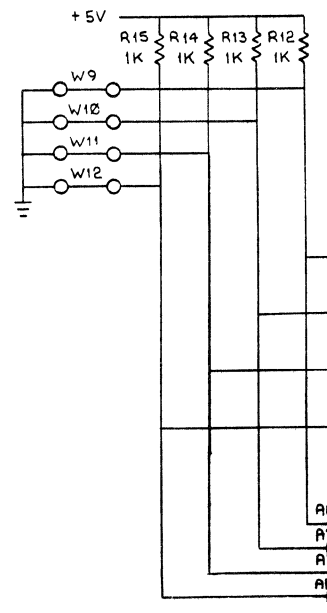


BIT
17 21 20 16 18 14 19 15

MEMORY SIZE	SIZE REG	SWITCHES
32K	001777	00000101
64K	003777	00010101
96K	005777	10000101
128K	007777	10010101
256K	017777	10011101
384K	027777	10010111
512K	037777	10011111
1M	077777	10111111

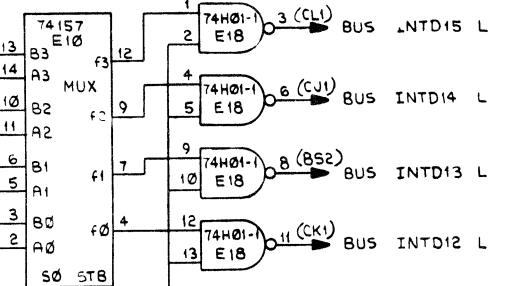
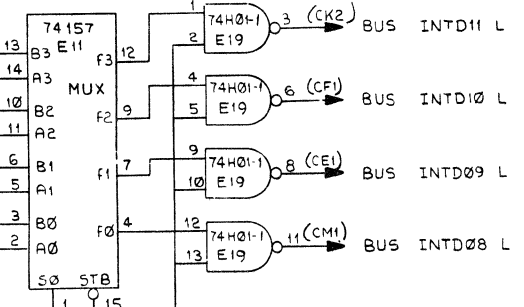
7483

CARRY OUT	F ₇	OUTPUT
L	A<B	NON EXISTENT MEM REF
H	A2B	VALID MEM REF



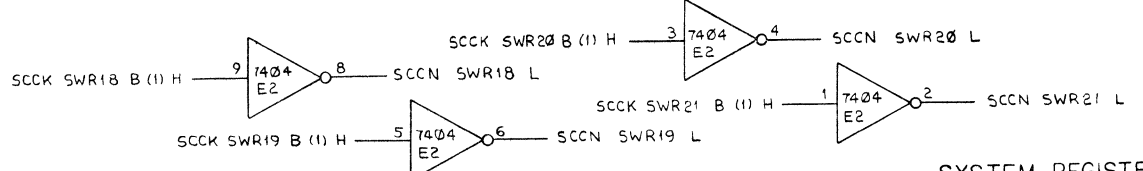
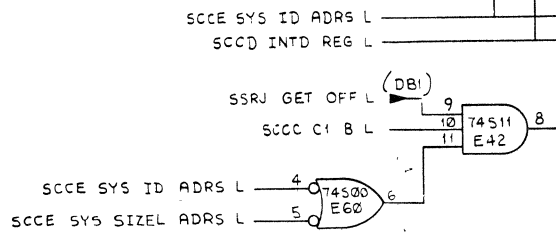
74157

SEL	INP	OUTPUT
L	A	SYS ID REGISTER
H	B	SYS SIZE - LO WORD



SCCN SYS ID11 H
SCCN SYS ID10 H
SCCN SYS ID09 H
SCCN SYS ID08 H

SCCN SYS ID15 H
SCCN SYS ID14 H
SCCN SYS ID13 H
SCCN SYS ID12 H



REVISIONS		
CHK	CHANGE NO	REV

SYSTEM REGISTER BITS (15:08) SLOT 16

TITLE	SIZE CODE	NUMB. R	REV
SYS DESC/CNSL CABLES (SCCN)	D CS	M8140-0-1	*
SCALE	SHEET 13 OF 13	DIST	

DEC FORM NO 000 138

8

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185

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1-0-81810-1

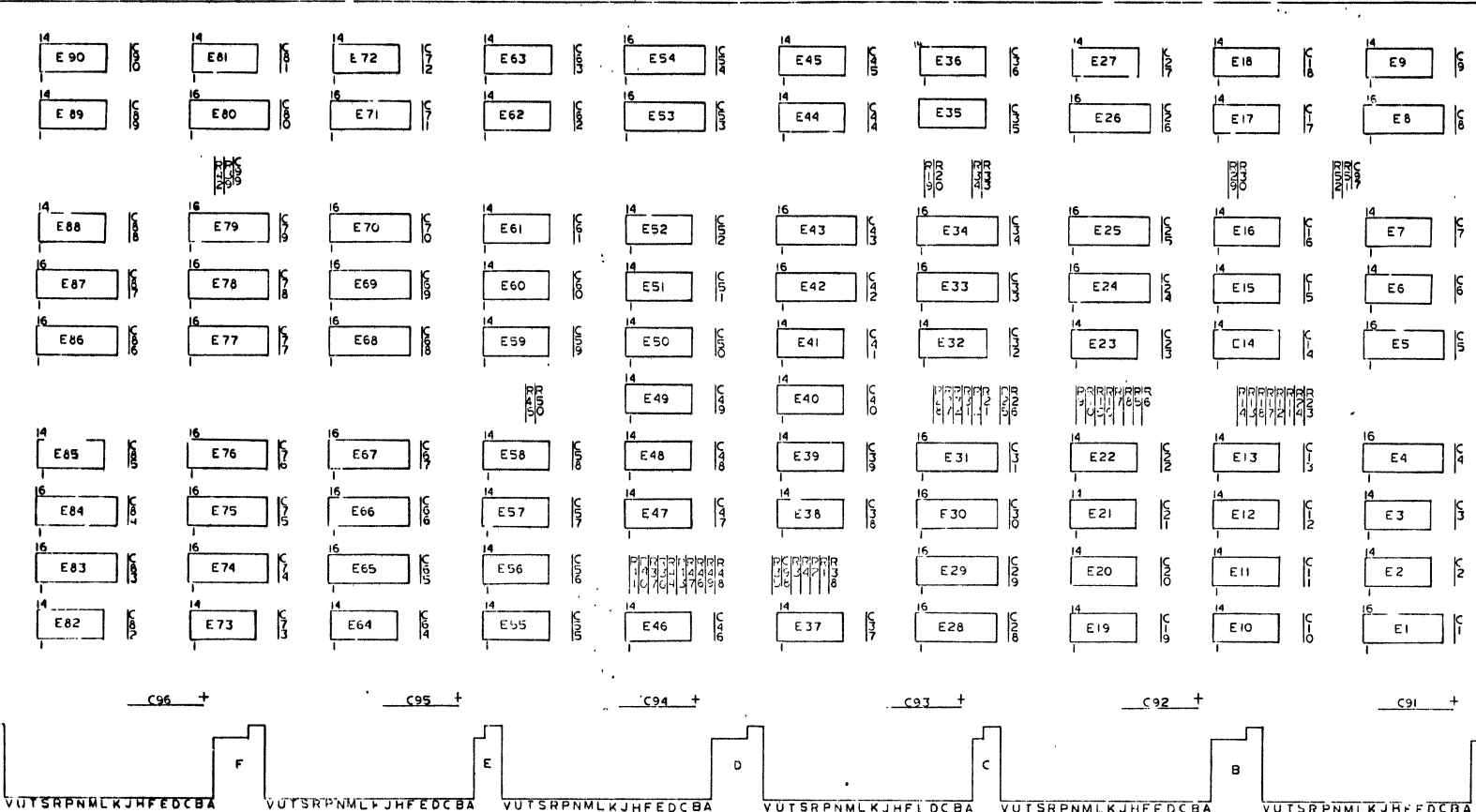
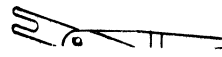
2

1

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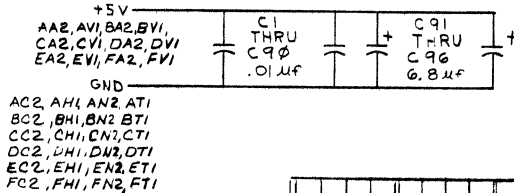
NOTES:

- 1. * OPTIONAL COMPONENTS.
- 2. E4, E5, E8, E22, E53, & E80 ARE SPARE I.C. LOCATIONS.



V U T S R P N M L K J H F E D C B A

IC DEC 7442	8	16
IC DEC 74153	8	16
IC DEC 74157	8	16
IC DEC 745157	8	16
IC DEC 74174	8	16
IC DEC 74174	8	16
IC DEC 74175	8	16
IC DEC 74187	8	16
IC TYPE	GND	+5V
GND AND BY ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		



REVISIONS
 1. 11/17/70
 2. 11/17/70
 3. 11/17/70
 4. 11/17/70
 5. 11/17/70
 6. 11/17/70
 7. 11/17/70
 8. 11/17/70
 9. 11/17/70
 10. 11/17/70
 11. 11/17/70
 12. 11/17/70
 13. 11/17/70
 14. 11/17/70
 15. 11/17/70
 16. 11/17/70
 17. 11/17/70
 18. 11/17/70
 19. 11/17/70
 20. 11/17/70

SEMICONDUCTOR CONVERSION CHART

DEC NO	EIA NO	DEC NO	EIA NO

DRY: 10/15/70
 CHK'D: 11/17/70
 ENG: 11/17/70
 PROJ. ENG: 11/17/70
 NEXT HIGHER ASSY: 11/17/70

digital EQUIPMENT CORPORATION
 SYS. STATUS REG.
 SIZE CODE: DCS MBI38-0-1
 NUMBER: 1
 REV: E

REF	REF	X-Y COORDINATE HOLE LOCATION	K-CD-MBI38-0-4	ITEM NO
REF	REF	ASSY/DRILLING HOLE LAYOUT	D-AH-MBI38-0-5	2
REF	REF	MODULE ECO HISTORY	B-MH-MBI38-0-6	3
1	1	ETCHED CIRCUIT BOARD	5011341	4
93	93	C1 THRU C90, C97, C98, C99	CAP .01uF 100V 20%	5
6	6	C91 THRU C96	CAP 6.8uF 35V 10% TANT	6
4	4	R1, R33, R44, R50	RESISTOR 150 1/4W 5%	7
3	3	R35, R39, R51	RESISTOR 330 1/4W 5%	8
12	12	R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R26, R32	RESISTOR 1K 1/4W 5%	9
3	3	R24, R28, R30	RESISTOR 1.5K 1/4W 5%	10
3	3	R23, R27, R29	RESISTOR 750 1/4W 5%	11
3	3	R38, R42, R52	RESISTOR 680 1/4W 5%	12
1	1	R34	RESISTOR 300 1/4W 5%	13
12	12	R3, R5, R7, R11, R13, R15, R9, R17, R19, R21, R25, R31	RESISTOR 550 1/4W 5%	14
1	1	E35	DELAY LINE	15
8	8	E65, E66, E67, E74, E75, E76, E83, E84	IC 74153	16
1	1	E1	IC 7442	17
2	2	E81, E85	IC DEC 7437	18
1	1	E7	IC 7408	19
6	6	E2, E15, E18, E45, E47, E58	IC 74500	20
9	9	E12, E14, E17, E23, E32, F46, E58, E81, E89	IC 74504	21
4	4	E10, E27, E48, E88	IC 74510	22
8	8	E3, E9, E11, E18, E36, E50, E57, E72	IC 74511	23
3	3	E64, E73, E82	IC 74505	24
5	5	E41, E44, E51, E80, E90	IC 74540	25
8	8	E13, E19, E20, E21, E22, E55, E56, E93	IC 74564	26
3	3	E33, E34, E79	IC 745157	27
6	6	E42, E43, E69, E70, E78, E87	IC 745174	28
4	4	E25, E54, E71, E86	IC DEC 74175	29
2	2	E88, E77	IC 74174	30
1	1	E24	IC 74157	31
8	8	E9, E37, E38, E39, E40, E49, E52, E82	IC 74574	32
1	1	E28	IC DEC 74187	33
1	1	E29	IC 74187	34
1	1	E30	IC 74187	35
1	1	E31	IC 74187	36
1	1	ANODE, HEX MODULE	1210711-02	37
12	12	EYELET HANDLE	9006732	38
1	1	E28	IC 74187	39
1	1	E29	IC 74187	40
1	1	E30	IC 74187	41
1	1	E31	IC 74187	42
1	1	E31	IC 74187	43
R/R	R/R	WIRE, #30 AWG	9105740-55	44

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DIGITAL EQUIPMENT CORPORATION

ROM ENCODING (1-4)

FUNCTION	M3	M2	M1	M0
NO OPERATION	X	0	0	0
RESTORE PROCESSOR STATUS	X	0	0	1
AUTO INCREMENT	X	0	1	0
AUTO DECREMENT	X	0	1	1
BRK. 30	X	1	0	0
INHIBIT PADWRITE ENABLE	X	1	0	1
CLR ADRS 16,17	X	1	1	0
CLR PS RESTORE	X	1	1	1
DESTINATION MODE	1	X	X	X
NOT DESTINATION MODE	0	X	X	X

ROM ENCODING (5-8)

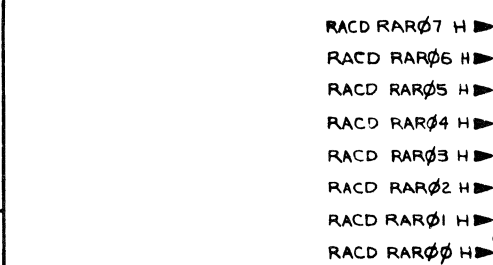
FUNCTION	M3	M2	M1	M0
CLOCK PREV MODE (MT/FP)	X	X	X	1
KERN DATA (TRAP OR ABORT)	X	X	1	X
BUST	X	1	X	X
I SPACE IF MT/FP	1	X	X	X

ROM ENCODING (9-12)

FUNCTION	M3	M2	M1	M0
I SPACE ON IND WORD FET	X	X	X	1
I IF INST START IN I	X	1	X	X
DEPOSIT - EXAMINE	1	X	X	X

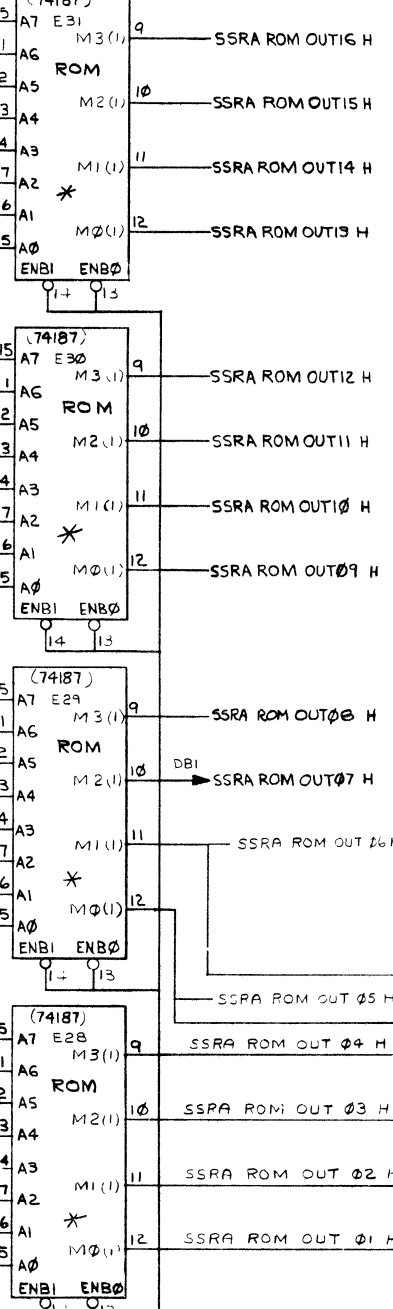
ROM ENCODING (13-16)

FUNCTION	M3	M2	M1	M0
SRM 1+2+3+4+5	X	X	X	1
DSTM 1+2	X	1	X	X
DSTM 3	X	1	X	X
RELATING - INST INST	1	X	X	X



NOTE 1:
SEE SHEET SSRL FOR A "TRUTH TABLE" OF THE 74187 READ ONLY MEMORY (ROM).
* SEE PARTS LIST

NOTE 1



745157

INPUT LINES SELECTED	SEL	ENA
A3 A2 A1 A0	L	L
B3 B2 B1 B0	H	L

ROM & DECODE OUT 1-4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITL#
11/70				

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS ANGLES 20' 30"

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL NEXT HIGHER ALLOY

FINISH

TITLE: SYS. STATUS REG. (SSRA)

SIZE CODE: DCS M8138-0-1

NUMBER: E

REV: E

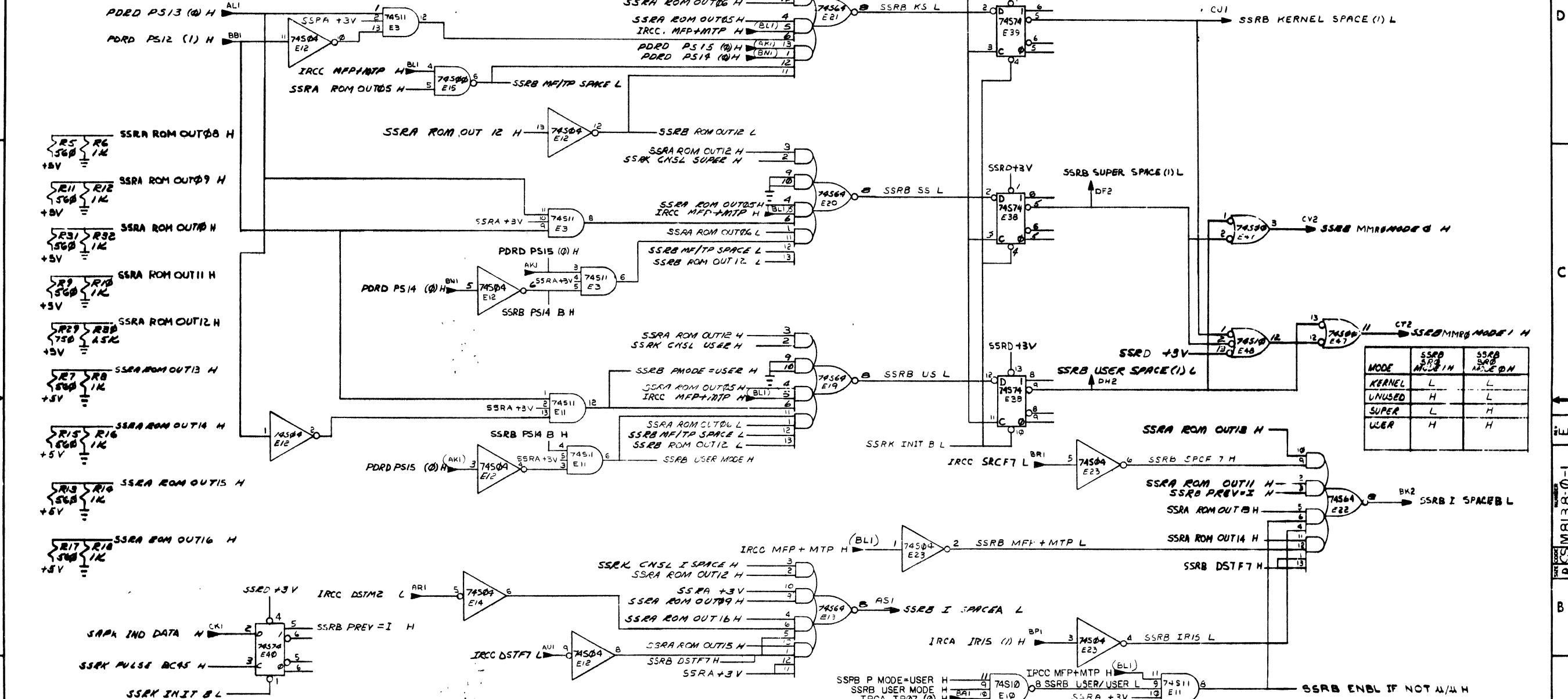
SCALE: 2 OF 12

SHEET: 2 OF 12

NOTE: MULTIPLEXER I.C. USED A FAST DECODER

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10-11-68



MODE	SSRB MMRMODE 0 H	SSRB MMRMODE 1 H
KERNEL	L	L
UNUSED	H	L
SUPER	L	H
USER	H	H

ADDRESS SPACE CONTROL LOGIC SLOT 15

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	REV.
11/70				

PARTS LIST		EQUIPMENT CORPORATION	
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	DATE 10/17/70	DATE 10/17/70	TITLE
TOLERANCES	DECIMALS	ANGLES	20° 30'
XXX = .008	XX = .02	X = .1	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			
MATERIAL	NEXT HIGHER ALTY.	SIZ CODE	NUMBER
FINISH	SCALE	DIGIT	

SYS. STATUS REG. (SSRB)

DCS M8138-0-1

REV.	CHANGE NO.	REVISIONS
ONE		

SECTION NO DED 102-A

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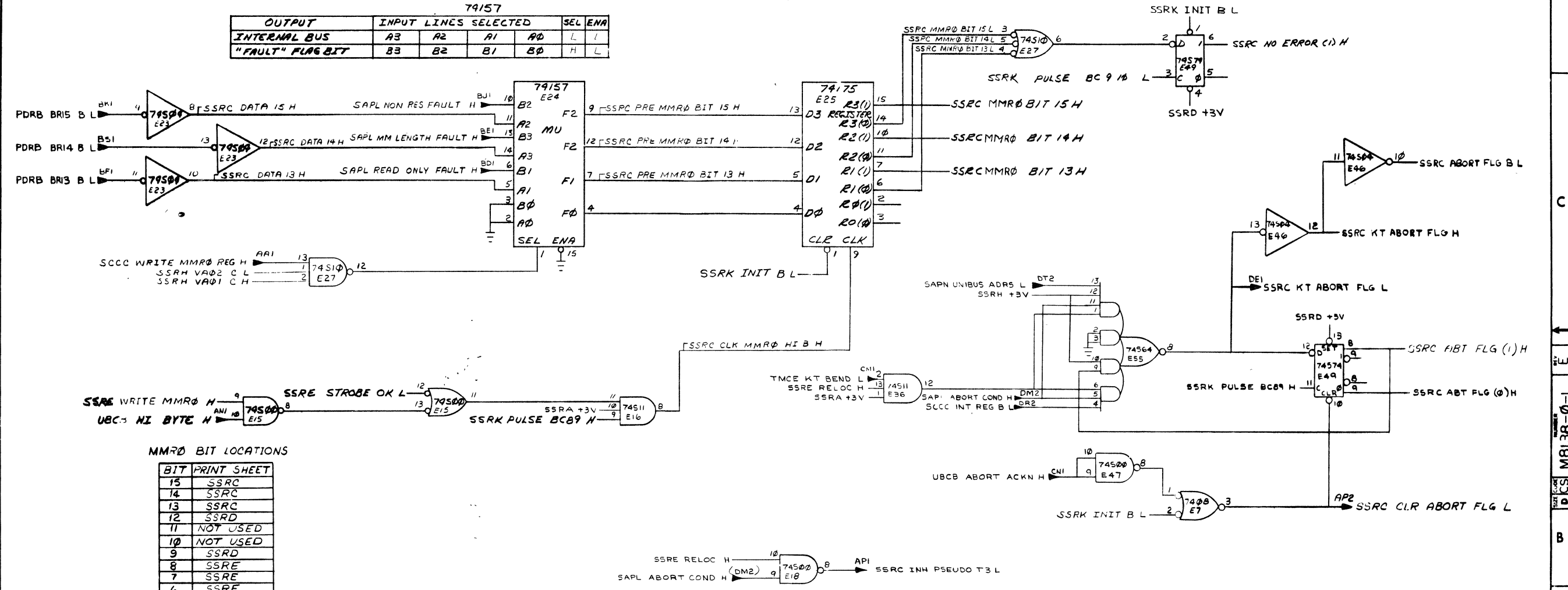
3

1-0-8E18W SC 2

1

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74157					
OUTPUT	INPUT LINES SELECTED			SEL ENA	
INTERNAL BUS	A3	A2	A1	A0	L 1
"FAULT" FLAG BIT	B3	B2	B1	B0	H 1



MMR0 BIT LOCATIONS

BIT	PRINT SHEET
15	SSRC
14	SSRC
13	SSRC
12	SSRD
11	NOT USED
10	NOT USED
9	SSRD
8	SSRE
7	SSRE
6	SSRE
5	SSRE
4	SSRE
3	SSRE
2	SSRE
1	SSRE
0	SSRE

MEM MGMT REGISTER 0-ABORT FLAGS SLOT 15

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM #
11/70				

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES

DECIMALS	ANGLES
XXX - 006	±0° 30'
XX - 02	
X - 1	

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL: --
FINISH: --

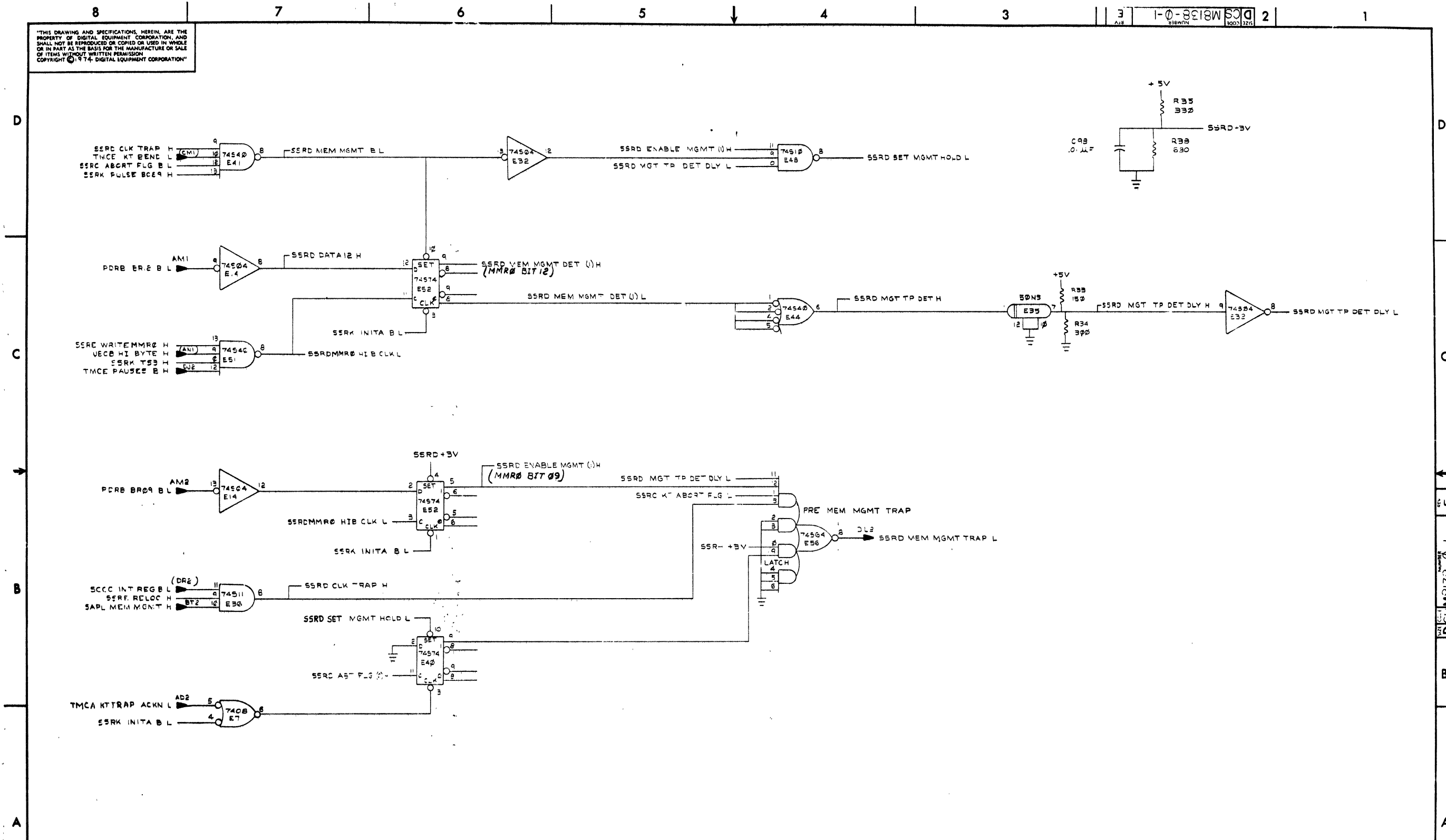
SCALE: --
SHEET 4 OF 12

DATE: 10/15/70
DATE: 1/12/71
DATE: 4/18/71
DATE: 1/30/73

TITLE: **SYS. STATUS REG.** (SSRC)

SIZE CODE: DCS
NUMBER: M8138-0-1
REV: E

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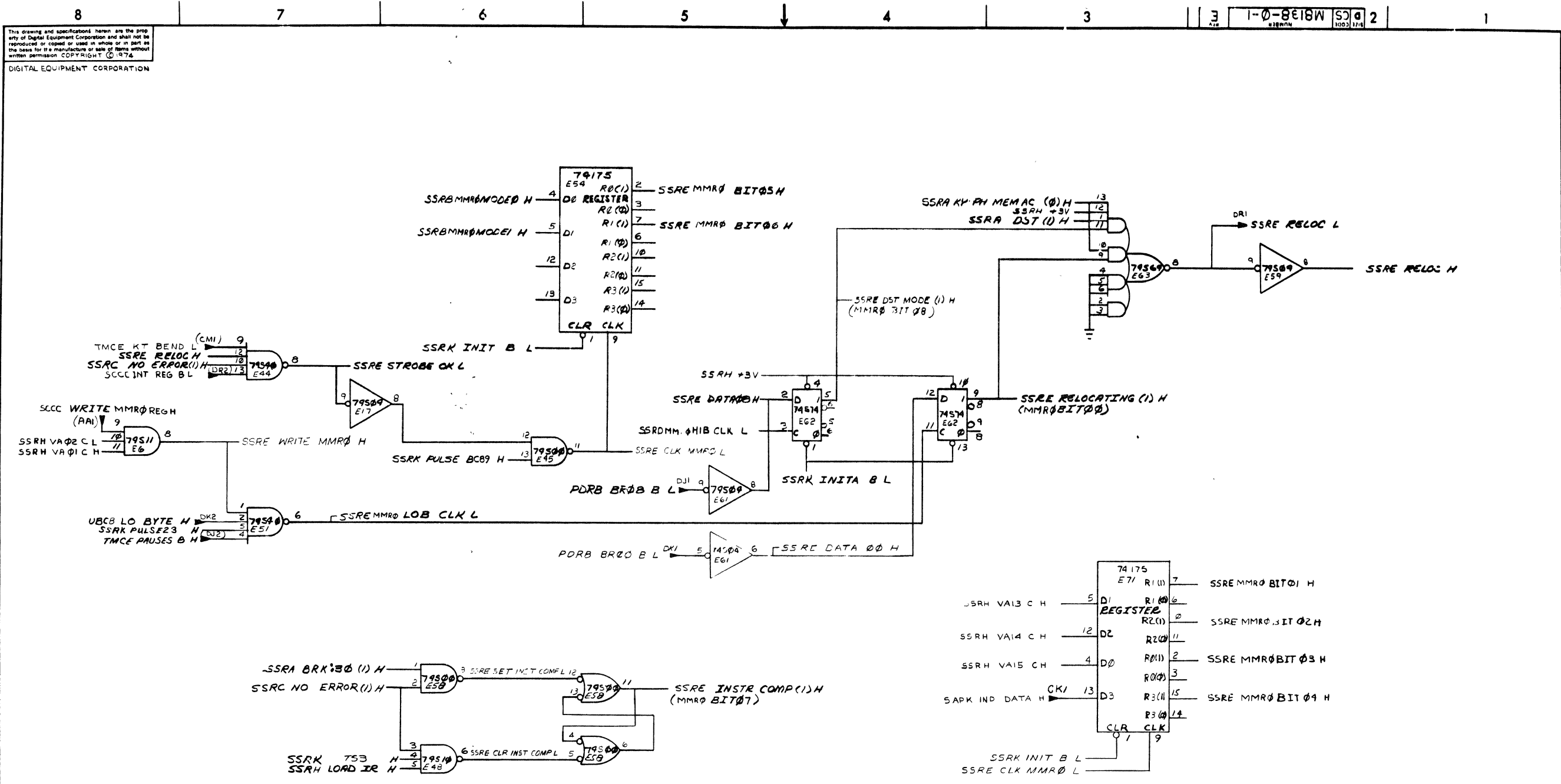


REVISIONS		
CHK	CHANGE NO	REV.

MEM MGMT REGISTER #0-MEMORY MANAGEMENT TRAP SLOT 15

TITLE	SYS STATUS REG	SIZE CODE	NUMBER	REV.
SSRD	D CS M8138-0-1	D	M8138-0-1	B
SCALE	SHEET	OF	DIST.	
	5	12		

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MEM MGMT REGISTER *0-MODE, OPERATE CONTROL SLOT 15

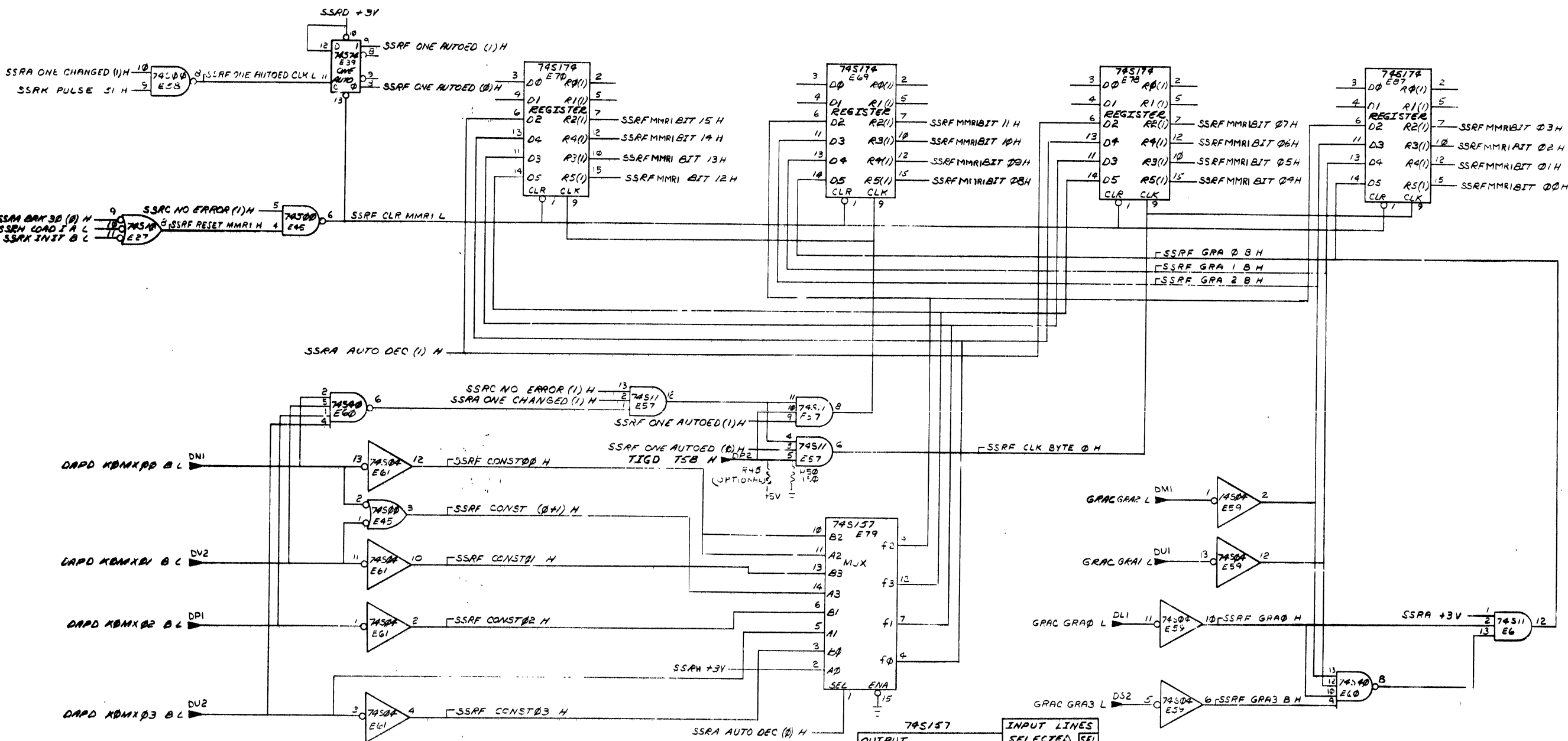
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN 10/1/74	DATE	EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	CSK-6	DATE		
ANGLES	ADDPENR	DATE	TITLE	
XXX - 006 XX - 02 X - 1	10/2/75	DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PH-3 11/30/75	DATE	SYS. STATUS REG. (SSRE)	
MATERIAL	PH-3 11/30/75	DATE		
FINISH	PH-3 11/30/75	DATE	SIZE CODE	NUMBER
			DCS	M8138-0-1
			DIST	REV
				E
			SHEET 6 OF 12	

REV	CHANGE NO

DEC FORM NO. 108-B

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DIGITAL EQUIPMENT CORPORATION

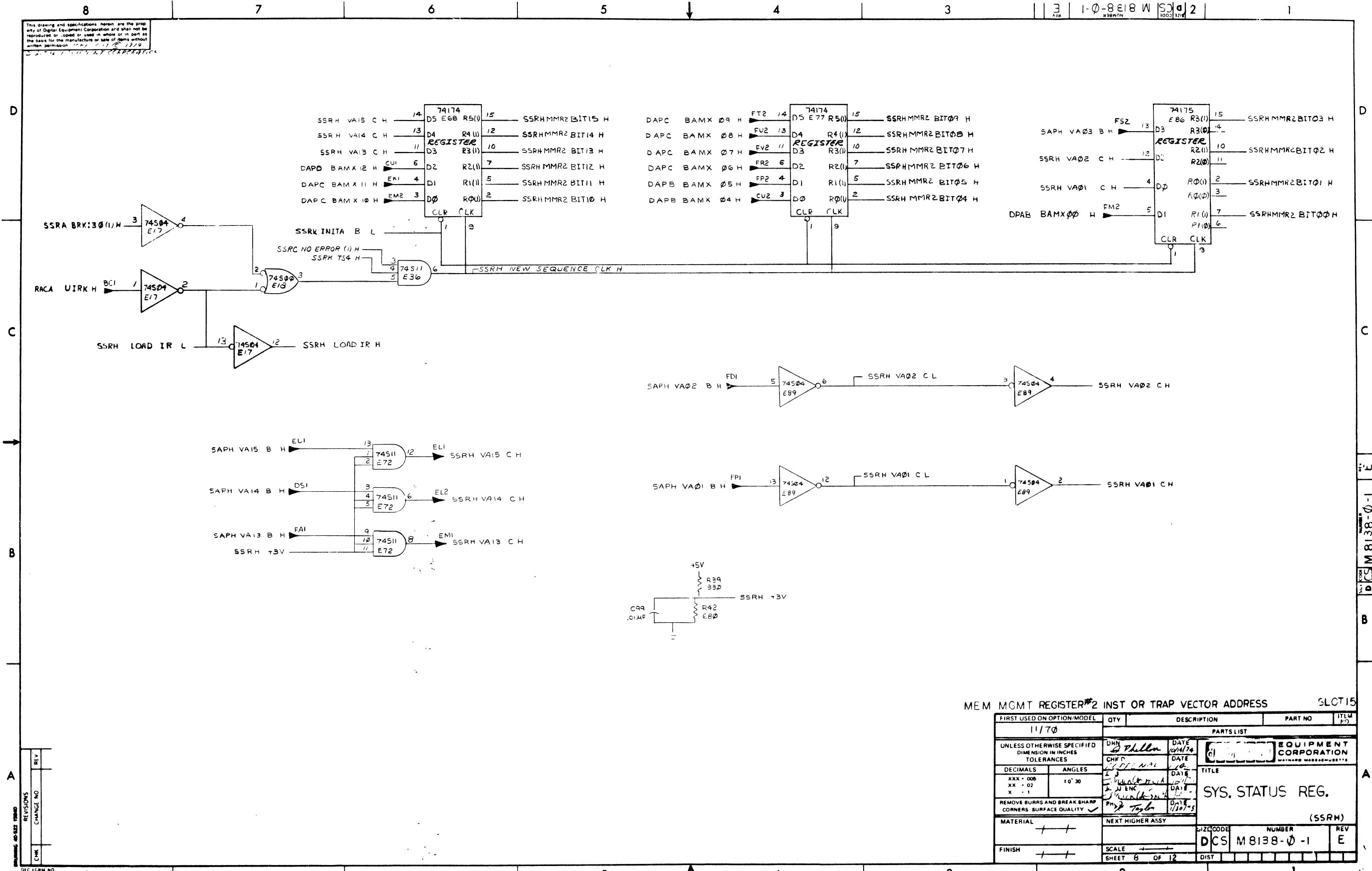


OUTPUT	SELECTED	SEL
NEGATIVE CONSTANT	A3 A2 A1 A0	L
POSITIVE CONSTANT	B3 B2 B1 B0	H

MEM MGMT REGISTER*1-AUTO INC/DEC INFO. SLOT 15

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN: <i>Shelan</i> DATE: 10/14/74	EQUIPMENT CORPORATION	
DECIMALS ANGLES		CHK: <i>B</i> DATE:	TITLE	
XXX - 005	±0° 30'	ENG: <i>...</i> DATE:	SYS. STATUS REG.	
XX - 02		PRG: <i>...</i> DATE:	(SSRF)	
X - 1		PRD: <i>...</i> DATE:	SIZE CODE NUMBER REV	
MATERIAL		NEXT HIGHER ASSY		DCS M8138-0-1 E
FINISH		SCALE: <i>...</i>		
SHEET 7 OF 12		DIST		

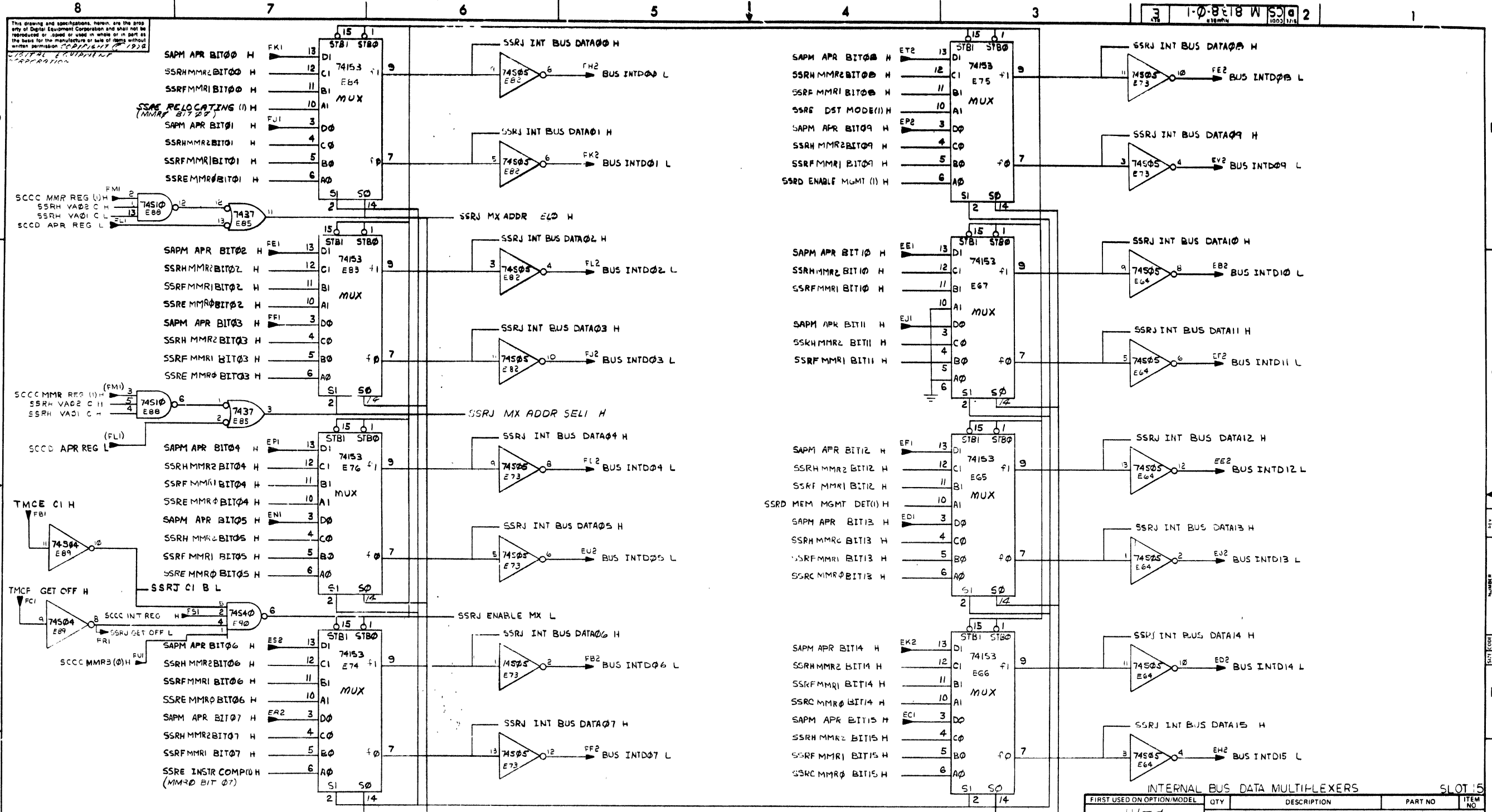
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MEM. MGMT REGISTER #2 INST OR TRAP VECTOR ADDRESS SLOT 15

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
1170				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX - 006	10' 30"	SYS. STATUS REG. (SSRH)		
XX - 02		DCS M8138-0-1 E		
X - 1		SCALE SHEET 8 OF 12		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL				
FINISH				

DCS M8138-0-1 E



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1-0-8-18 W S 2

REVISIONS

REV.	CHK	CHANGE NO.

OUTPUT	INPUT LINES	SELECTED	SI	SD	SP	SB	SL
MEM MGMT REG 0	A1	A0	L	L	L	L	L
MEM MGMT REG 1	B1	B0	L	H	L	L	L
MEM MGMT REG 2	C1	C0	H	L	L	L	L
APR	D1	D0	H	H	L	L	L

INTERNAL BUS DATA MULTIPLEXERS SLOT 15

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
1170				

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS	ANGLES
XXX.005	±0.30
XX.02	
X.1	

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL	NEXT HIGHER ASSY
FINISH	SCALE
	SHEET 9 OF 12

DATE 12/14/74
 DATE 1/21/75
 DATE 1/21/75
 DATE 1/30/75

DB: *D. P. Miller*
 CHKD: *D. P. Miller*
 ENG: *D. P. Miller*
 PRON BNC: *D. P. Miller*
 PRUD: *D. P. Miller*

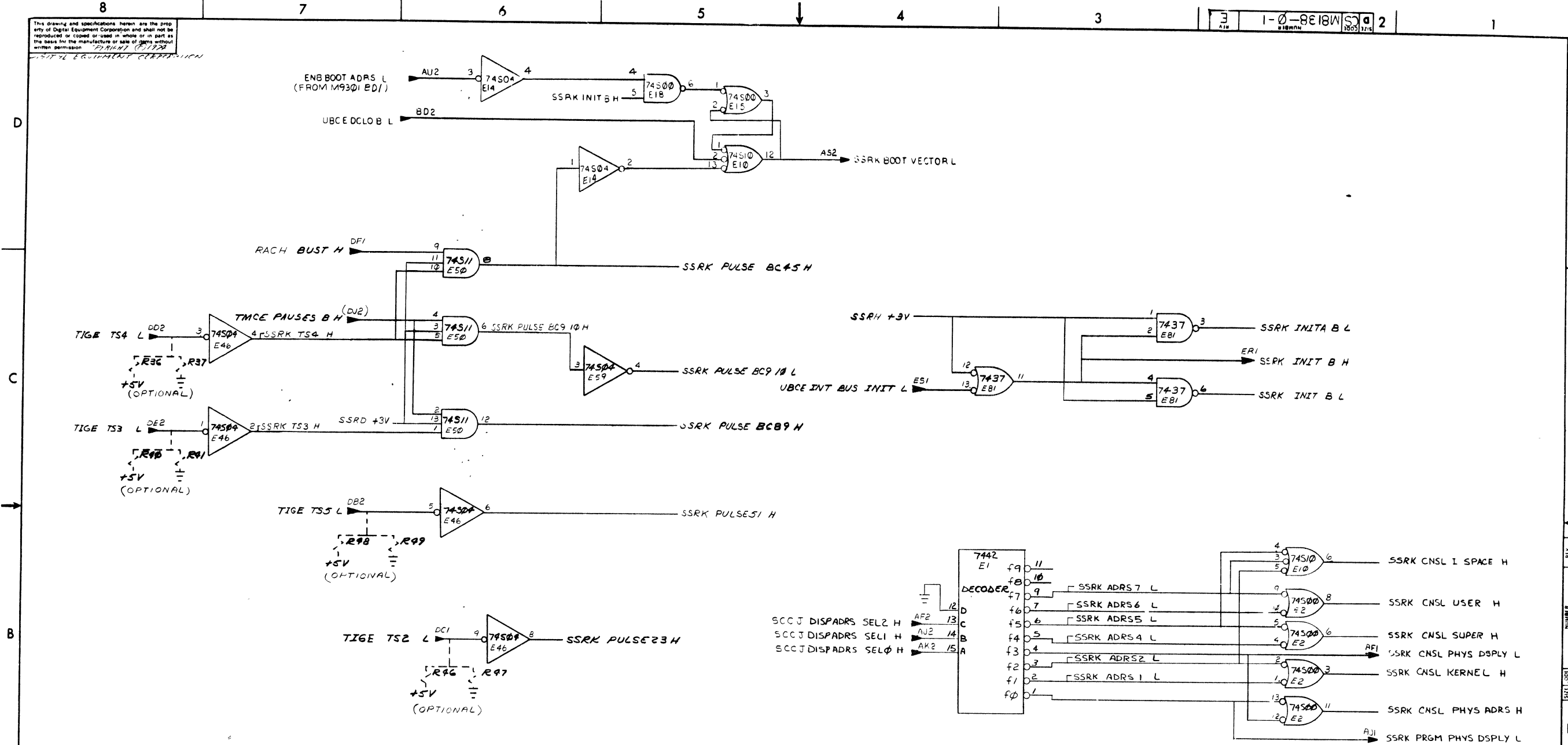
EQUIPMENT CORPORATION
 WATFORD, MASSACHUSETTS

TITLE
 SYS. STATUS REG.

(SSRJ)
 SIZE CODE
 NUMBER
 REV
 DCS M 8138-0-1 E

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1-0-8E18W S 2



ADDRESS SELECT SWITCH POSITION	UBCJ DIS ADRS SEL2	UBCJ DIS ADRS SEL1	UBCJ DIS ADRS SEL 0
PROGRAM PHYSICAL	L	L	L
KERNEL D VIRTUAL	L	L	H
KERNEL I VIRTUAL	L	H	L
CONSOLE PHYSICAL	L	H	H
SUPERVISOR D VIRTUAL	H	L	L
SUPERVISOR I VIRTUAL	H	L	H
USER D VIRTUAL	H	H	L
USER I VIRTUAL	H	H	H

CNSL.ADRS.SEL.SWITCH, TIMING LOGIC, INIT SLOT 15

FIRST USED ON OPTION/MODEL 11/70	QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	DATE	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
XXX - 005	± 0° 30	DATE	TITLE	
XX - 02	X - 1	DATE	SYS. STATUS REG.	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	DATE	SIZE CODE	NUMBER
FINISH	SCALE	DATE	DCS M8138-0-1	REV E
SHEET 10 OF 11		DIST		

REVISIONS
CHK CHANGE NO
DEC FORM NO 102-B

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Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT. Rows 1-187.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT. Rows 110-217.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT. Rows 220-327.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT. Rows 330-377.

ROM ENCODING (-4), ROM ENCODING (3 B), ROM ENCODING (3 12), ROM ENCODING (3 16) tables.

NOTE: 1. FLOW SHEET - REFERS TO KB11 - (PDP11) MICRO STATE FLOWS SHEET NUMBER. 2. ROMS ARE SHOWN ON CIRCUIT SCHEMATIC SSRA.

ROM TRUTH TABLE SLOT 15

Form with fields: FIRST USED ON OPTION/MODEL, QTY, DESCRIPTION, PART NO, ITEM NO, PARTS LIST, EQUIPMENT CORPORATION, TITLE, SYS, STATUS REG, SSRL, MATERIAL, NEXT HIGHER ASSY., FINISH, SCALE, SHEET OF 12, DIST.

REVISIONS CHANGE NO. REV. CHK.

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Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT (16-1). Rows 0-107.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT (16-1). Rows 110-217.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT (16-1). Rows 220-327.

Table with columns: OCTAL LOCATION, MICROSTATE NAME, FLOWS SHEET, TRUTH VALUE ROMOUT (16-1). Rows 330-377.

ROM ENCODING (1-4), ROM ENCODING (5-8), ROM ENCODING (9-12), ROM ENCODING (13-16), SRCM 1+2+3+4+5, DSTIM=1+2, LSTIM=3, FLOATING POINT INST.

NOTE: 1 FLOW SHEET - REFERS TO KB11-B (PDP11 70 PROCESSOR) MICRO STATE FLOWS SHEET NUMBER 2. ROMS ARE SHOWN ON CIRCUIT SCHEMATIC SSRA.

ROM TRUTH TABLE SLOT 15

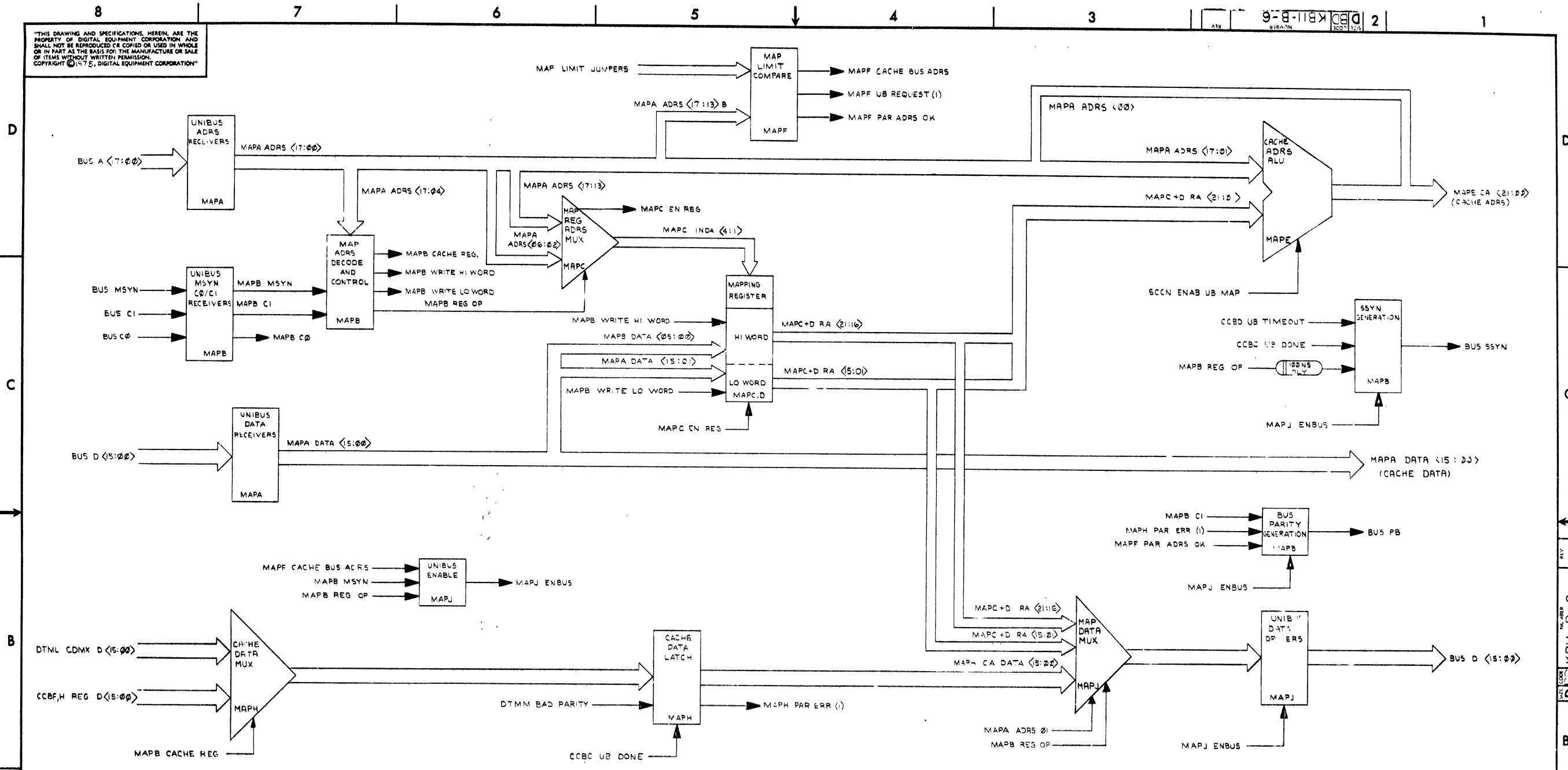
Table with columns: FIRST U/F/D/O/N OPTION/MODEL, QTY, DESCRIPTION, PART NO, ITEM NO. Includes PARTS LIST, TOLERANCES, DECIMALS, ANGLES, MATERIAL, FINISH, and revision table.

D C B A

D C B A

11 11-000-100 11710 100-4

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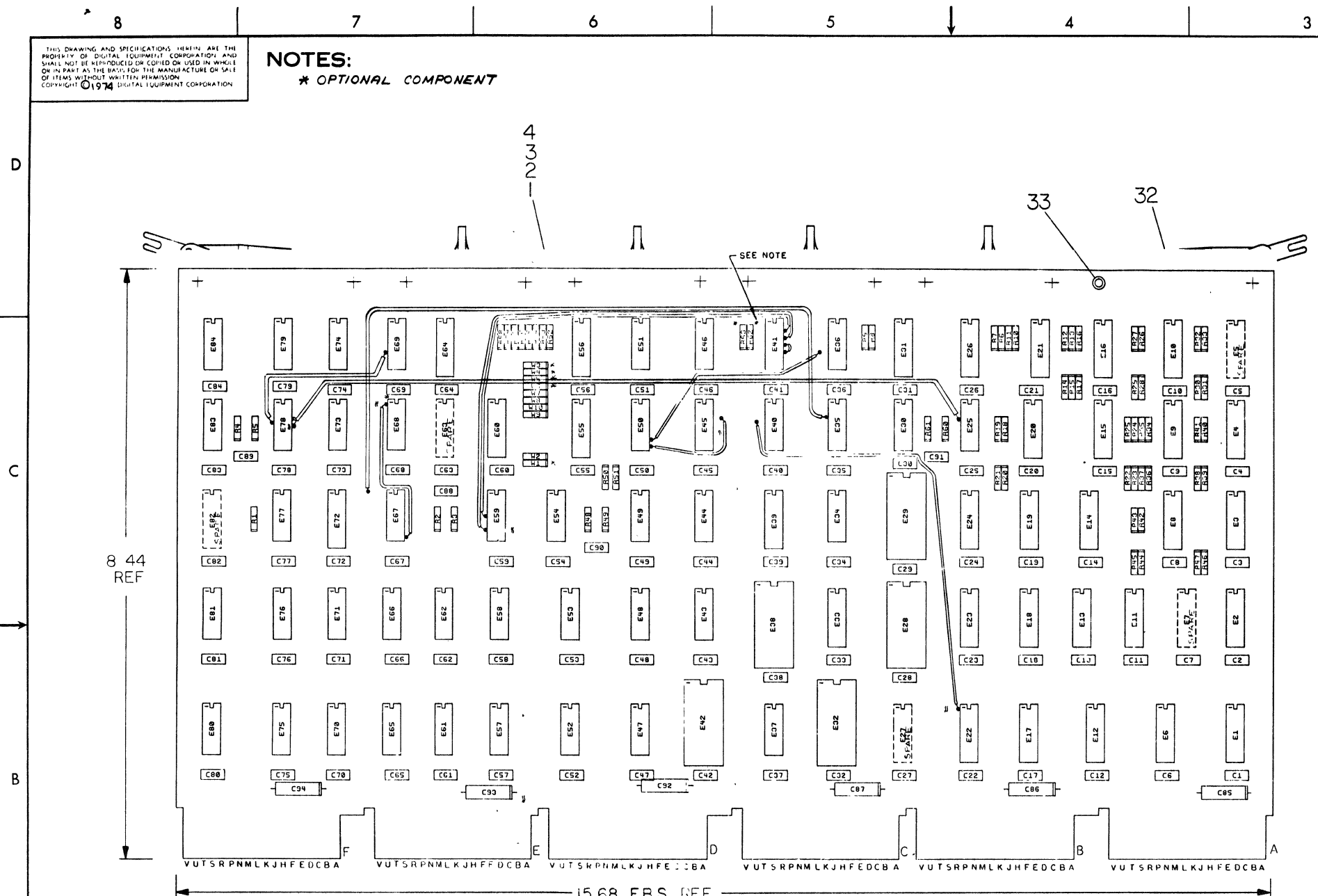


REV	CHANGE NO.

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
KB11-B				
DIMENSIONAL TOLERANCE				
DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED				
MILLIMETERS	INCHES	ANGLES		
.XXX = ±0.10	.XXX = ±0.05	90° 30'		
.XX = ±0.5	.XX = ±0.02			
X = ±2	.X = ±1			
THIRD ANGLE PROJECTION	REMOVES BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.		
MATERIAL	B-DD-KB11-B	SCALE	NONE	
FINISH		SCALE	NONE	
TITLE			SIZE/CODE	NUMBER
UNIBUS MAP (M314)			D	BD KB11-B-6
BLOCK DIAGRAM				
REV.				
SHEET 1 OF 1			DIST	

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NOTES:
 * OPTIONAL COMPONENT



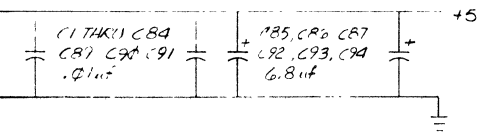
DEC 74585	8	16
DIC 74182-1	8	16
DEC 74S181	12	24
DEC 74S174	8	16
DEC 74S158	8	16
DEC 74S157	8	16
DEC 8640	1	8
DEC 7485	8	16
DEC 74153	3	16
DEC 3101A	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS

L22 SA EAE
 AV1 CV1 EV1
 BA2 LA2 FA2
 BV1 DV1 FV1

AC2 LA1 AN2 AT1
 BC2 BH1 BN2 BT1
 CC2 CH1 CN2 CT1
 DC2 DH1 DN2 DT1
 EC2 EH1 EN2 ET1
 FC2 FH1 FN2 FT1



REF	X-Y HOLE COORDINATE LOCATION	K-CO M8141 0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D AH-M8141 0 5	2
REF	MODULE ECO HISTORY	B MH-M8141 0 6	3
1	ETCHED CIRCUIT BOARD	5011348	4
87	C1 THRU C84, C89, C90, C91	CAP -01uf 100V 20%	5
6	C85, C86, C87, C92, C93, C94	CAP 6.8uf 35V 20%	6
1	C88	CAP 220pf 100V 5%	7
12	R1, R2, R50 THRU R59	RES 1K 1/4W 5%	8
1	R3	RES 47 OHM 1/4W 5%	9
24	R4, R6, R7 THRU R47 (odd #'s only)	RES 330 OHM 1/4W 5%	10
24	R5, R49, R81, R8 THRU R48 (even #'s only)	RES 680 OHM 1/4W 5%	11
7	E1, E8, E12, E17, E13, E18, E23	IC DEC 74S157	12
3	E2, E11, E22	IC DEC 74S174	13
12	E3, E4, E8, E9, E10, E14, E16, E20, E28, E15, E21, E31	IC DEC 3101A	14
3	E19, E24, E39	IC DEC 74153	15
2	E25, E78	IC DEC 74S74	16
5	E29, E42, E32, E38, E28	IC DEC 74S181	17
9	E47, E50, E54, E34, E37, E59, E30, E44, E38	IC DEC 74S04	18
1	E33	IC DEC 74182-1	19
1	E35	IC DEC 74H50	20
4	E74, E49, E4R, E40	IC DEC 74S11	21
3	E83, E51, E41	IC DEC 74S00	22
2	E43, E48	IC DEC 74H30	23
2	E67, E45	IC DEC 74S20	24
5	E80, E52, E57, E51, FR5	IC DEC 8881	25
10	E53, E58, E62, E66, E70, E76, E75, E77, E61, E71	IC DEC 8640	26
2	E50, E55	IC DEC 74P5	27
1	E68	IC DEC 7405	28
3	E79, E84, E69	IC DEC 74S40	29
1	E72	IC DEC 74S158	30
1	E73	IC DEC 74S10	31
1		HANDLE ASSEMBLY	32
12		EYELET HANDLE	33
5	W2, W7-W10	INSULATED JUMPERS	34
2	E56, E64	IC DEC 74S85	35

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO

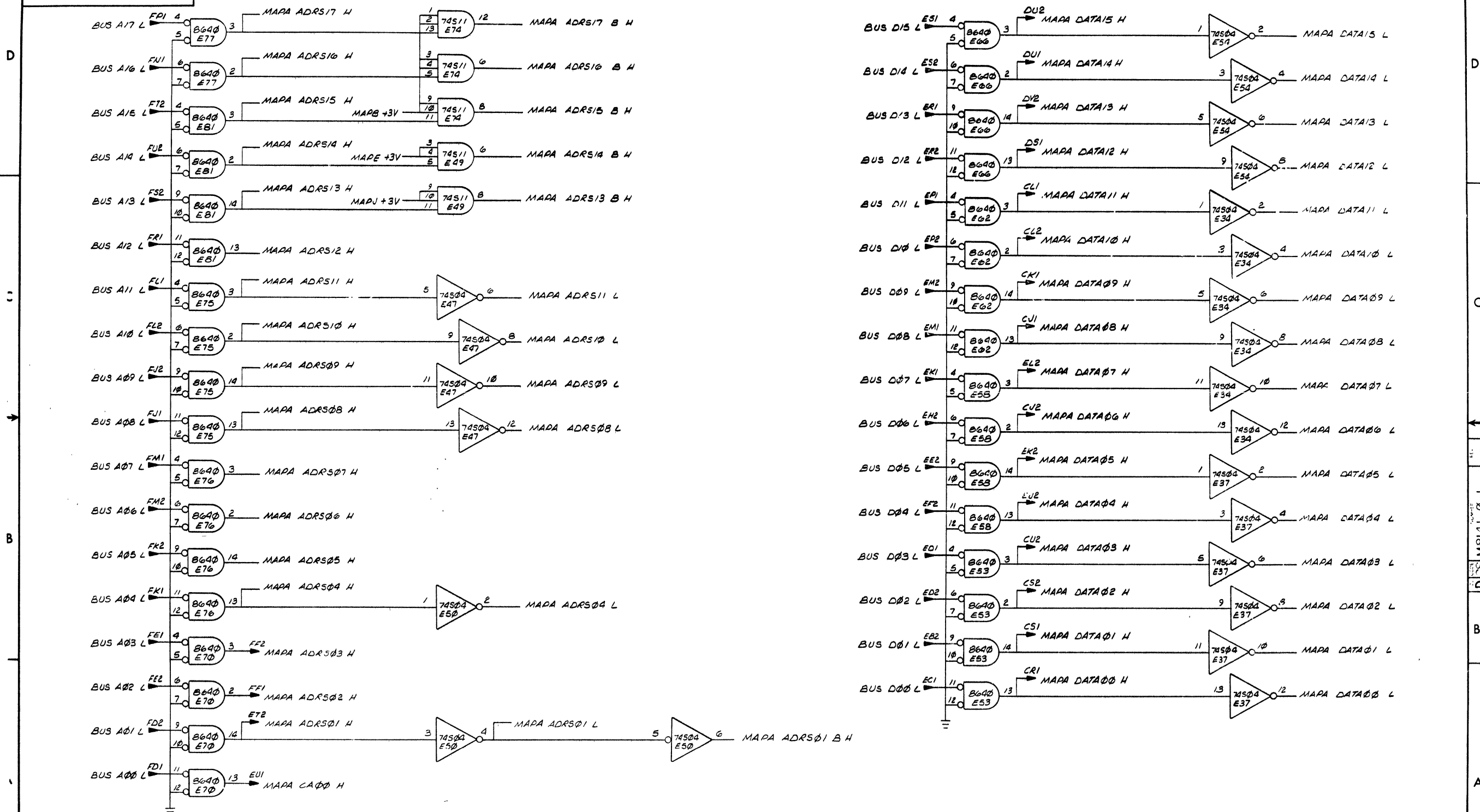
FIRST USED ON OPTION MODEL		PARTS LIST	
11/70			

DRN	DATE	CHKD	DATE	ENL	DATE	PROJ ENG.	DATE	PROD	DATE

DEC NO	EIA NO	DEC NO	EIA NO

SIZE	CODE	NUMBER	REV.
D	CS	M8141-0-1	A

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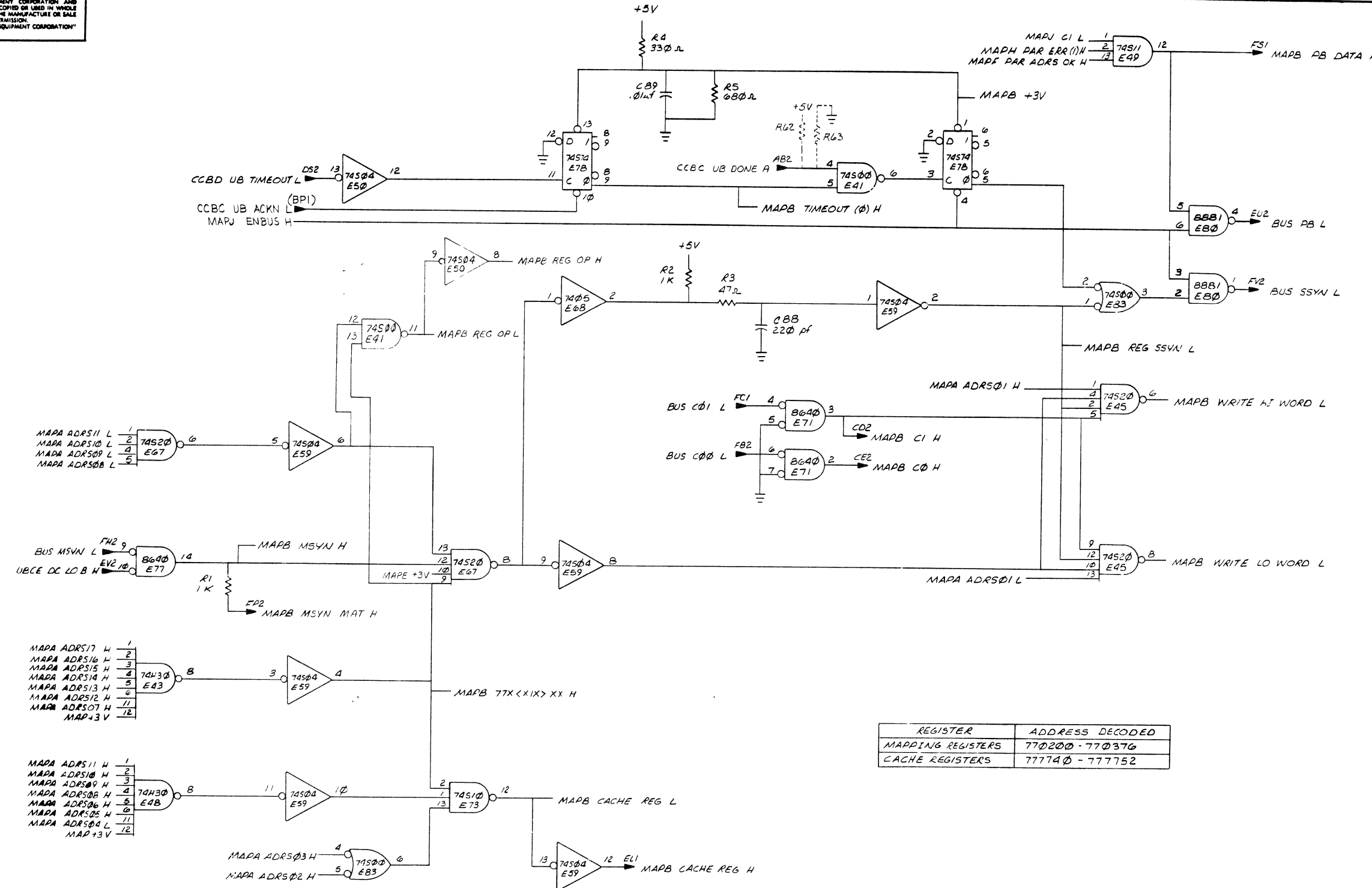


REVISIONS		
CHK	CHANGE NO	REV.

BUS ADDRESS AND DATA RECEIVERS		SLOT 22	
TITLE	SIZE CODE	NUMBER	REV.
UNIBUS MAP (MAPA)	D CS	M8141-0-1	A
SCALE 1/1	SHEET 2 OF 9	DIST.	

200

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REGISTER	ADDRESS DECODED
MAPPING REGISTERS	770200 - 770370
CACHE REGISTERS	777740 - 777752

REVISIONS		
CHK	CHANGE NO	REV

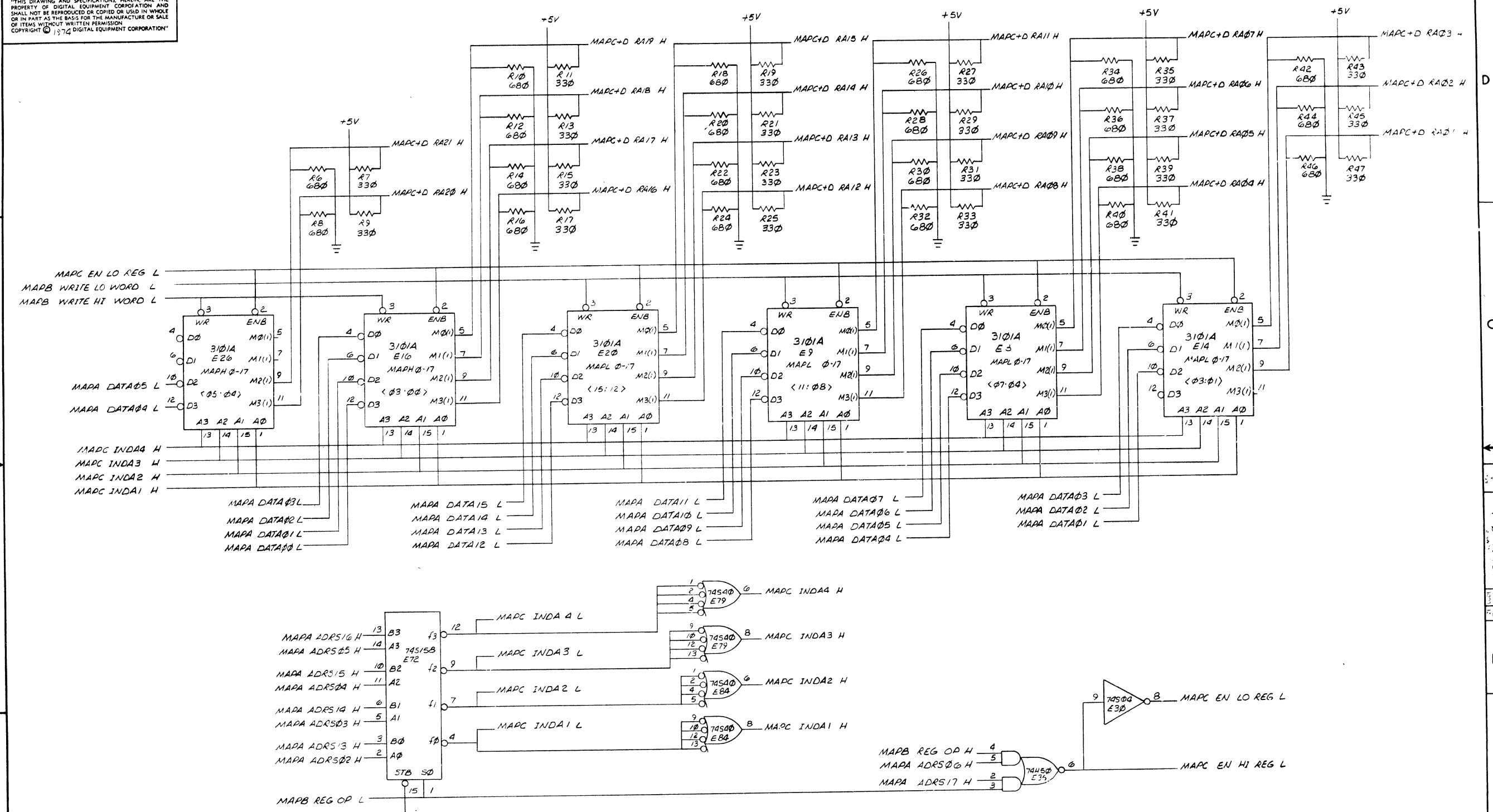
MAP ENABLE-BUS CONTROL LINES-ADDRESS DECODE SLOT 22

TITLE	SIZE/CODE	NUMBER	REV
UNIBUS MAP (MAPB)	D CS	M8141-0-1	A

SCALE	SHEET	OF	DIST
1/1	3	9	

201

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74S158			
S/D	INP	OUTPUT	FUNCTION
L	A	MAPA ADRS <05-02>	MAPPING REGISTER REFERENCE
H	B	MAPA ADRS <16-13>	UNIBUS ADDRESS RELOCATION

LOWER MAPPING REGISTER SLOT 22

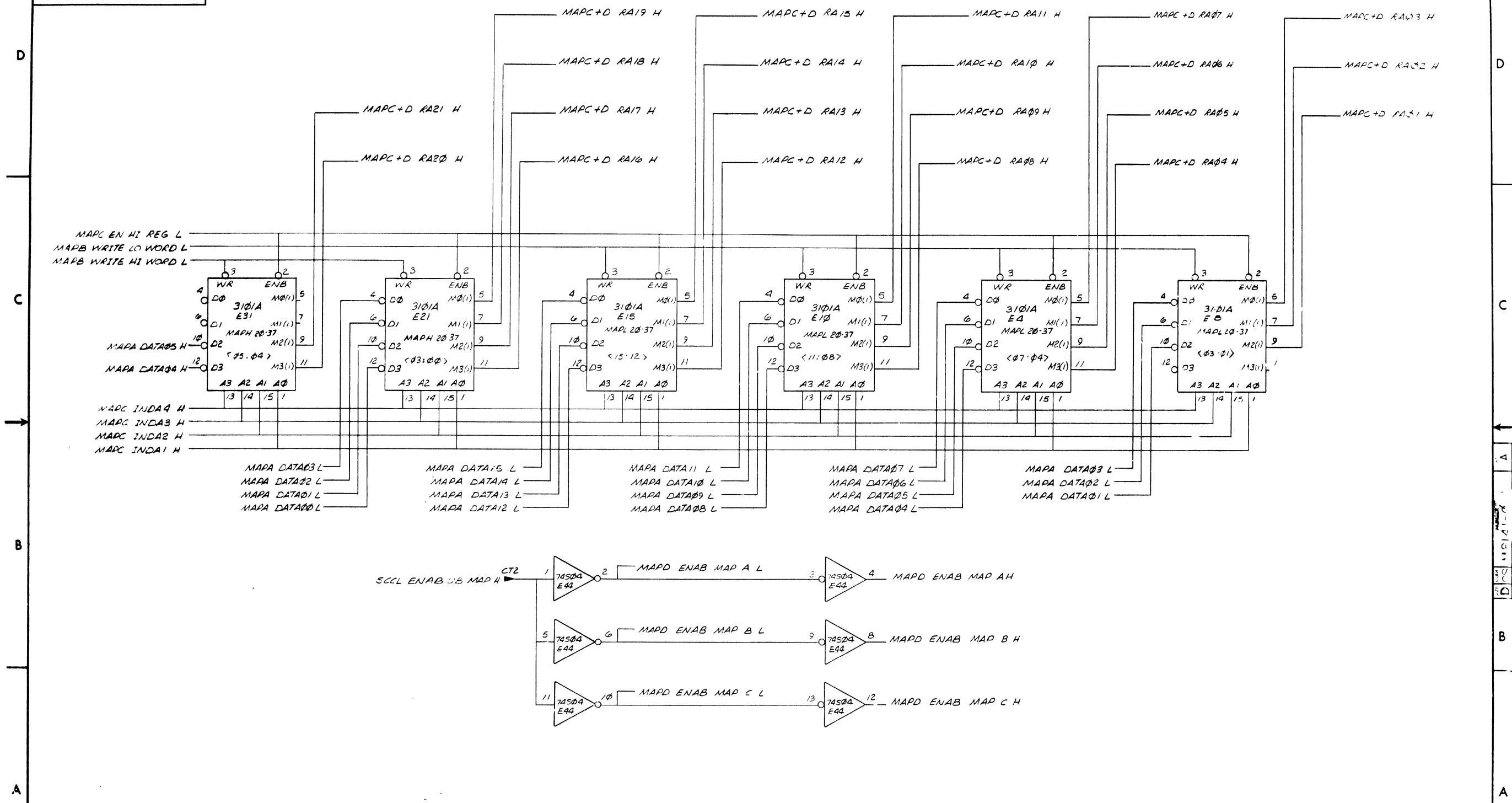
REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV
UNIBUS MAP (MAPC)	D/CS	M8141-0-1	L
SCALE	SHEET 4 OF 9	DIST.	1

202

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CS M 8141-0-1 2



REVISIONS		
CHK	CHANGE NO	REV

UPPER MAPPING REGISTER				SLOT 22			
TITLE		SIZE CODE	NUMBER		REV.		
UNIBUS MAP (MAPD)		D CS	M 8141-0-1		A		
SCALE	SHEET	OF					
	5	9					

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ALU (E42)

S0/S3	FUNCT
0	A
1	A PLUS B

ALU (E3B)

M	S1/S3	FUNCT
1	1	B
0	0	A+CARRY

ALU (E29)

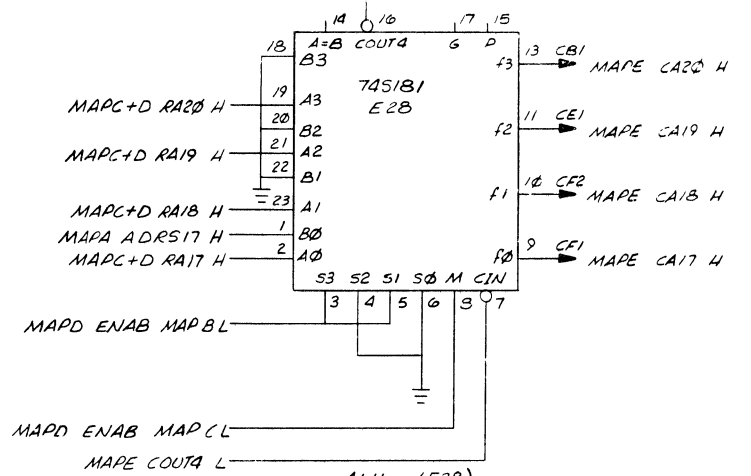
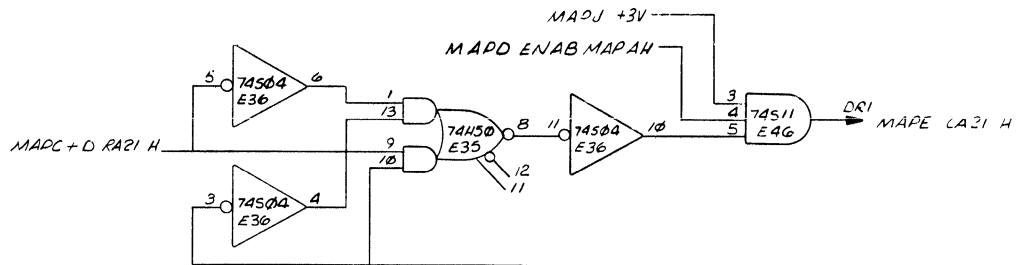
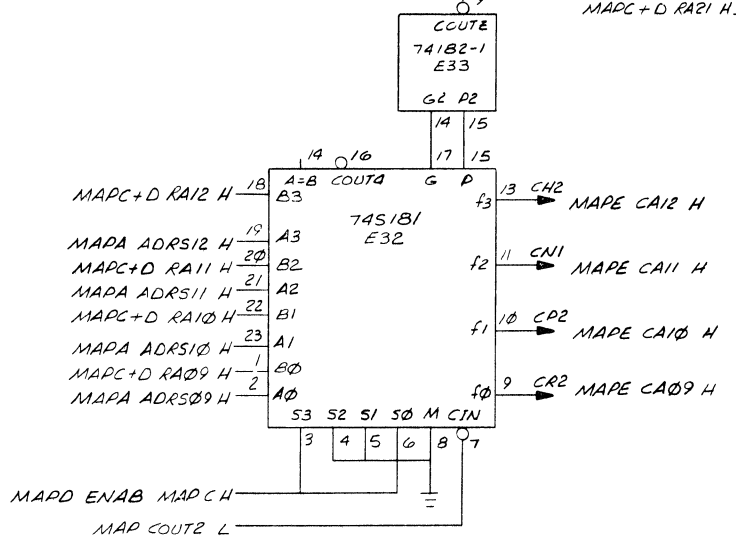
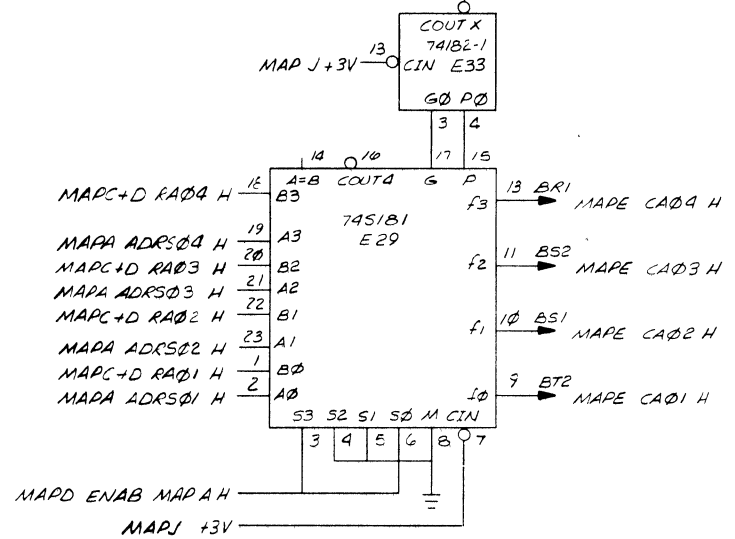
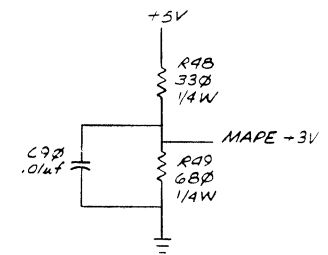
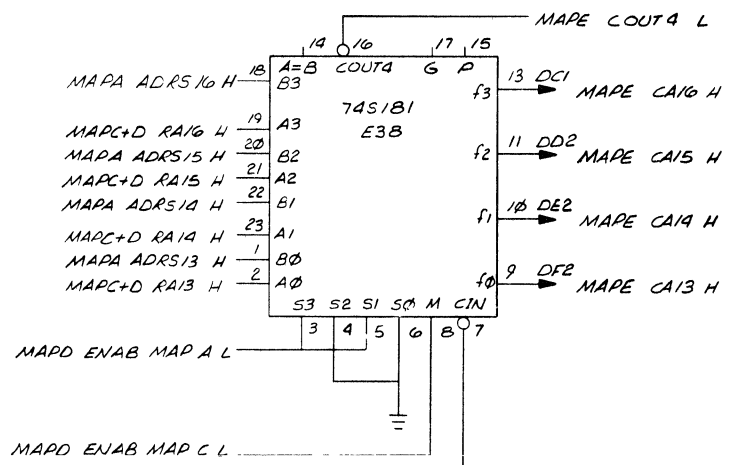
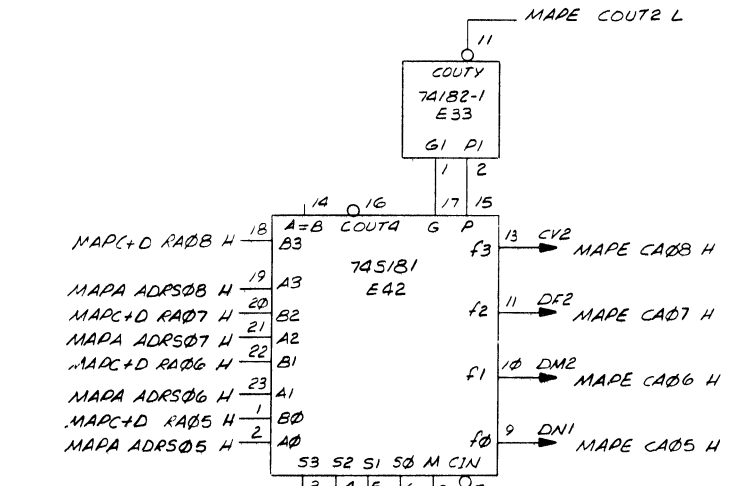
S0/S3	FUNCT
0	A
1	A PLUS B

ALU (E32)

S0/S3	FUNCT
0	A
1	A PLUS B

ALU (E2B)

M	S1/S3	FUNCT
1	1	B
0	0	A+CARRY



REVISIONS

CHK	CHANGE NO	REV

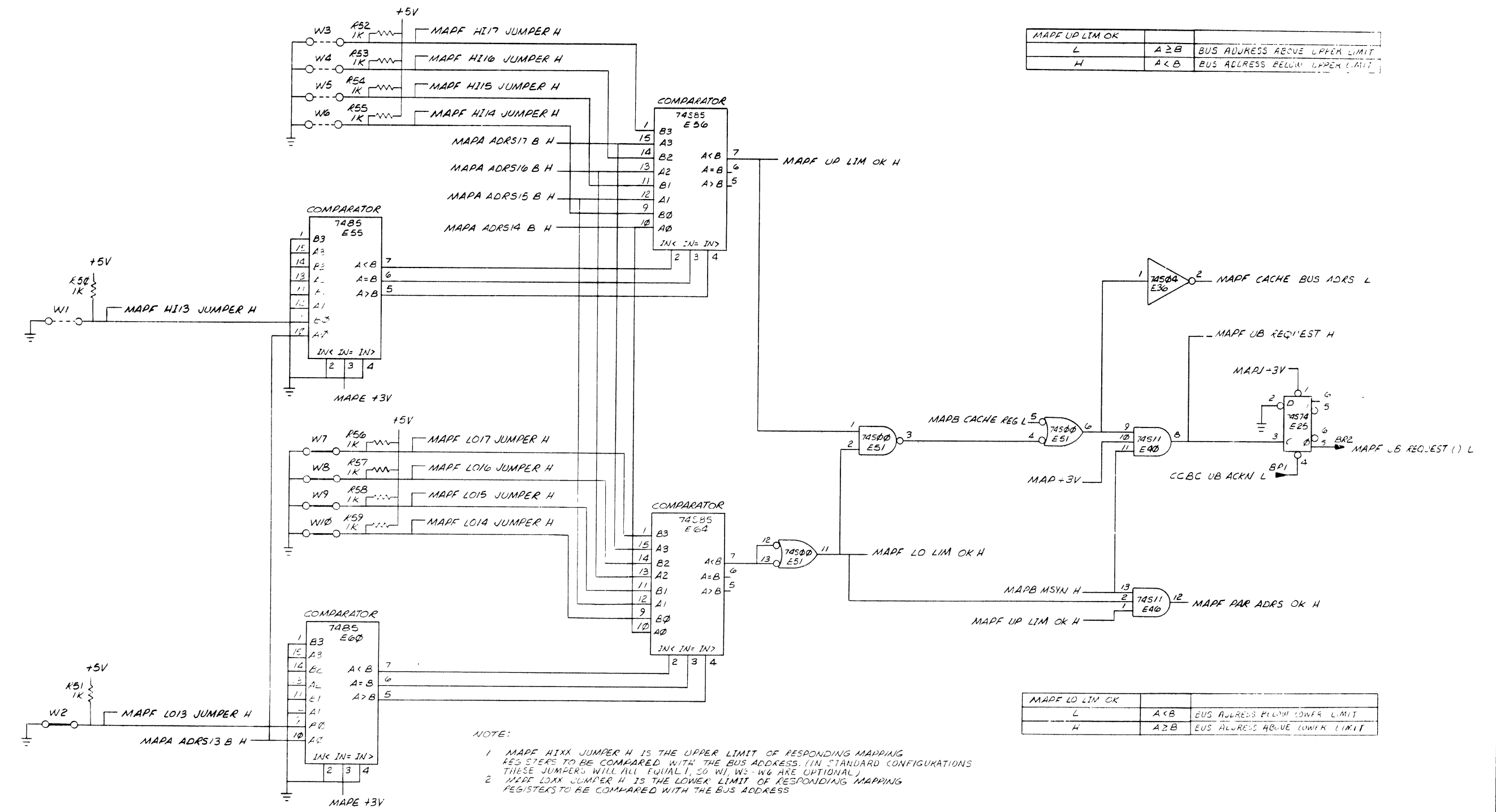
CACHE ADRS SLCT 22

TITLE	SIZE CODE	NUMBER	REV.
UNIBUS MAP (MAPE)	D CS	M8141-0-1	A

204

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CS M 8141-0-1 2



MAPF UP LIM OK		
L	$A \geq B$	BUS ADDRESS ABOVE UPPER LIMIT
H	$A < B$	BUS ADDRESS BELOW UPPER LIMIT

MAPF LO LIM OK		
L	$A < B$	BUS ADDRESS BELOW LOWER LIMIT
H	$A \geq B$	BUS ADDRESS ABOVE LOWER LIMIT

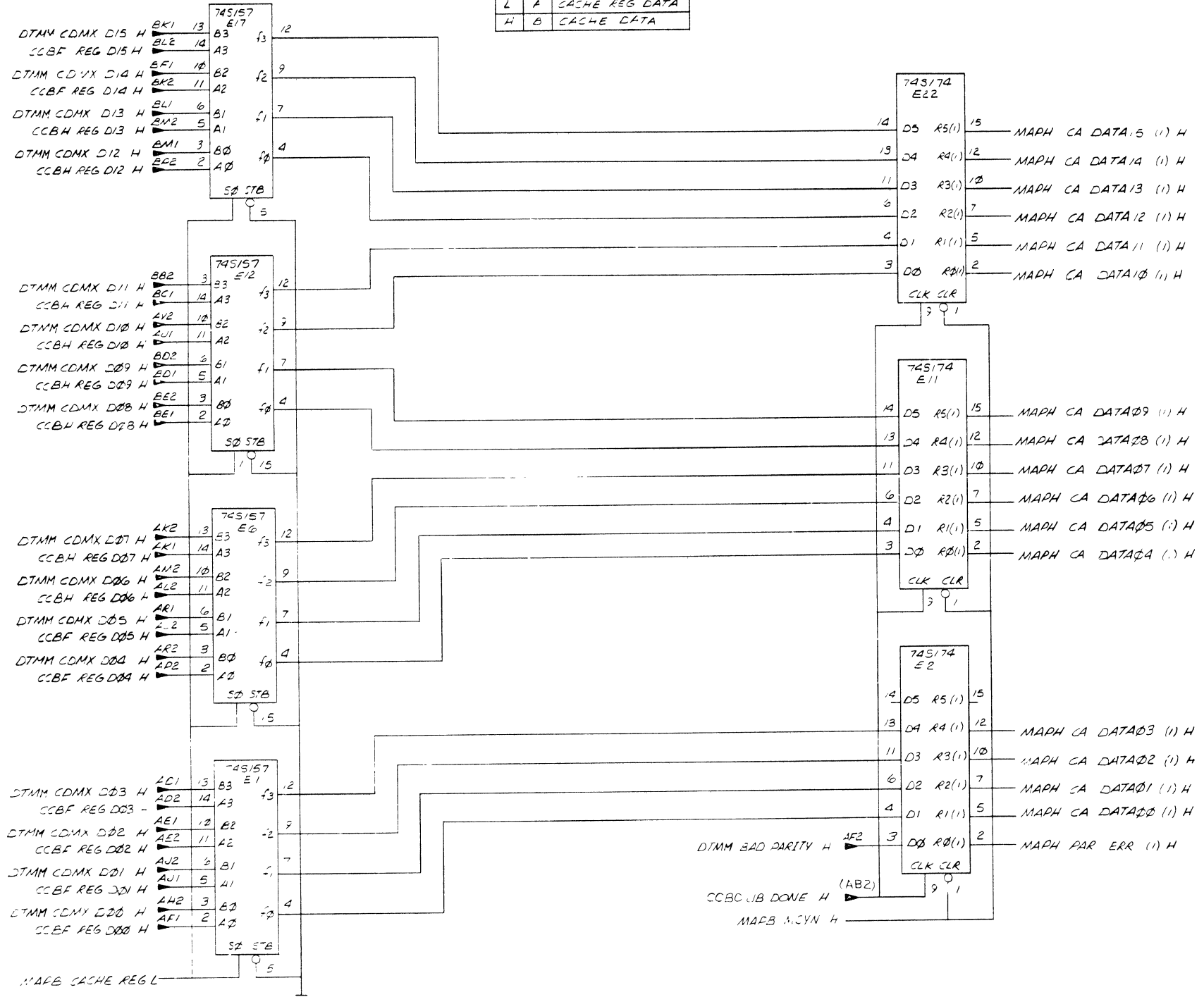
NOTE:
 1 MAPF HIXX JUMPER H IS THE UPPER LIMIT OF RESPONDING MAPPING REGISTERS TO BE COMPARED WITH THE BUS ADDRESS. (IN STANDARD CONFIGURATIONS THESE JUMPERS WILL ALL EQUAL 1, SO W1, W3 - W6 ARE OPTIONAL)
 2 MAPF LOXX JUMPER H IS THE LOWER LIMIT OF RESPONDING MAPPING REGISTERS TO BE COMPARED WITH THE BUS ADDRESS

REVISIONS		
CHK	CHANGE NO	REV

MAP LIMIT COMPARATOR SLOT 22
 TITLE UNIBUS MAP (MAPF) SIZE CODE DCS NUMBER M 8141-0-1 REV A
 SCALE # SHEET 7 OF 9 DIST

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74S157		
SD	IND	OUTPUT
L	A	CACHE REG DATA
H	B	CACHE DATA

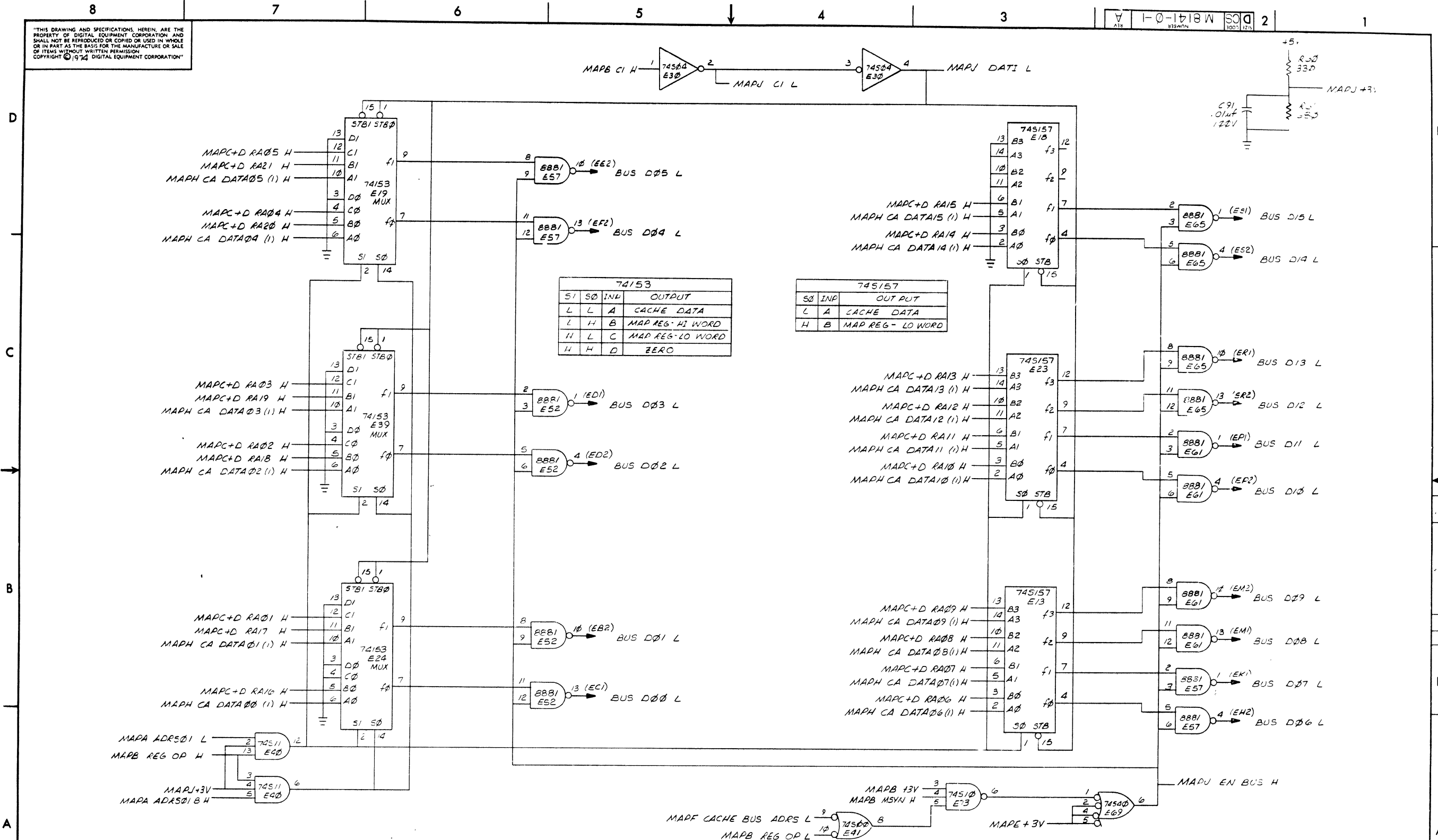


REVISIONS		
CHK	CHANGE NO	REV

CACHE DATA MUX		SLOT 22	
TITLE	SIZE CODE	NUMBER	REV
UNIBUS MAP (MAPH)	D/CS	M8141-0-1	A
SCALE	SHEET 8 OF 9	CIST	

206

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74153			
S0	S0	INH	OUTPUT
L	L	A	CACHE DATA
L	H	B	MAP REG - HI WORD
H	L	C	MAP REG - LO WORD
H	H	D	ZERO

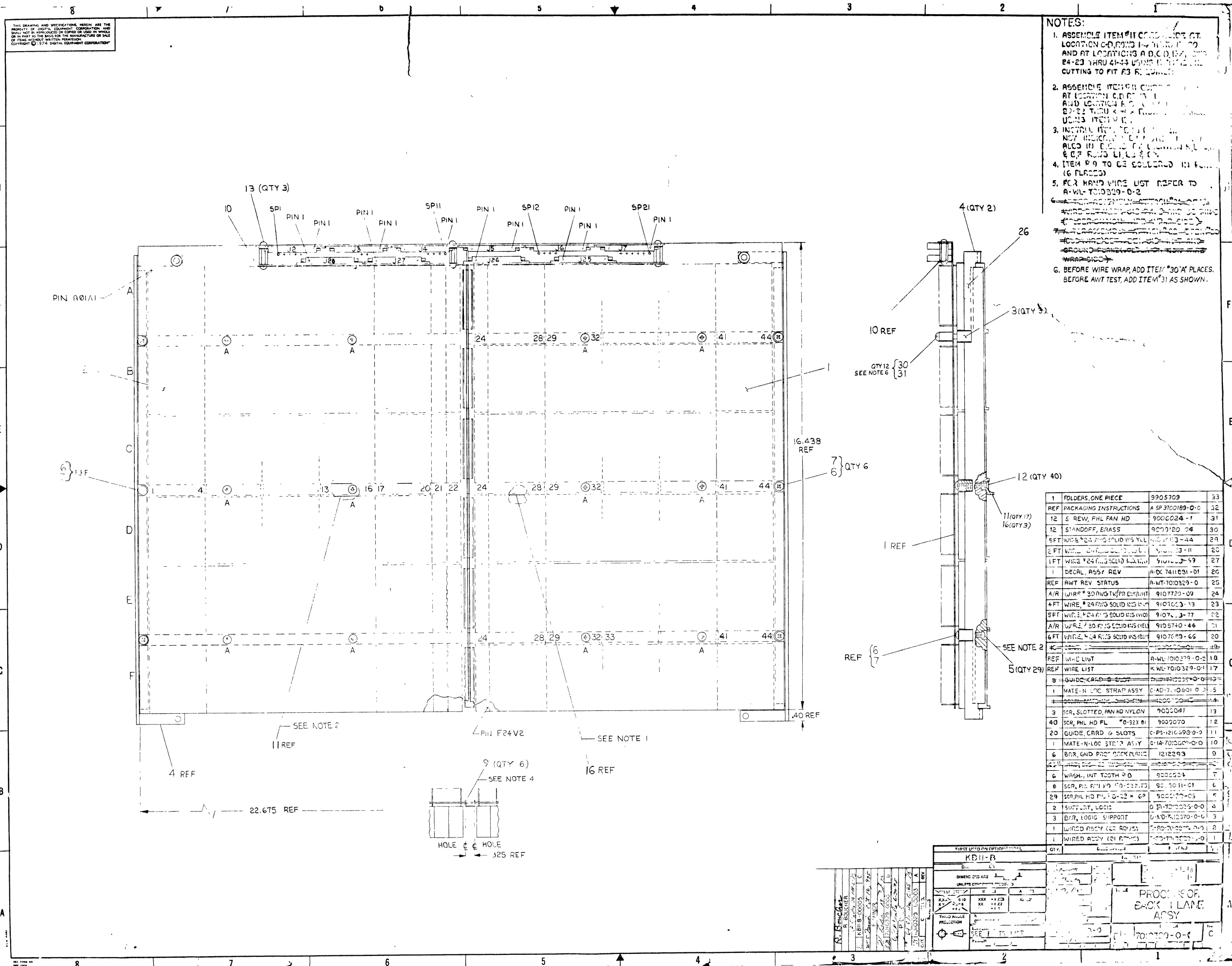
745157		
S0	INH	OUTPUT
L	A	CACHE DATA
H	B	MAP REG - LO WORD

REVISIONS		
CHK	CHANGE NO	REV

DATA MUX AND DRIVERS				SLOT 22			
TITLE		SIZE	CODE	NUMBER		REV	
UNIBUS MAP (MAPJ)		D	CS	M8141-0-1		A	
SCALE	-7	SHEET	9 OF 9	DIST			

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- NOTES:**
- ASSEMBLE ITEM #11 COILS IN PLACE AT LOCATION C-D, ROWS 1-4 AND IN PLACE AND AT LOCATIONS A, B, C, D, ROWS 24-23 THRU 41-43 USING ITEM #12 AND CUTTING TO FIT AS REQUIRED.
 - ASSEMBLE ITEM #4 COILS IN PLACE AT LOCATION C-D, ROWS 1-4 AND AT LOCATION A, C, D, ROWS 24-23 THRU 41-43 USING ITEM #12 USING ITEM #11.
 - INSTALL ITEM #12 COILS IN PLACE. NOT INDICATED COILS ARE ALSO IN PLACE AT LOCATIONS A, B, C, D, ROWS 24-23 THRU 41-43.
 - ITEM #9 TO BE SOLDERED IN PLACE (6 PLACES).
 - FOR WIRE LIST REFER TO A-WL-1010329-0-2.
 - BEFORE WIRE WRAP, ADD ITEM #30 IN PLACES. BEFORE AWT TEST, ADD ITEM #31 AS SHOWN.



1	FOLDERS, ONE PIECE	9905709	33
REF	PACKAGING INSTRUCTIONS	A SP 3700189-0-0	32
12	SREW, PHL PAN HD	900024-1	31
12	STANDOFF, BRASS	9000120-04	30
5FT	WIRE #24 AWG SOLID INS (WOL)	910763-44	29
2 FT	WIRE #24 AWG SOLID INS (WOL)	910763-11	28
1 FT	WIRE #24 AWG SOLID INS (WOL)	910763-59	27
1	DECAL, ASSY REV	A-DC 7411031-01	26
REF	AWT REV STATUS	A-WT-1010329-0	25
A/R	WIRE #20 AWG TYP (R) (WOL)	9107720-09	24
4 FT	WIRE #24 AWG SOLID INS (WOL)	910763-13	23
5 FT	WIRE #24 AWG SOLID INS (WOL)	910763-77	22
A/R	WIRE #20 AWG SOLID INS (WOL)	910740-44	21
6 FT	WIRE #24 AWG SOLID INS (WOL)	910763-66	20
REF	WIRE #24 AWG SOLID INS (WOL)	910763-01	19
REF	WIRE LIST	A-WL-1010329-0-0	18
REF	WIRE LIST	K-WL-1010329-0-1	17
3	GUIDE CARD-SLOT	0-PS-1216490-0-0	16
1	MATE-N-Loc STRAP ASSY	C-AD-710601-0-1	15
1	MATE-N-Loc STRAP ASSY	C-AD-710601-0-0	14
3	SCR, SLOTTED, PAN HD NYLON	9002041	13
40	SCR, PHL HD FL	9002070	12
20	GUIDE, CARD & SLOTS	C-PS-1216490-0-0	11
1	MATE-N-Loc STRAP ASSY	C-AD-710601-0-0	10
6	BR, GND PROT SOCK PLATE	1212293	9
6	WASH, INT TOOTH #D	9002524	8
8	SCR, PHL PAN HD	9002011-01	7
29	SCR, PHL HD FL	9002005	6
2	SUPPORT, LOGIC	D-PA-102025-0-0	5
3	BAR, LOGIC SUPPORT	D-ND-712070-0-0	4
1	WIRED ASSY (20 ROWS)	7-AD-70000-0-0	3
1	WIRED ASSY (24 ROWS)	7-AD-70000-0-0	2
1	WIRED ASSY (24 ROWS)	7-AD-70000-0-0	1

PROCESSED BY: [Signature]

DATE: [Date]

PROJECT: [Project Name]

REV: [Revision]

APPROVED BY: [Signature]

DATE: [Date]

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DRAWING NUMBER	INIT REL	AUTOMATIC WIRE TESTER (AWT) REVISION STATUS													REV NUMBER								
	7	A	B	C	D	E	F	H	J	K	L	M											
E-AD-7010829-0-0	*	*	*	*	*	*	*	*	*	*	*	*	*										
E-AD-7010828-0-0	*	*	*	*	*	*	*	*	*	*	*	*	*										
K-WL-7010329-0-1	*	A	B	B	C	C	C	D	E	F	H	J											
A-WL-7010329-0-2	*	*	*	A	A	B	I	B	B	B	C	C											
E-AD-7010329-0-0	*	*	*	*	*	A	B	F	B	B	C	C											
D-CS-5411337-0-1	C	C	C	C	C	C	C	C	C	C	C	C											
E-CS-5411339-0-1	B	B	B	B	B	B	B	B	B	B	B	B											

REV	CHANGE NO	CHK
A	KEII-E-00001	M
B	KBII-B-00002	M
C	7010329-0002A	
D	KBII-B-00003	M
E	7010329-00003	
F	7010329-00004	M
H	7010329-00005	M
J	7010329-00006	R.B.
K	7010329-00007	M
L	KBII-B-00005	R.F.B.
M	7010329-00008	R.F.B.

DRN D. HEALY	DATE 1/20/70		EQUIPMENT CORPORATION MASSACHUSETTS	
CHK'D D. HEALY	DATE 1/20/70		TITLE PROC BACK PLANE 7010329	
ENG [Signature]	DATE	AWT REVISION STATUS		
PROJ ENG	DATE	SIZE CODE AWT	NUMBER 7010329-0	REV 1
PROD	DATE	FIRST USED ON KM11-D		
SCALE		SHEET 1 OF 1		

DRA 123

DEC 16 13251-1097 N 113

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

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SEQUENCE

7	7
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DRAWING DIRECTORY
WIRING DIAGRAM
POWER LINE MONITOR
E742A POWER SUPPLY
E742 POWER SUPPLY (P.L.)

SEQUENCE

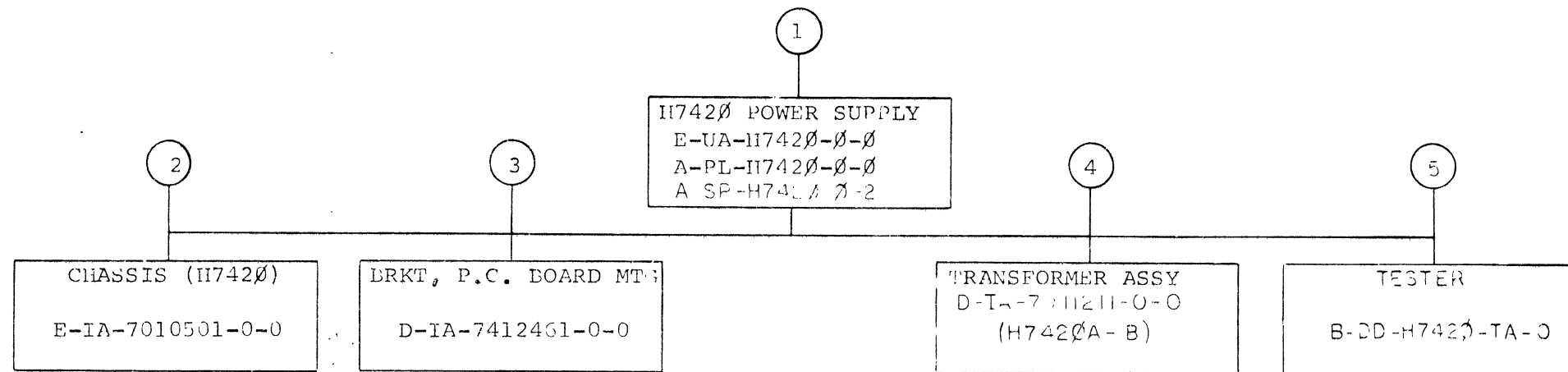
7	7
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D-D-E742A-Ø
D-CS-E742A-Ø-Ø
D-CS-E741A-Ø-Ø-1
E-74A-E742A-Ø-Ø
A-PL-E742A-Ø-Ø

UNIT VARIATIONS		PRINT SET			
VAR	TITLE				
E742A	E742A POWER SUPPLY (120V)	1			
E742B	E742B POWER SUPPLY (240V)				

REVISIONS				USED ON OPTION/MODEL		DRN.	DATE	TITLE						
DATE	CHG. NO.	REV.	BY	DESCRIPTION	DATE	DATE	DATE	SIZE		CODE	NUMBER	REV		
								B	DD		E742A-J	E		

DEC 16 1975 1063 1A-R172



TITLE	SHEET	OF	SIZE	CODE	NUMBER	REV
H7420 POWER SUPPLY	2	3	B	DD	H7420-0	E

ELECTRICAL					MECHANICAL										
CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE	CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
X		1	B-DD-H7420-0	E	3	DRAWING DIRECTORY		X		1	E-UA-H7420-0-0	E	4	H7420 POWER SUPPLY	
X			D-CS-H7420-0-1	A	2	WIRING DIAGRAM		X			A-PL-H7420-0-0	E	2	H7420 POWER SUPPLY	
X			D-CS-5411086-0-1	#	4	POWER LINE MONITOR					D-MD-7412459-0-0	A	1	COVER, CONTROL BOX	
			A-SP-H7420-0-2	#	16	ENGINEERING SPEC.					C-IA-7010730-0-0		1	POWER INDICATOR ASSY	
											D-IA-7010729-0-0	A	1	CABLE, REGULATOR BOARD	
											D-IA-7010728-0-0		1	CABLE, FAN POWER	
											C-IA-7010727-0-0	C	1	POWER CORD, ASSEMBLY	
											A-DC-7413184-0-0		1	POWER SUPPLY DECAL (H7420)	
		5	B-DD-H7420-TA		1	TESTER DRAWING DIRECTORY									
			B-CS-H7420-TA-1	A	1	TESTER WIRING DIAGRAM					A-DC-7413966-0-0		1	POWER SUPPLY DECAL (H7420A)	
			A-UA-H7420-TA-0		1	H7420 TESTER					A-DC-7413967-0-0		1	POWER SUPPLY DECAL (H7420B)	
			A-PL-H7420-TA-0		2	TESTER PARTS LIST									
			A-SP-H7420-0-3		2	TEST PROCEDURE									
										2	E-IA-7010501-0-0		1	CHASSIS (H7420)	
											E-IA-7412948-0-0		2	PLATE, BASE	
											E-IA-7412949-0-0		2	HOUSING, REGULATOR	
										3	D-IA-7412461-0-0		1	BRKT, P.C. BOARD MTG.	
											D-SS-7412461-0-1		1	BRKT, P.C. BOARD MTG. (SS)	
										4	D-IA-7011211-0-0	A	2	TRANSFORMER ASSY (H7420A&B)	
											C-IA-7010813-0-0		1	CAP/VAR ASSEMBLY	

CUSTOMER PRINT SET CODES

X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
 C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
 S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE

H7420 POWER SUPPLY

SHEET 3 OF 3

SIZE CODE
B DD

NUMBER
H7420-0

REV
E

312

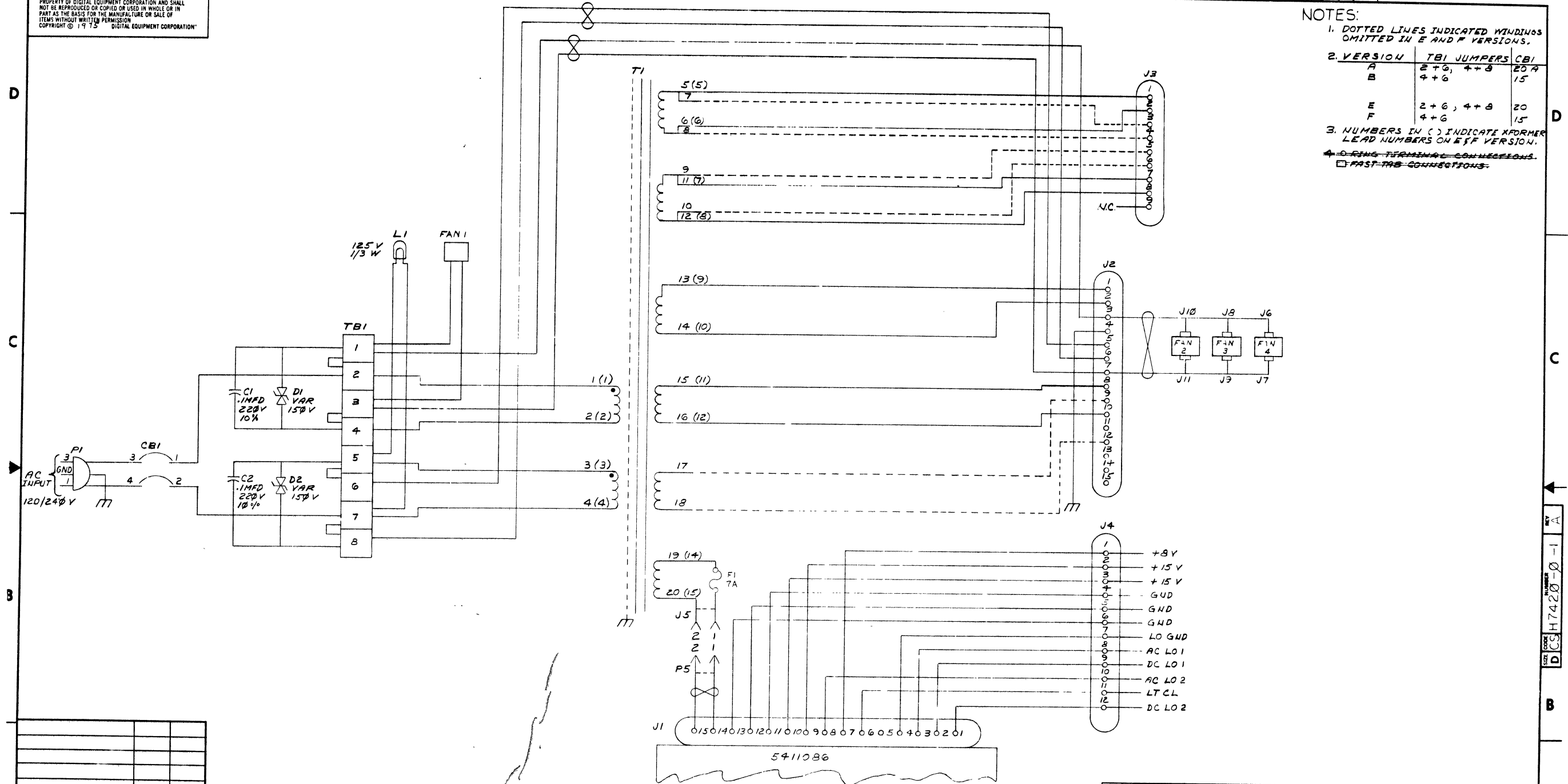
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1-0-0274H SCS 2

- NOTES:
1. DOTTED LINES INDICATED WINDINGS OMITTED IN E AND F VERSIONS.
 2. VERSION TBI JUMPERS CBI

A	2+G, 4+B	20A
B	4+G	15
E	2+G, 4+B	20
F	4+G	15

 3. NUMBERS IN () INDICATE XFORMER LEAD NUMBERS ON E & F VERSIONS.
- TERMINAL CONNECTIONS
 FAST-TAB CONNECTIONS

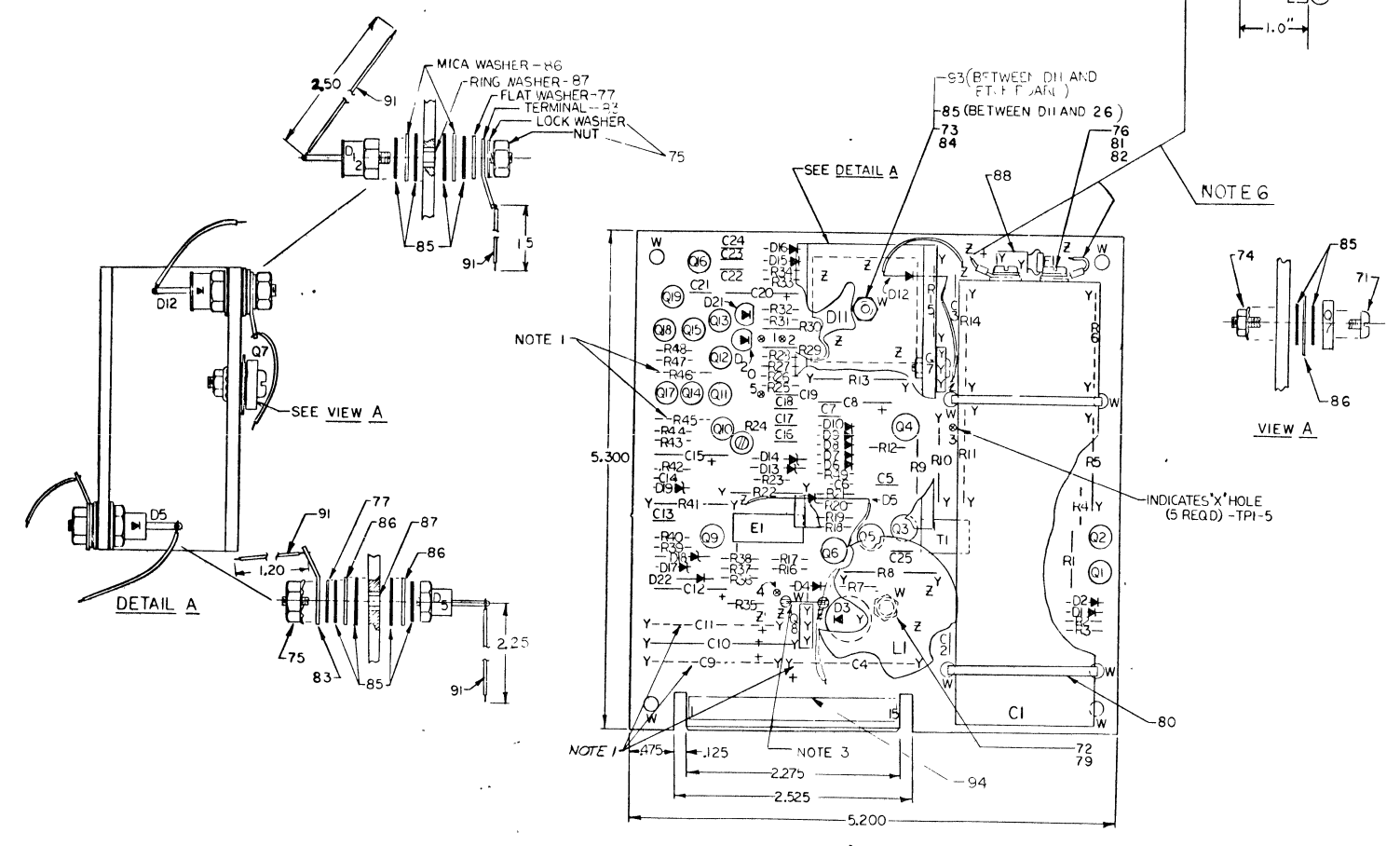


IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.								
PARTS LIST												
FIRST USED ON OPTION MODEL H7-120												
<table border="1"> <tr> <td>DRN. <i>M. Jones</i></td> <td>DATE 1-17-75</td> </tr> <tr> <td>CHK. <i>L. Gardner</i></td> <td>DATE 2-2-75</td> </tr> <tr> <td>ENG. <i>R. J. ...</i></td> <td>DATE 2/2/75</td> </tr> <tr> <td>PH. <i>...</i></td> <td>DATE 2/2/75</td> </tr> </table>					DRN. <i>M. Jones</i>	DATE 1-17-75	CHK. <i>L. Gardner</i>	DATE 2-2-75	ENG. <i>R. J. ...</i>	DATE 2/2/75	PH. <i>...</i>	DATE 2/2/75
DRN. <i>M. Jones</i>	DATE 1-17-75											
CHK. <i>L. Gardner</i>	DATE 2-2-75											
ENG. <i>R. J. ...</i>	DATE 2/2/75											
PH. <i>...</i>	DATE 2/2/75											
TITLE WIRING DIAGRAM												
SIZE CODE NUMBER REV. DCS H7420-0-1 A												
SCALE SHLET OF 1												
SEMICONDUCTOR CONVERSION CHART												
DEC. NO.	EIA NO.	DEC. NO.	FIA NO.									

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- NOTES:**
1. R45, R46, C4, C5, C11 ARE NOT USED ON BASIC 5411086 BUT ARE RESERVED FOR PLANNED FUTURE MODULE VARIATIONS.
 2. ** TOTAL +15V AND +8V CURRENT NOT TO EXCEED 40 AMPERES.
 3. W1 (TEST JUMPER) MAY BE TEMPORARILY REMOVED WHILE TROUBLE-SHOOTING TO DETERMINE IF LOSS OF 15V IS DUE TO CROW- BAR CIRCUITRY, BUT MUST BE IN THE BOARD FOR NORMAL OPERATION.
 4. ~~NON-ITEMIZED PARTS SUPPLIED WITH D12.~~
 - 4 YA VERSION DOES NOT CONTAIN +15VDC RES.
 5. A) FOR STANDARD VERSION USE SHEETS 1, 2, 3, & 4 OF THIS LWG.
B) FOR YA VERSION USE SHEETS 1, 2, & 3 OF THIS DWG.
 - 6 WIRES MUST NOT EXTEND BEYOND THE DIMENSIONS OF THE BOARD.



REF	REF	X-Y COORDINATE HOLE LOCATION	K-00 5411086-0-4	1
REF	REF	ASSY/DRILLING HOLE LAYOUT	D-AH-5411086-0-5	2
REF	REF	MODULE ECO HISTORY	B-MH-5411086-0-6	3
1	1	ETCHED CIRCUIT BOARD	5011035	4
0	1	C2	1000012	5
4	4	C16, C17, C18, C21	1000023	6
3	5	C3, C13, C19, C22, C23	1001610 01	7
1	3	C8, C12, C15	1002431	8
2	2	C6, C25	1002608	9
1	1	C20	1009725	10
4	4	C5, C7, C14, C24	1010274-01	11
0	1	C10	1010509 01	12
1	1	C1	1010851	13
1	2	D2, D19	1100122	14
0	1	D5	1100134	15
0	1	D3	1103341	16
7	8	D1, D6, D7, D8, D9, D15, D16, D22	1105275	17
0	1	D4	1105648	18
0	1	D10, D17	1105796	19
0	1	D12	1109440	20
0	1	D18	1110068	21
2	2	D20, D21	1110324	22
1	1	D11	1110714	23
2	2	D13, D14	1110925	24
0	1	F1	1205147	25
0	1	HEAT SINK	1211986	26
0	1	R23	1300202	27
0	2	R7, R40	1300229	28
0	1	R41	1300232	29
1	3	R4, R12, R49	1300271	30
0	1	R14	1300278	31
0	1	R11	1300349	32
2	2	R18, R20	1300365	33
0	1	R1	1300394	34
0	1	R10	1300420	35
1	1	R15	1300437	36
0	1	R3	1300439	37
2	2	R43, R47	1300479	38
0	1	R37	1301317	39
2	3	R2, R44, R48	1301401	40
0	1	R38	1301424	41
0	1	R16	1301808	42
1	1	R13	1301952	43
0	1	R9	1302253	44
2	2	R19, R21	1302394	45
0	1	R36	1302411	46
0	1	R39	1302685	47
1	1	R25	1303045	48
1	1	R8	1303082	49
1	2	R17, R28	1303114	50
1	1	R31	1303303	51
0	1	R42	1303312	52
2	2	R33, R34	1304854	53
1	1	R30	1304855	54

COMPONENT CHART - YA VERSION

QTY	REF. DESIGNATION	ITEM
3	C19, C22, C23	7
1	C6	5
1	D19	14
7	D6, D7, D8, D9, D15, D16, D22	17
1	D10	18
1	R49	30
2	R44, R48	40
1	R28	50
4	Q3, Q5, Q10, Q19	63
4	Q11, Q12, Q13, Q16	66

IC PIN LOCATIONS

IC TYPE	QND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		

- REV. 1: JAN 74 (A) - E. LOYA
- REV. 2: APR 76 (B) - M. APPELBERG
- REV. 3: JAN 77 (C) - E. LOYA
- REV. 4: JAN 78 (D) - V. BOAEN
- REV. 5: JAN 79 (E) - V. BOAEN
- REV. 6: JAN 80 (F) - V. BOAEN
- REV. 7: JAN 81 (G) - V. BOAEN
- REV. 8: JAN 82 (H) - V. BOAEN
- REV. 9: JAN 83 (I) - V. BOAEN
- REV. 10: JAN 84 (J) - V. BOAEN

FIRST USED ON OPTION MODEL

PARTS LIST

DRN.	DATE	DATE
CHG'D	10-17-74	
ENG	1-27-78	
PRG'D	11-1-78	
PREP'D	11-1-78	
TEST'D	11-1-78	

DRN: J. W. DEWITT DATE: 10-17-74
 CHG'D: DATE: 1-27-78
 ENG: M. APPELBERG DATE: 11-1-78
 PRG'D: DATE: 11-1-78
 PREP'D: DATE: 11-1-78
 TEST'D: DATE: 11-1-78

digital

TITLE: PWR. LINE MONITOR/15V REG.

SCALE: 1 OF 4

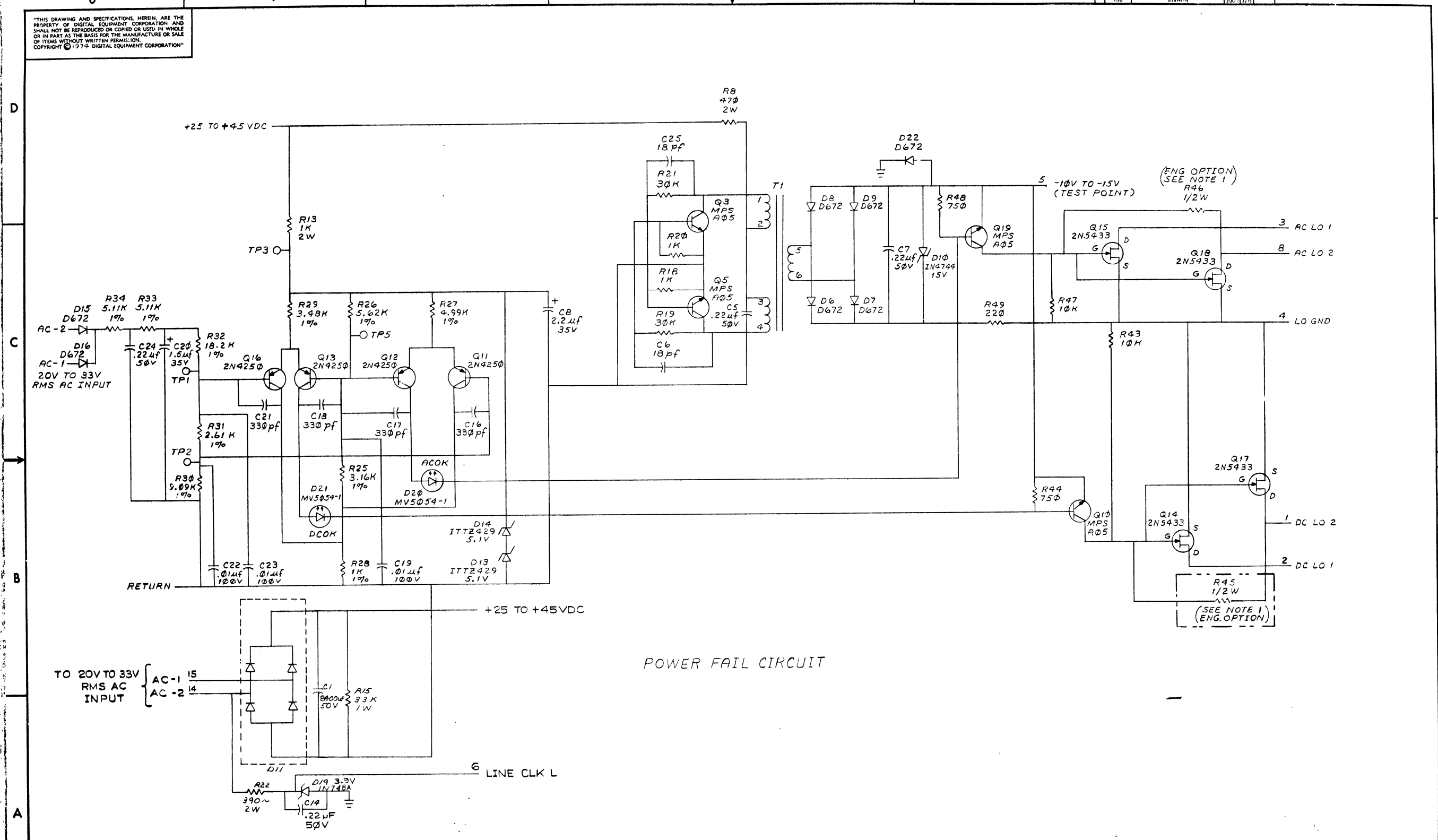
SEMICONDUCTOR CONVERSION CHART

SIZE CODE: DCS 5411086-0-1 NUMBER: REV. J

214

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1-0-98011+SD 2



REVISIONS		
CHK	CHANGE NO.	REV.

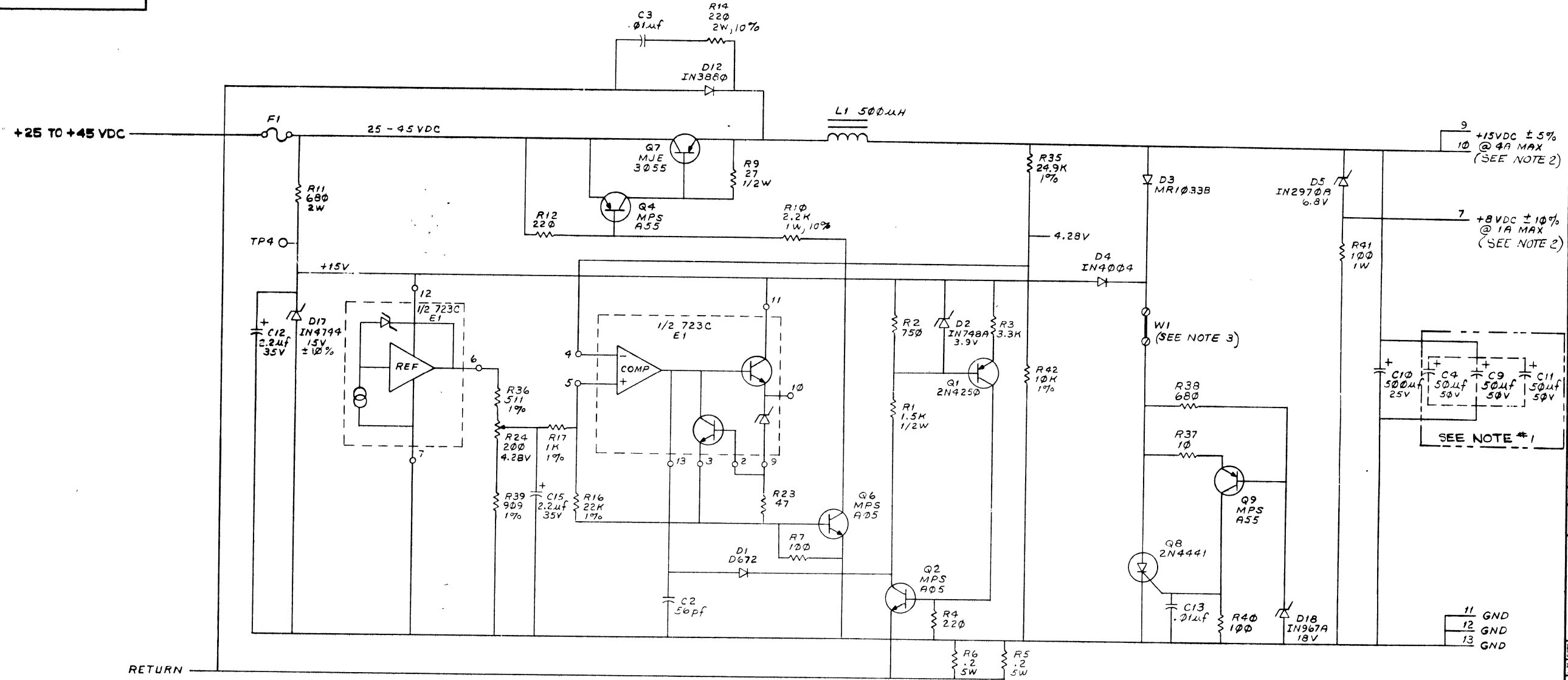
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SCALE		SHEET	3 OF 4	DATE			

REV. 5411086-0-1

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DCS 5411086-0-1



15V REGULATOR
(SEE NOTE #4)

REVISIONS		
CHK	CHANGE NO.	REV.

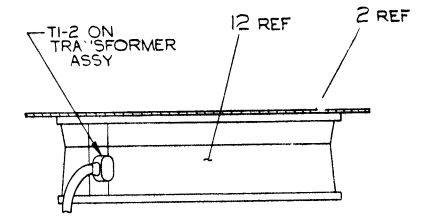
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SCALE	1/1	SHEET	1 OF 4	DIST.
DCS 5411086-0-1				

DO NOT SCALE DRAWING

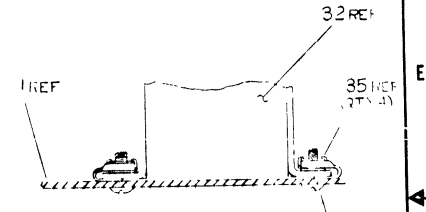
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NOTES:

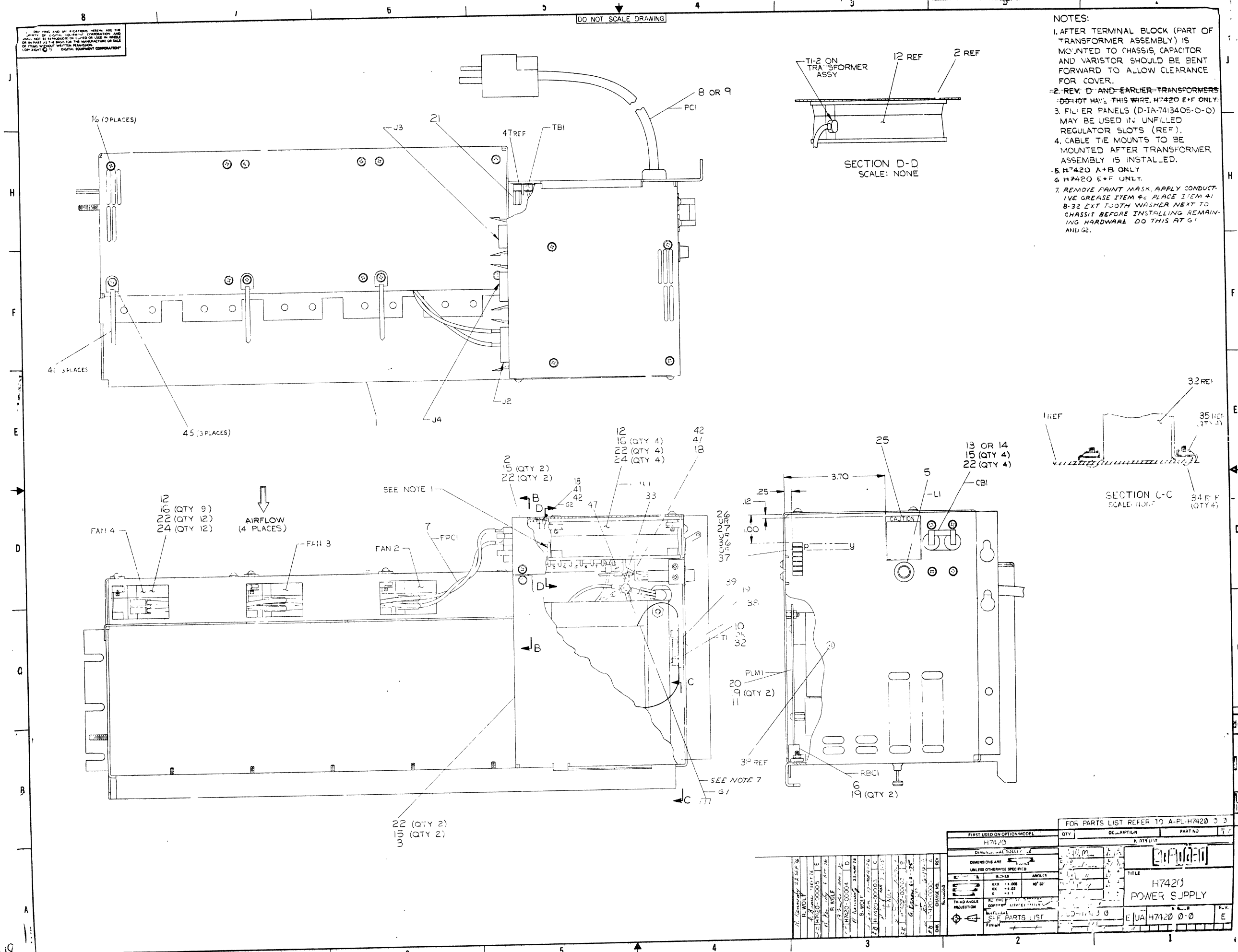
1. AFTER TERMINAL BLOCK (PART OF TRANSFORMER ASSEMBLY) IS MOUNTED TO CHASSIS, CAPACITOR AND VARISTOR SHOULD BE BENT FORWARD TO ALLOW CLEARANCE FOR COVER.
2. REV. D AND EARLIER TRANSFORMERS DO NOT HAVE THIS WIRE. H7420 E+F ONLY.
3. FILTER PANELS (D-1A-7413405-0-0) MAY BE USED IN UNFILLED REGULATOR SLOTS (REF).
4. CABLE TIE MOUNTS TO BE MOUNTED AFTER TRANSFORMER ASSEMBLY IS INSTALLED.
5. H7420 A+B ONLY.
6. H7420 E+F ONLY.
7. REMOVE PAINT MASK, APPLY CONDUCTIVE GREASE ITEM 4, PLACE ITEM 41 B-32 EXT TOOTH WASHER NEXT TO CHASSIS BEFORE INSTALLING REMAINING HARDWARE DO THIS AT G1 AND G2.



SECTION D-D
SCALE: NONE



SECTION C-C
SCALE: NONE



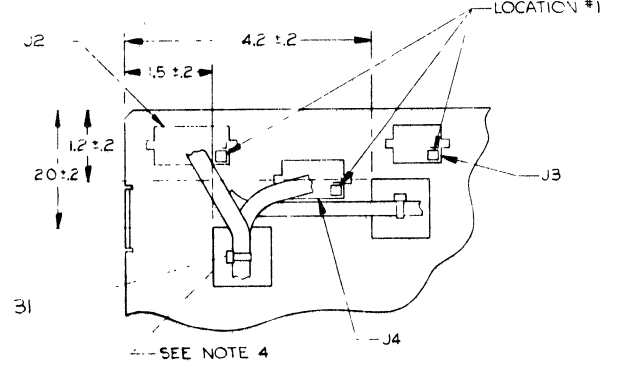
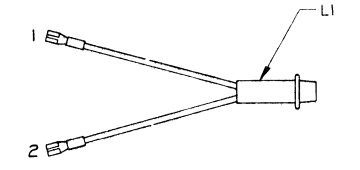
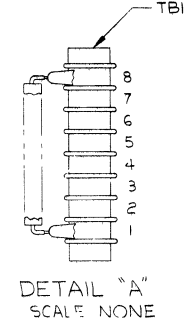
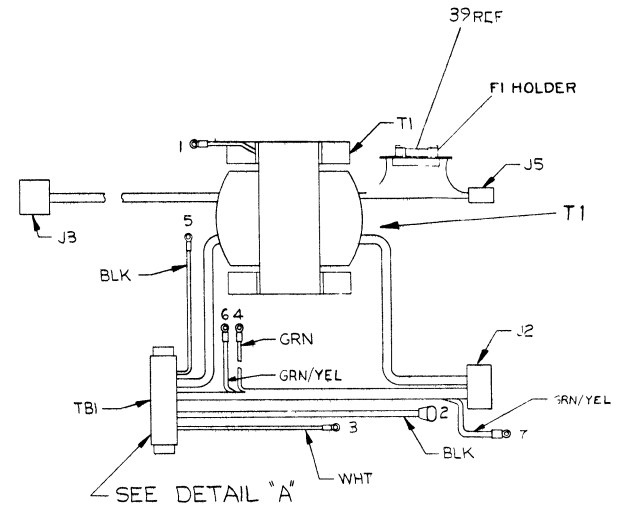
FIRST USED ON OPTION/MODEL		QTY	DC. PARTITION	PART NO.	REV.
H7420					
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED					
TOLERANCES UNLESS OTHERWISE SPECIFIED					
FINISH	REVISIONS	DATE	BY	CHKD	APP'D
ASSEMBLY	1				
DESIGN	2				
TESTING	3				
MANUFACTURING	4				
FIELD SERVICE	5				
SALES	6				
TRAINING	7				
REWORK	8				
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REVISIONS	98				
REVISIONS	99				
REVISIONS	100				

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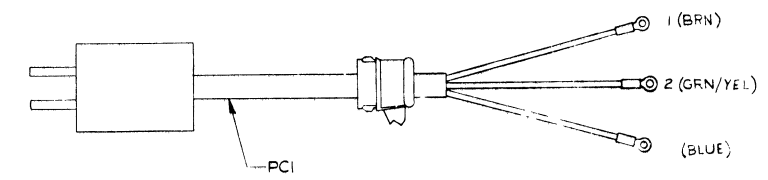
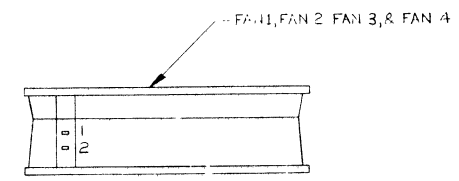
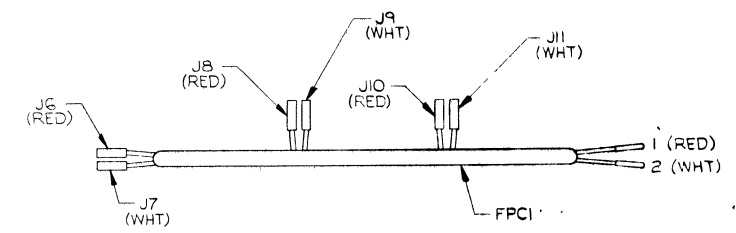
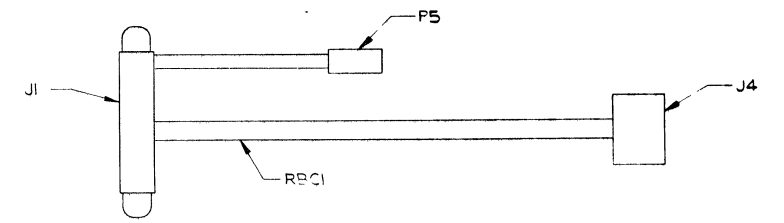
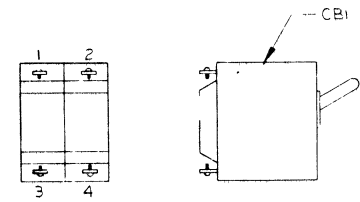
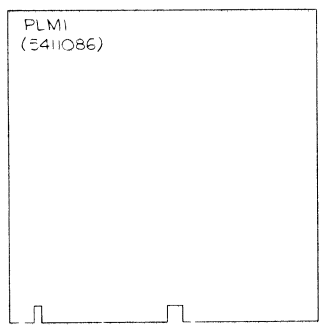
DO NOT SCALE DRAWING

WIRE TABLE					
ITEM NO	DESCRIPTION	FROM CONNECTION	TO CONNECTION	REMARKS	
10	14	BLK	T1-J5	RBC1-P5	SEE NOTE 2, 7
1	14	GRN	T1-1	G1	SEE NOTE 2, 7
1	14	BLK	T1-2	FAN1-1 & 2	SEE NOTE 7
1	14	WHT	T1-3	CBI-1	SEE NOTE 7
1	14	GRN	T1-4	G1	SEE NOTE 7
10	14	BLK	T1-5	CBI-2	SEE NOTE 7
3	22	BLK	LI-1	TBI-5	
5	22	BLK	LI-2	TBI-7	
7	16	RED	FPC1-J6	FAN 4-1	
7	16	WHT	FPC1-J7	FAN 4-2	
7	16	RED	FPC1-J8	FAN 3-1	
7	16	WHT	FPC1-J9	FAN 3-2	
7	16	RED	FPC1-J10	FAN 2-1	
7	16	WHT	FPC1-J11	FAN 2-2	
7	16	RED	FPC1-1	J2-3	
7	16	WHT	FPC1-2	J2-7	
8/9	14	BRN	PCI-1	CBI-4	
8/9	14	GRN/YEL	PCI-2	G1	SEE NOTE 7
8/9	14	BLK	PCI-3	CBI-3	
11	14	PL	PL-1	RBC1-J1	
12	14	GRN/YEL	T1-6	G1	SEE NOTE 7
13	14	GRN/YEL	T1-7	G2	SEE NOTE 7

JUMPER TABLE								
ITEM NO	DESCRIPTION	FROM CONNECTION	WITH CONNECTION	TO CONNECTION	WITH CONNECTION	PRECUT LENGTH	VARIATION	
23	14	BLK	TBI-2	ITEM 28	TBI-6	ITEM 28	3.0	H7420E #A
24	14	BLK	TBI-4	ITEM 28	TBI-8	ITEM 28	3.0	H7420E #A
29	14	BLK	TBI-4	ITEM 28	TBI-6	ITEM 28	3.0	H7420F #B



SECTION B-B
SCALE: NONE



REV	DESCRIPTION

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY/VARIATION																		
PARTS LIST				H7420A	H7420B											H7420A	H7420B					
MADE BY	R. THELLEN	CHECKED	P. CAPPABIANCA			SECTION																
DATE	1/17/75	DATE	2/3/75	1																		
ENG	R. WOLF	PROD	J. BORENSTEIN	ISSUED SECT.																		
DATE	2/3/75	DATE	2/3/75	1																		
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION																				
1	E-IA-7010501-0-0	CHASSIS (H7420)		1	1																	
2	D-MD-7412459-0-0	COVER, CONTROL BOX		1	1																	
3	D-IA-7412461-0-0	BRKT, P.C. BOARD MTG.		1	1																	
4	C-IA-7413125-0-0	PLATE, ADAPTER (H7420)																				
5	C-IA-7010730-0-0	POWER INDICATOR ASSEMBLY		1	1																	
6	D-IA-7010729-0-0	CABLE, REGULATOR BOARD		1	1																	
7	D-IA-7010728-0-0	CABLE, FAN POWER		1	1																	
8	C-IA-7010727-1-0	POWER CORD ASSY (120V)		1	-																	
9	C-IA-7010727-2-0	POWER CORD ASSY (240V)		-	1																	
10	D-IA-7010814-0-0	TRANSFORMER ASSY																				
11	D-CS-5411086-0-1	POWER LINE MONITOR		1	1																	
12	1209403-01	FAN		4	4																	
13	1210191-06	CIRCUIT BREAKER (20A)																				
14	1210191-03	CIRCUIT BREAKER (15A)																				
15	9006020-01	SCR, PHL PAN HD #6-32 x .25		8	8																	
16	9006025-01	SCR, PHL PAN HD #6-32 x .62		13	13																	
17	9006565-00	NUT, KEP #10-32																				
18	9006563-00	NUT, KEP #8-32		2	2																	
19	9008185-00	NUT, KEP #6-32		5	5																	
20	9006840-00	SPACER, #6-32 x .19		2	2																	
21	9006851-00	SPACER, #6-32 x .50		2	2																	
22	9006633-00	WASHER, INT. TOOTH LOCK #6		24	24																	
TITLE POWER SUPPLY H7420				ASSY NO. E-UA-H7420-0-0	SIZE A	CODE PL	NUMBER H7420-0-0	REV E	ECO NO H7420-00005													
SHEET 1 OF 3				DIST																		

DEC FORM DEC 16 (325) 1031 N870
DRA 110

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY/VARIATION																		
PARTS LIST				H7420A	H7420B											H7420A	H7420B					
MADE BY	R. THELLEN	CHECKED	P. CAPPABIANCA			SECTION																
DATE	17-JAN-75	DATE	3-FEB-75	1																		
ENG	R. WOLF	PROD	J. BORENSTEIN	ISSUED SECT.																		
DATE	3-FEB-75	DATE	3-FEB-75	1																		
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION																				
45	9006026-1	SCR PH PAN HD #6-32 x 3/4		3	3																	
46	9007033	TIE CABLE		3	3																	
47	9006933	BLOCK, TERM MARKER STRIP		1	1																	
TITLE POWER SUPPLY H7420				ASSY NO. E-UA-H7420-0-0	SIZE A	CODE PL	NUMBER H7420-0-0	REV E	ECO NO H7420-00005													
SHEET 3 OF 3				DIST																		

DEC FORM DEC 16 (325) 1031 N870
DRA 110

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY/VARIATION																		
PARTS LIST				H7420A	H7420B											H7420A	H7420B					
MADE BY	R. THELLEN	CHECKED	P. CAPPABIANCA			SECTION																
DATE	1/17/75	DATE	2/3/75	1																		
ENG	R. WOLF	PROD	J. BORENSTEIN	ISSUED SECT.																		
DATE	2/3/75	DATE	2/3/75	1																		
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION																				
23	9008509-00	RELIEF, STRAIN																				
24	9009165-00	CLIP, FAN MOUNTING		16	16																	
25	A-DC-7413184-0-0	POWER SUPPLY DECAL (H7420)		1	1																	
26	A-DC-7413186-0-0	POWER SUPPLY DECAL (H7420E)																				
27	A-DC-7413185-0-0	POWER SUPPLY DECAL (H7420F)																				
28	9007969-00	TERMINAL, QUICK CONNECT		4	2																	
29	9107370-00	WIRE, #14 AWG, 1' VC		2	2																	
30	900826-00	MOUNT, CABLE TIE ADHESIVE		2	2																	
31	9007880-00	TIE, CABLE		2	2																	
32	D-IA-7011211-0-0	TRANSFORMER ASSY		1	1																	
33	3612680-01	SAFETY GROUND DECAL		1	1																	
34	9006074-3	SCR, PP. HD. TRUSS 10x32x5/8		4	4																	
35	9006586	TINNERMAN SPEED NUT 10-32		4	4																	
36	A-DC-7413966-0-0	POWER SUPPLY DECAL (H7420A)																				
37	A-DC-7413967-0-0	POWER SUPPLY DECAL (H7420B)																				
38	9006021-1	SCR. PAN HD. 6-32x5/16		1	1																	
39	9007224	FUSE 7 AMP SLOW BLOW		1	1																	
40	9009768-01	RELIEF, STRAIN																				
41	9008072	8-32 WASHER EXT. TOOTH		1	1																	
42	4901173-01	CONDUCTIVE GREASE		1	1																	
43	1212124-01	CIRCUIT BREAKER (20A) SCREW TERM		1	-																	
44	1212124-02	CIRCUIT BREAKER (15A) SCREW TERM		-	1																	
TITLE POWER SUPPLY H7420				ASSY NO. E-UA-H7420-0-0	SIZE A	CODE PL	NUMBER H7420-0-0	REV E	ECO NO H7420-00005													
SHEET 2 OF 3				DIST																		

DEC FORM DEC 16 (325)-1031-N870
DRA 110

220

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE	SEQUENCE
DRAWING DIRECTORY KB11-C (SHEET 1 ONLY)	B-DD-KB11-C
16 BIT PROCESSOR	A-PL-KB11-C-Ø
FLOW DIAGRAMS	D-FD-KB11-C-1
BLOCK DIAGRAM	D-BD-KB11-B-2
BLOCK DIAGRAM	D-BD-KB11-B-3
UNIBUS CABLE & GRANT CHAIN	D-IC-KB11-B-7
DATA PATHS	D-CS-M813Ø-Ø-1
GEN REG & ALU. CONTROLS	D-CS-M8131-Ø-1
IR DECODE	D-CS-M8132-Ø-1
CONSOLE BOARD	D-CS-5411294-Ø-1
PROC. DATA & UNIBUS CONTROL	D-CS-M8134-Ø-1
ROM & ADDRESS CONTROL	D-CS-M8123-Ø-1
TIMING GENERATOR	D-CS-M8139-Ø-1
TRAPS & MISC. CONTROL	D-CS-M8135-Ø-1
UNIBUS & CONSOLE CONTROL	D-CS-M8136-Ø-1
TIMING DIAGRAM	D-TD-M8136-Ø-7
FLOW DIAGRAM	D-FD-M8136-Ø-8
ADDRESS MEMORY BOARD	D-CS-M8143-Ø-1
CACHE CONTROL BOARD	D-CS-M8142-Ø-1
CACHE DATA PATHS	D-CS-M8145-Ø-1
BLOCK DIAGRAM	B-BD-M8145-Ø-7
DATA MEMORY BOARD	D-CS-M8144-Ø-1
MEM. MGMT BLOCK DIAGRAM	D-BD-KB11-B-8
MEM. MGMT REGISTERS	D-BD-KB11-B-4
CACHE ADDRESS TIMING	D-TD-KB11-B-1Ø
INT. REG. CYCLE TIMING	D-TD-KB11-B-9
MEM. MGMT TRAP TIMING	B-BD-KB11-B-5
SYSTEM ADDRESS PATHS	D-CS-M8137-Ø-1
SYSTEM DESCRIPTOR AND CONSOLE CABLES	D-CS-M814Ø-Ø-1
SYSTEM STATUS REGISTERS	D-CS-M8138-YA-1
UNIBUS MAP (M8141) B.D.	B-BD-KB11-B-6
UNIBUS MAP	D-CS-M8141-Ø-1
PROCESSOR BACK PLANE	E-AD-7010329-0-0
AWT REV STATUS	A-WT-7010329-0

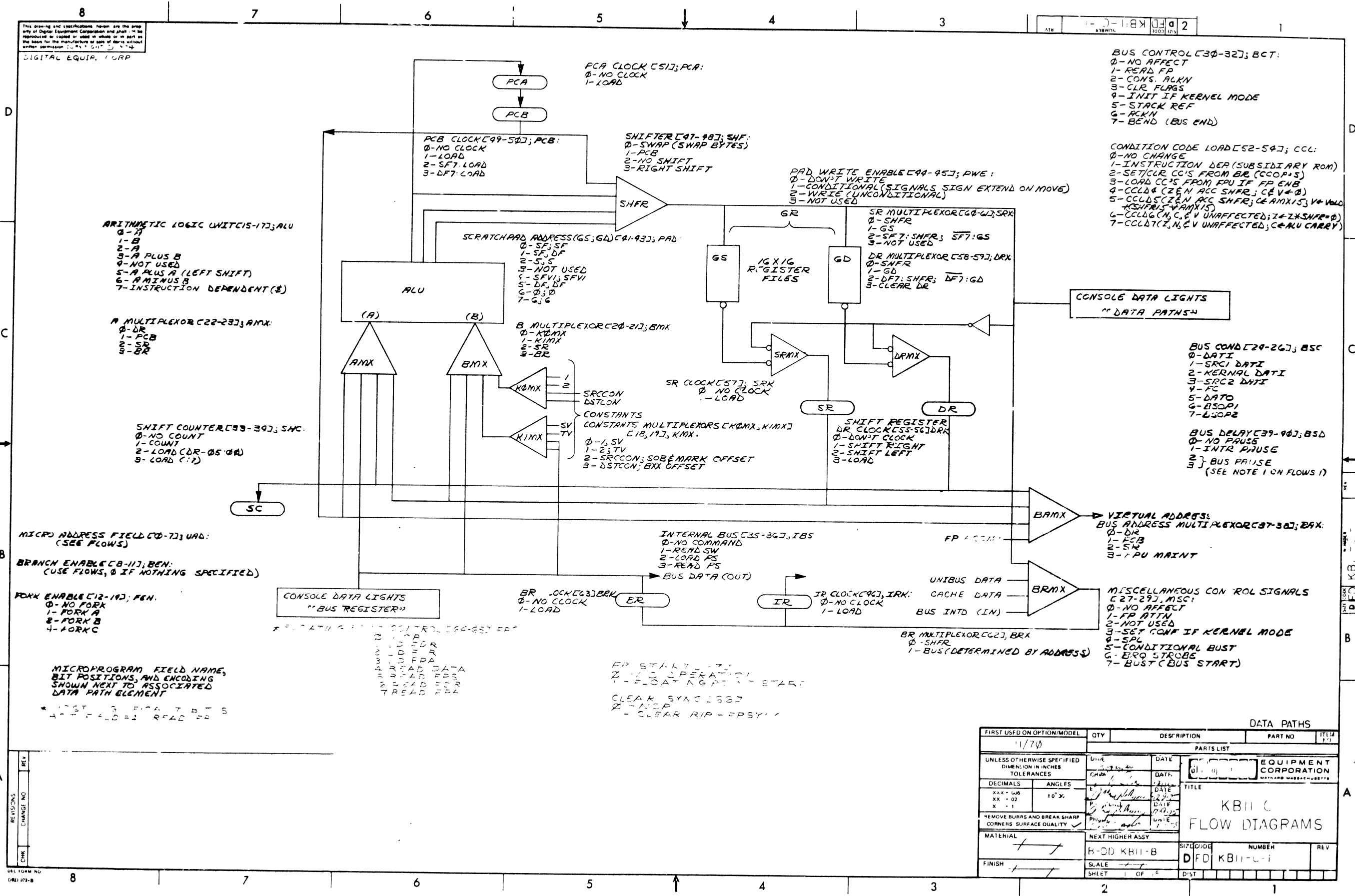
UNIT VARIATIONS		PRINT SET			
VAR	TITLE	1	2	3	4
KB11-C	16 BIT PROCESSOR	X			

REVISIONS		
DATE	CHG. NO.	REV
7/7/75	17	A

USED ON OPTION/MODEL	DRN. TOM NOTHRUP	DATE 9/11/75	TITLE DRAWING DIRECTORY 16 BIT PROCESSOR				NUMBER		REV A
	CHK'D. D. HEALY	DATE 9/18/75					CODE		
	PROD. <i>[Signature]</i>	DATE 11/22/75					SIZE B	DD	
	FIELD SERV. <i>[Signature]</i>	DATE					DIST		
SHEET 1 OF 7									

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS					QUANTITY / VARIATION															
PARTS LIST																				
MADE BY TOM NOTHRUP		CHECKED D. HEALY		SECTION																
DATE 9/11/75		DATE 9/18/75		1																
ENG <i>[Signature]</i>		PROD <i>[Signature]</i>		ISSUED SECT																
DATE 12/2/75		DATE 12/2/75		1																
ITEM NO	DWG NO. / PART NO.	DESCRIPTION																		
	D-CS-M8130-0-1	DATA PATHS			1															
	D-CS-M8131-0-1	GEN REG. PLUS ALU. CONTROLS			1															
	D-CS-M8132-0-1	I R DECODE			1															
	D-CS-M8123-0-1	ROM AND ADDRESS CONTROL			1															
	D-CS-M8134-0-1	PROCESSOR DATA & UNIBUS CONTROL			1															
	D-CS-M8135-0-1	TRAPS & MISC. CONTROL			1															
	D-CS-M8136-0-1	UNIBUS & CONSOLE CONTROL			1															
	D-CS-M8137-0-1	SYSTEM ADDRESS PATHS			1															
	D-CS-M8138-YA-1	SYSTEM STATUS REGISTERS			1															
	D-CS-M8139-0-1	TIMING GENERATOR			1															
	D-CS-M8140-0-1	SYS. DESCRIPTOR & CONS. CABLES			1															
	D-CS-M8141-0-1	UNIBUS MAP			1															
	D-CS-M8142-0-1	CACHE CONTROL BOARD			1															
	D-CS-M8143-0-1	ADDRESS MEMORY BOARD			1															
	D-CS-M8144-0-1	DATA MEMORY BOARD			1															
	D-CS-M8145-0-1	CACHE DATA PATHS			1															
	E-AD-7010329-0-0	PROCESSOR BACK PLANE ASSY.			1															
	B-MD-7413647-0-0	BLANK MODULE			1															
	D-CS-5411294-0-1	CONSOLE BOARD			1															
		NOTE: FOR MODULE LOCATIONS REFER TO D-CA-11/70-0-0 SHEET 3																		
TITLE		ASSY NO.		SIZE	CODE	NUMBER				REV	ECONO									
16 BIT PROCESSOR (M811-C)		NONE		A	PL	M811-C-0														
		SHEET 1 OF 1		DIST																

DEC FORM DEC 16 (325) 1031-N870
DRA 110



BUS CONTROL [30-32]; BCT:
 0-NO AFFECT
 1-READ FP
 2-CONS. ALKN
 3-CLR. FLAGS
 4-INIT IF KERNEL MODE
 5-STACK REF
 6-ACKN
 7-BEND (BUS END)

CONDITION CODE LOAD [52-54]; CCL:
 0-NO CHANGE
 1-INSTRUCTION DEP (SUBSIDIARY ROM)
 2-SET CLR CC'S FROM BR (CCOP15)
 3-LOAD CC'S FROM FP (IF FP ENB)
 4-CCLD (ZEN ACC SHFR; CE V=0)
 5-CCLD (ZEN ACC SHFR; CE AMXIS; V=VALD)
 6-CCLD (N, C, S, V UNAFFECTED; Z=ZK SHFR=0)
 7-CCLD (Z, N, S, V UNAFFECTED; CE ARU CARRY)

ARITHMETIC LOGIC UNIT [15-17]; ALU
 0- \bar{A}
 1-B
 2-A
 3-A PLUS B
 4-NOT USED
 5-A PLUS A (LEFT SHIFT)
 6-A MINUS B
 7-INSTRUCTION DEPENDENT (S)

A MULTIPLEXOR [22-23]; AMX:
 0-DR
 1-PCB
 2-SR
 3-BR

SHIFT COUNTER [53-54]; SMC:
 0-NO COUNT
 1-COUNT
 2-LOAD (DR-05 00)
 3-LOAD (1)

MICRO ADDRESS FIELD [70-72]; UAD:
 (SEE FLOWS)

BRANCH ENABLE [13-14]; BEN:
 (USE FLOWS, 0 IF NOTHING SPECIFIED)

FORK ENABLE [12-14]; FEN:
 0-NO FORK
 1-FORK A
 2-FORK B
 4-FORK C

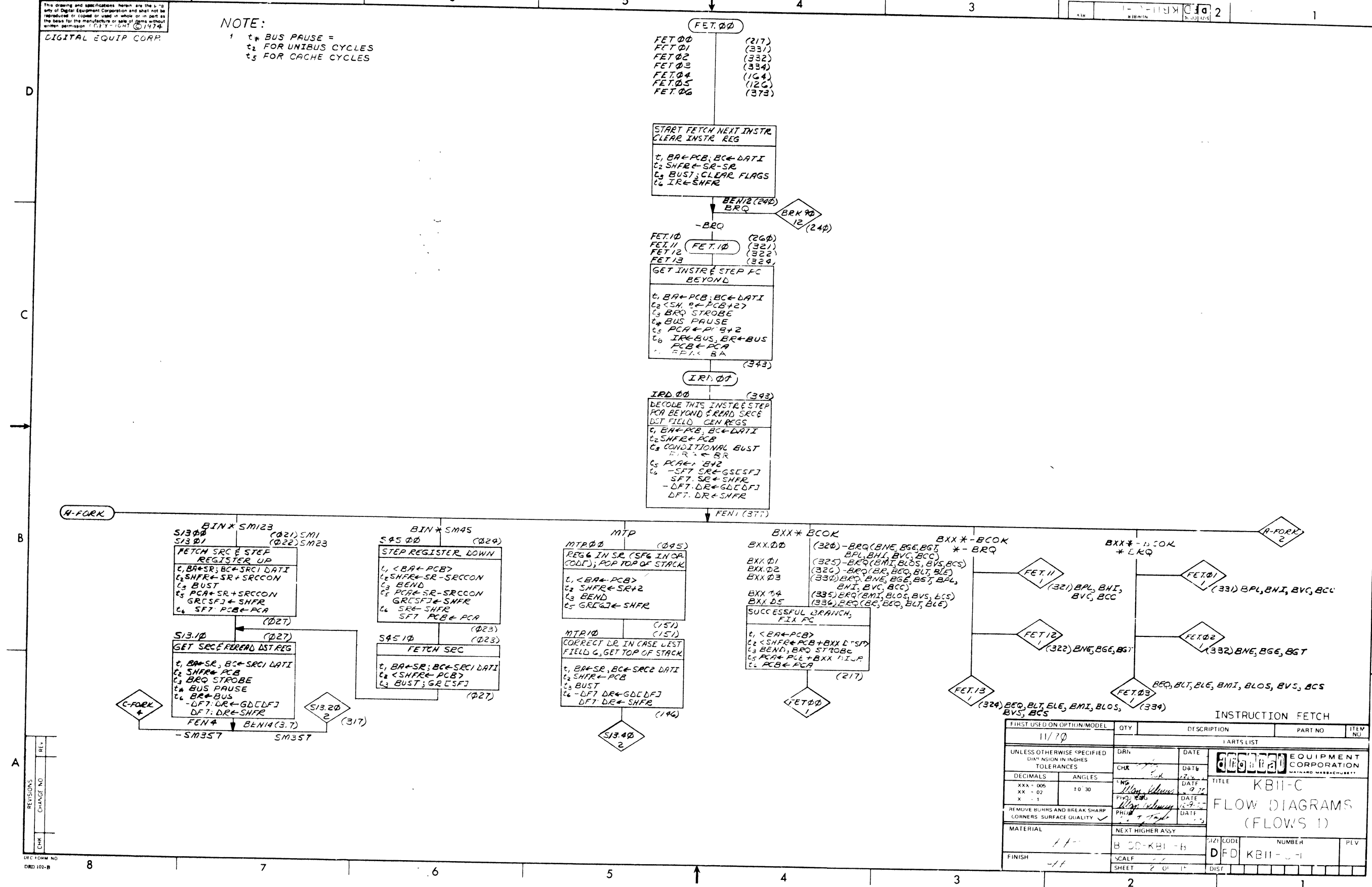
MICROPROGRAM FIELD NAME, BIT POSITIONS, AND ENCODING SHOWN NEXT TO ASSOCIATED DATA PATH ELEMENT

REV	CHG	NO

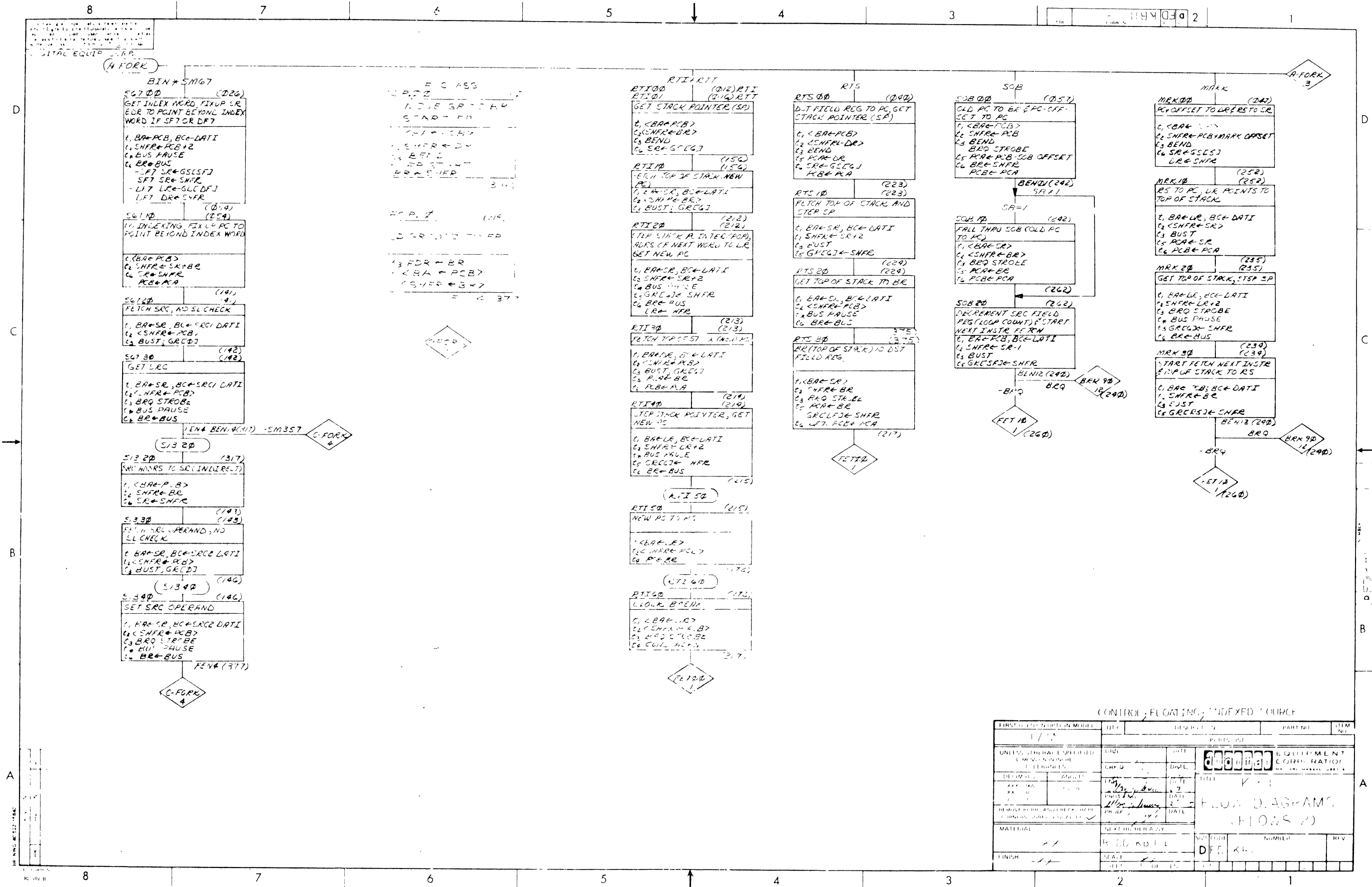
FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM #
1170				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	DATE		
XXX - 06	10° 30'	DATE	DATE	DATE
XX - 02		DATE	DATE	DATE
X - 1		DATE	DATE	DATE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY			
FINISH	H-DD KBII-B	SIZE/ODE	NUMBER	REV
		D	FD	KBII-C-1
SHEET	1 OF 1	DIST		

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NOTE:
 1 t* BUS PAUSE =
 2 FOR UNIBUS CYCLES
 3 FOR CACHE CYCLES



FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	DATE	PARTS LIST	
XXX + 005	± 0.30	DATE	EQUIPMENT CORPORATION	
XX - 02		DATE	MAYNARD MASSACHUSETTS	
X - 1		DATE	TITLE	
		DATE	KBII-C	
		DATE	FLOW DIAGRAMS	
		DATE	(FLOWS 1)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY	SIZE	CODE	NUMBER
11	B SC-KBI-B	D	FD	KBII-C-1
FINISH	SCALE	SHEET	DIST	
-11	2 OF 11			



(CONTROL FLOW CHARTING) INDEXED SOURCE

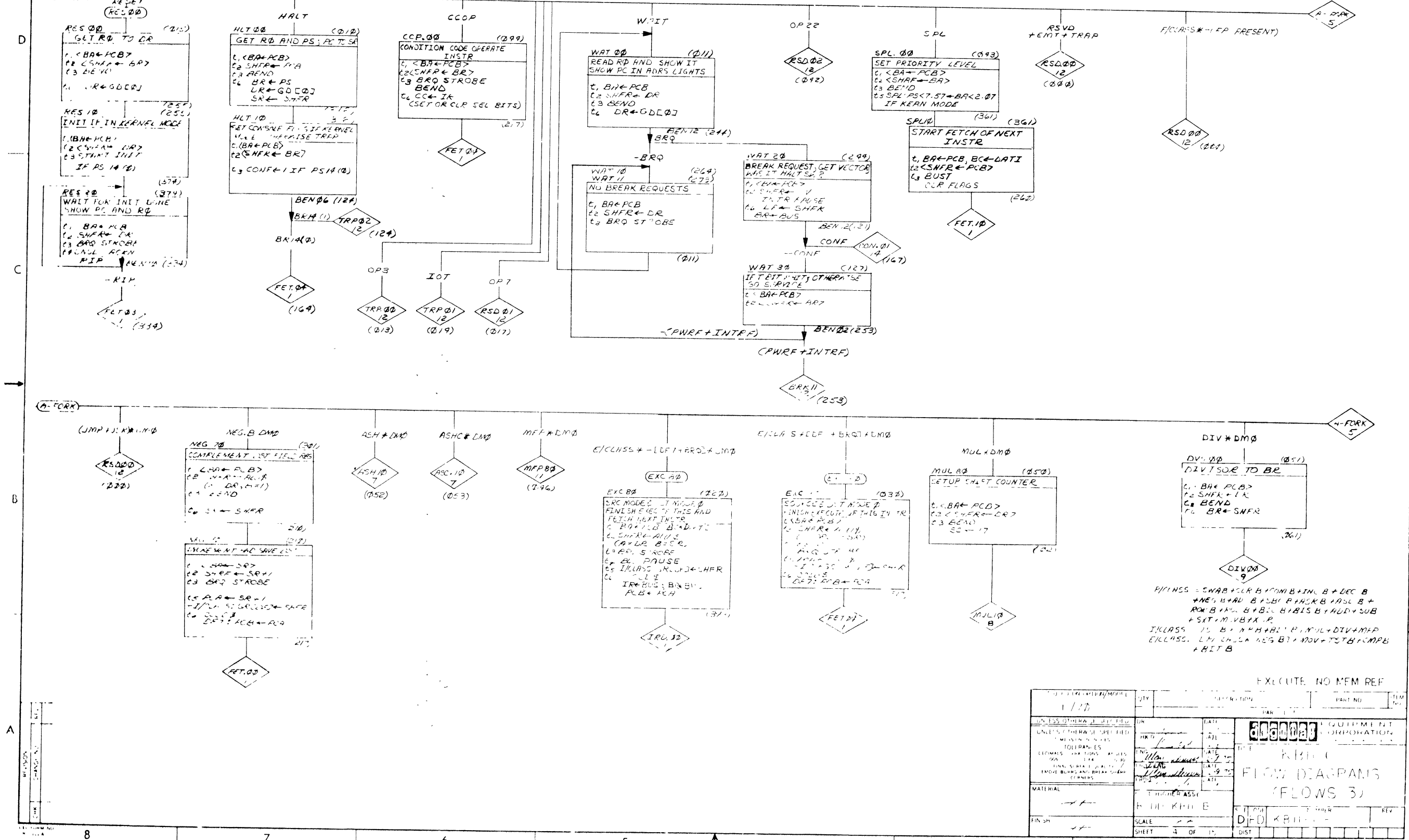
ITEM NO.	DESCRIPTION	DATE	BY
1	DESIGNED		
2	DRAWN		
3	CHECKED		
4	APP. BY		
5	DATE		
6	DATE		
7	DATE		
8	DATE		
9	DATE		
10	DATE		

ITEM NO.	DESCRIPTION	DATE	BY
1	DESIGNED		
2	DRAWN		
3	CHECKED		
4	APP. BY		
5	DATE		
6	DATE		
7	DATE		
8	DATE		
9	DATE		
10	DATE		

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REV. 2 12/68

INITIAL WUP / JRP
(L104K)



DIV 9
 FCLASS = SWAB + CLR B + COMB + INL B + DEC B
 + NEG B + AD B + SHC B + ASK B + ASE B +
 ROW B + K. B + BIL B + BIS B + AUD + SUB
 + SKT + M. VB + X. P.
 ICLASS = IS B + N + H + H. P. + MUL + DIV + MAP
 ECLASS. LHI + LLA + NEG B + NOV + TST B + CMP B
 + BIT B

A

A

DATE	DESCRIPTION	PART NO.	REV.
1/1/70			
UNLESS OTHERWISE SPECIFIED			
TOLERANCES			
DECIMALS			
FRACTIONS			
ANGLES			
MATERIAL			
FINISH			
SCALE	4 OF 15		
SHEET	DIST		

EXECUTE NO MEM REF

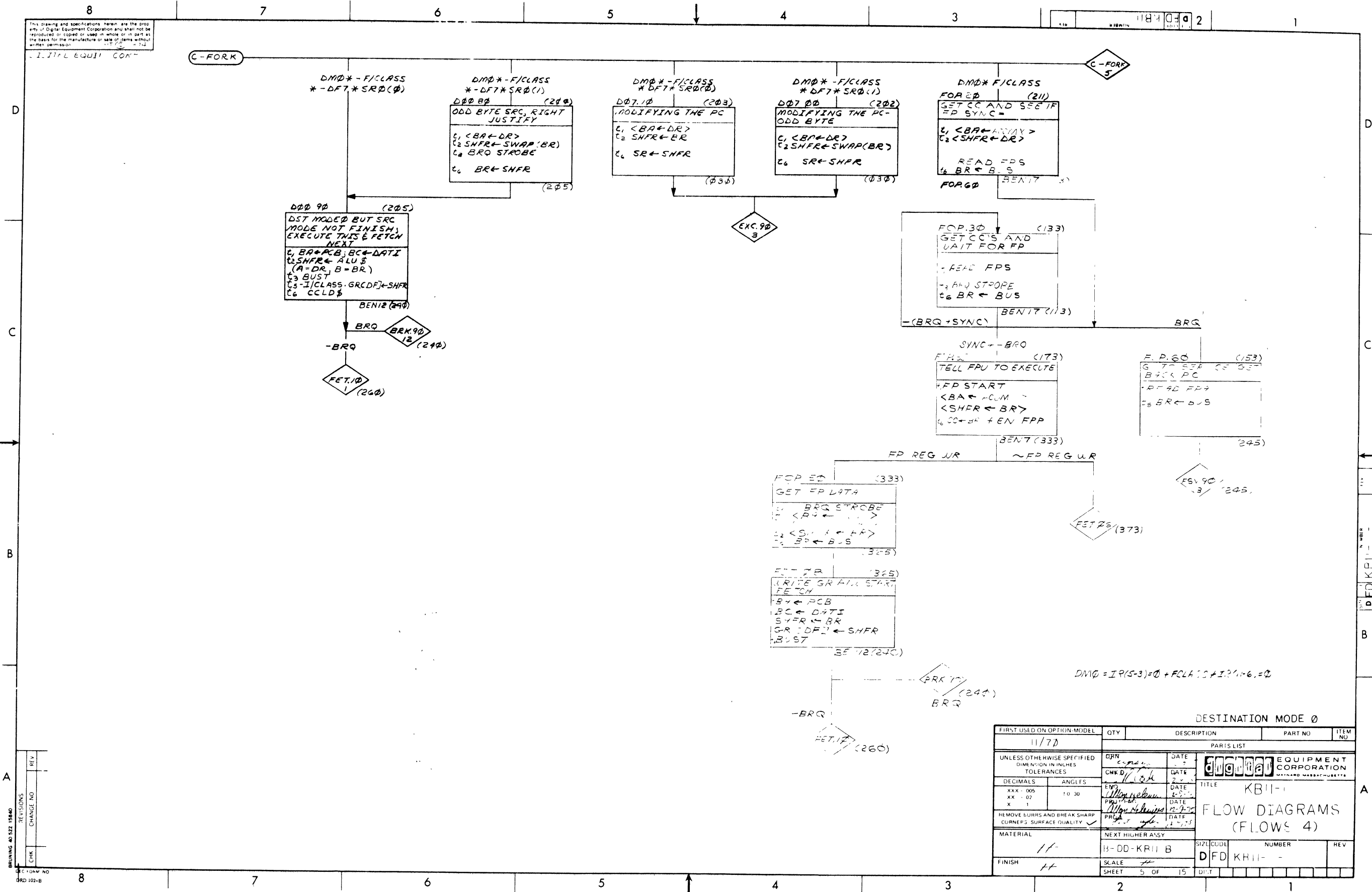
INSTRUMENT CORPORATION

KBI00

FLOW DIAGRAM (FLOWS 3)

DIED KBI00

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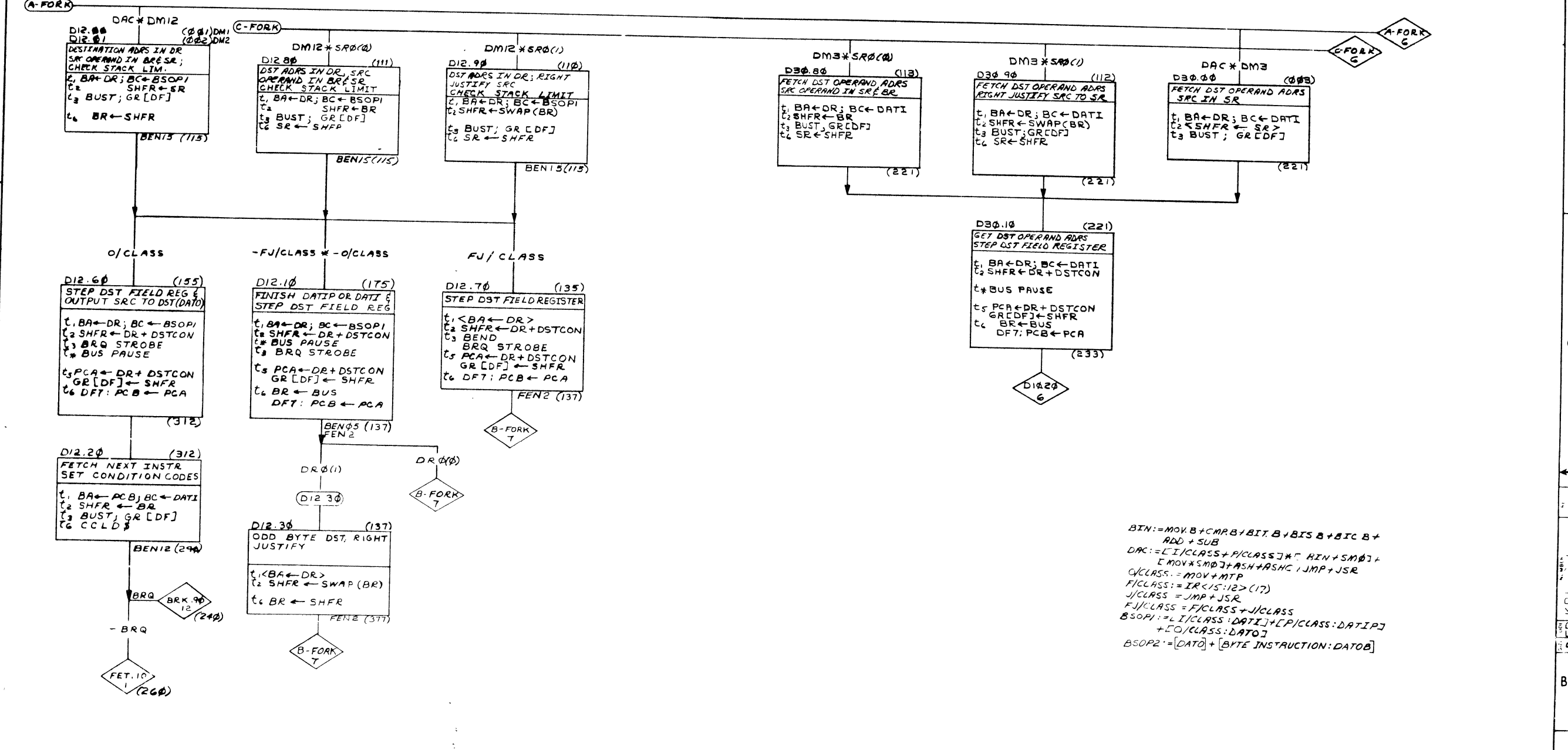
REV	CHANGE NO

BRUNING NO 522 15840
ORD 102-B

FIRST USED ON OPTION-MODEL 11/70	QTY	DESCRIPTION	PART NO	ITEM NO
PARIS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN CHK D	DATE DATE	DIGITAL EQUIPMENT CORPORATION	
DECIMALS XXX - 005 XX - 02 X - 1	ENGR PROJ. ENGR PRG	DATE DATE DATE	TITLE KBII-1	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			FLOW DIAGRAMS (FLOWS 4)	
MATERIAL 11	NEXT HIGHER ASSY B-DD-KR11 B	SCALE 5 OF 15	SIZE CODE D	NUMBER FD KHII-
FINISH 11			REV	

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DIGITAL EQUIP CORP

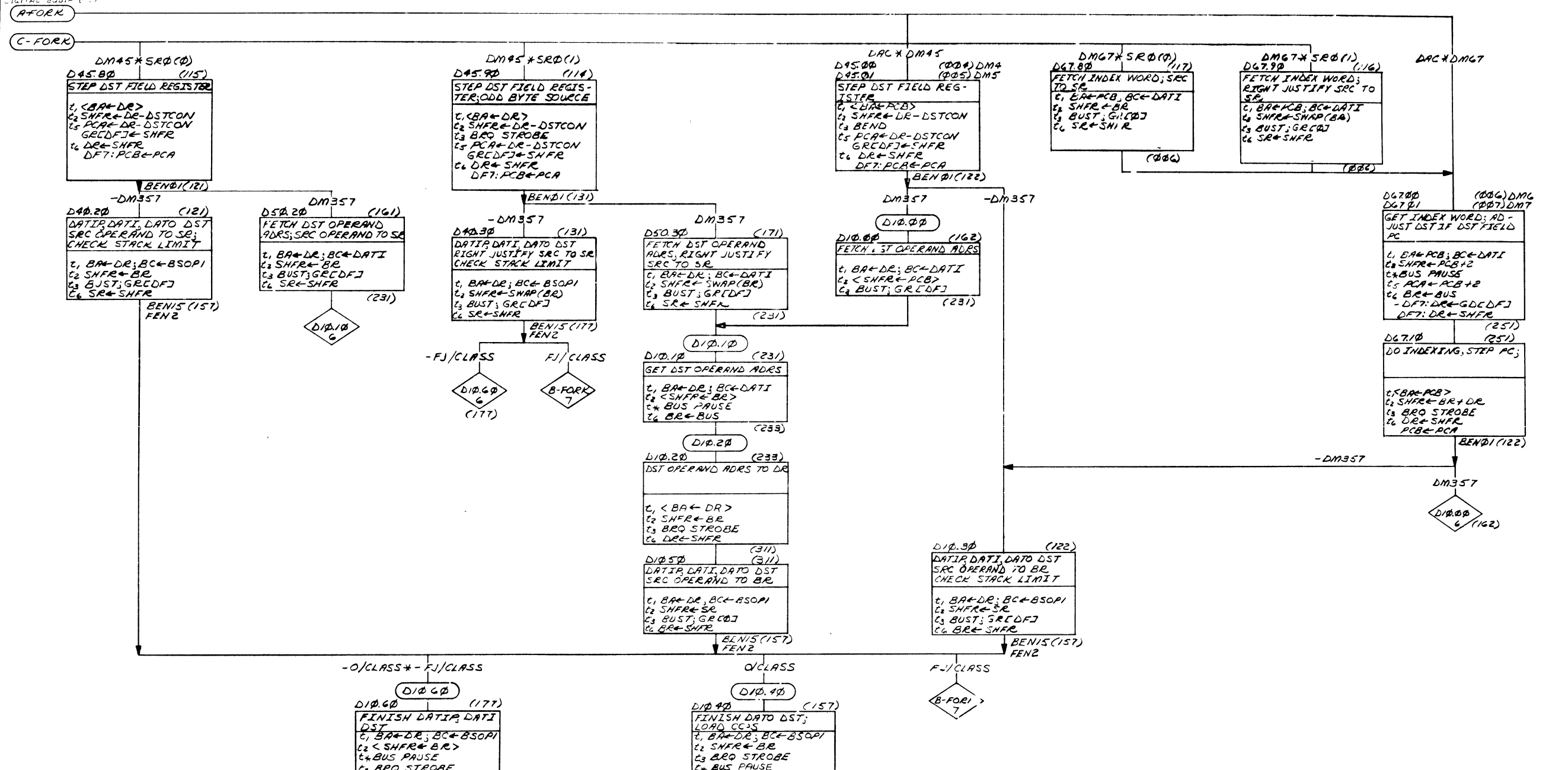


BIN := MOV B + CMB / BIT B + BIS B + BIC B + ADD + SUB
 DAC := L I / CLASS + F / CLASS + J * C REN + SM0 + L MOV * SM0 + ASH + ASHC / JMP + JSR
 C / CLASS := MOV + MTP
 F / CLASS := IR < 15:12 > (17)
 J / CLASS := JMP + JSR
 F / J / CLASS := F / CLASS + J / CLASS
 BSOP1 := L I / CLASS : DATI + L P / CLASS : DATIP + L O / CLASS : DATO
 BSOP2 := [DATO] + [BYTE INSTRUCTION: DATOB]

DESTINATION MODES 1-3

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED	DRN	DATE	DIGITAL EQUIPMENT CORPORATION	
UNLESS OTHERWISE SPECIFIED	CHKD	DATE	KBI-C	
DIMENSION IN INCHES	ENGR	DATE	FLOW DIAGRAMS (FLOWS 5)	
TOLERANCES	PHYS	DATE	SIZE CODE NUMBER	
DECIMALS FRACTIONS ANGLES	PROV	DATE	D F D KBI-C-1	
2 005 ± .004 ± .030			FINISH	
FINAL SURFACE QUALITY			SCALE	
REMOVE BURRS AND BREAK SHARP CORNERS			SHEET 6 OF 15	
MATERIAL			DIST	
FINISH				

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REV	CHANGE NO	DATE

DEC 1968 DRD 100-3

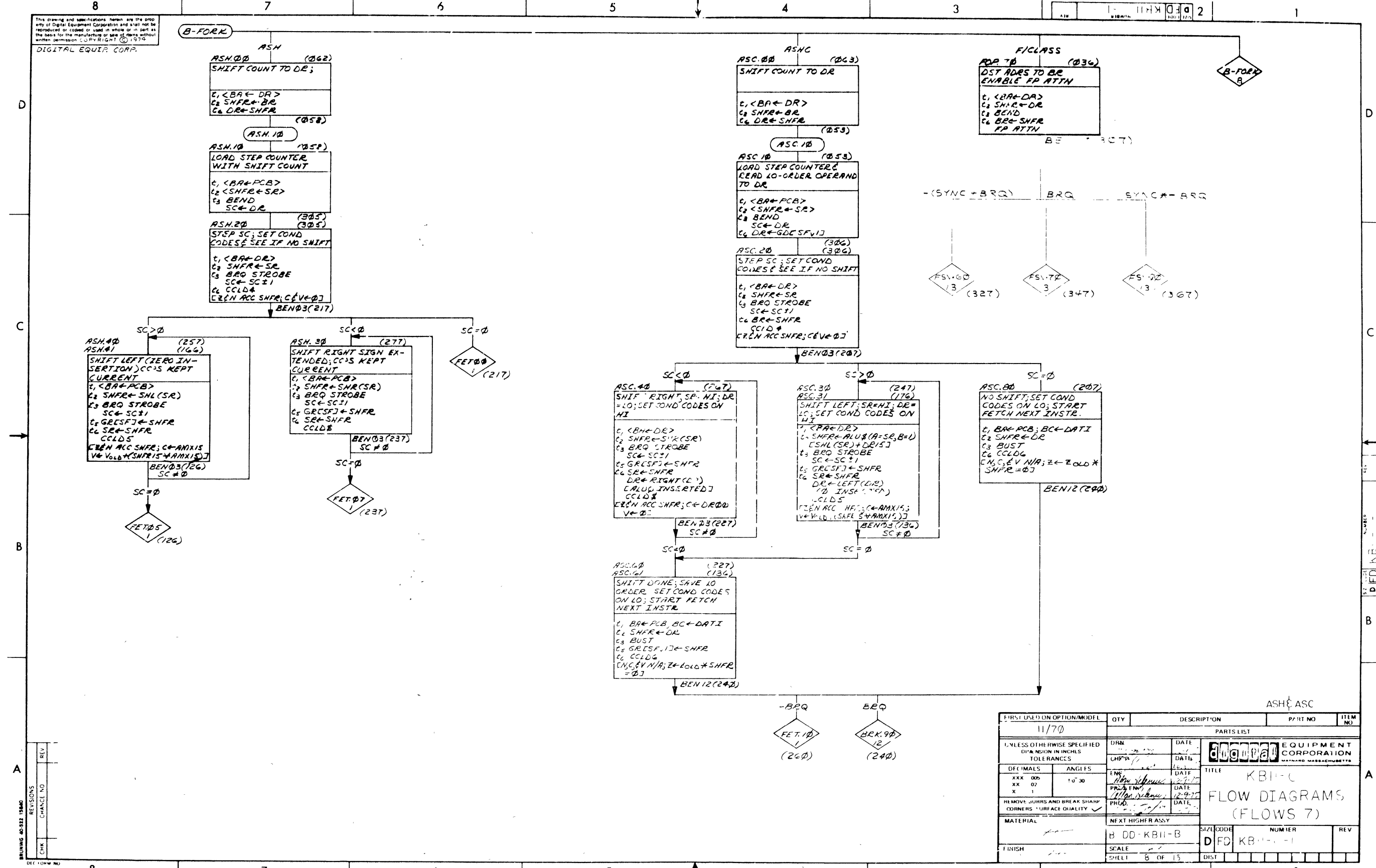
DESTINATION MODES 4-7

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	URN	DATE	EQUIPMENT CORPORATION	
DECIMALS: .005				
ANGLES: 10°30'				
MATERIAL: B-00-KBII-B				
FINISH: / /				

TITLE: **KBII-C**
FLOW DIAGRAMS
(FLOWS 6)

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FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES	DRN	DATE	DIGITAL EQUIPMENT CORPORATION	
DECIMALS ANGLES	CHK'D	DATE	KBI-C	
XXX 005	ENG	DATE	FLOW DIAGRAMS (FLOWS 7)	
XX 07	PRG ENR	DATE		
X 1	PRD	DATE		
REMOVE DIMS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY		SIZE CODE	NUMBER
FINISH	B DD-KBI-B		D FD	KB-1-1
SCALE	SHEET 8 OF 15		DIST	

8
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2
 KRII-11-KRII

B-FORK
 B-FORK 9

MUL 00 (060)
 MULTIPLICAND GOES TO DR; SC ← 17
 T, <BA ← DR>
 E2 SHFR ← BR
 E3 SC ← 17
 E6 DR ← SHFR
 (102)

MUL 10 (102)
 BR GETS CLEARED; DR SHIFTED RIGHT ONE PLACE; BRANCH DETERMINED BEFORE SHIFT
 T, <BA ← DR>
 E2 SHFR ← BR - BR
 E3 SC ← SC - 1
 E6 BR ← SHFR
 DR ← RIGHT (DR)
 ALU ← INSERTED
 BEN 11 (296)

DR 0 (1)
 MUL 20 (206)
 IF DR 0 IS 1 ADD SR TO BR AND COMBINED SHIFT RIGHT; BR ← SR IS FOR SIGN
 T, <BA ← DR>
 E2 SHFR ← SHR (BR + SR)
 E3 SC ← SC - 1
 E6 CLLD 4
 BR ← SHFR
 DR ← RIGHT (DR)
 ALU ← INSERTED
 BEN 11 (206)

DR 0 (0)
 MUL 30 (206)
 IF DR 0 IS 0 COMBINED SHIFT RIGHT; NO PLACE; SIGN ENTERED ON BA
 T, <BA ← DR>
 E2 SHFR ← SHR (BR)
 E3 SC ← SC - 1
 E6 CLLD 4
 BR ← SHFR
 DR ← RIGHT (DR)
 ALU ← INSERTED
 BEN 11 (206)

SC = 0
 DR 0 (1)
 MUL 50 (226)
 MULTIPLICAND NEG; SUBTRACT SR FROM BR AND SHIFT RIGHT; BR ← -SR IS FOR SIGN
 T, <BA ← DR>
 E2 SHFR ← ALU (A - BR, B + SR)
 E3 BKO STROBE
 E5 GRC SF ← SHFR
 E6 BR ← SHFR
 DR ← RIGHT (DR)
 ALU ← INSERTED
 CLLD 4
 ZEN ACC SHFR, VEC ← 0
 (317)

SC = 0
 DR 0 (0)
 MUL 40 (206)
 MULTIPLICAND POS; SHIFT RIGHT; HIGH ORDER PRODUCT GOES TO GRC SF
 T, <BA ← DR>
 E2 SHFR ← SHR (BR)
 E3 BKO STROBE
 E5 GRC SF ← SHFR
 E6 BR ← SHFR
 DR ← RIGHT (DR)
 ALU ← INSERTED
 CLLD 4
 ZEN ACC SHFR, VEC ← 0
 (317)

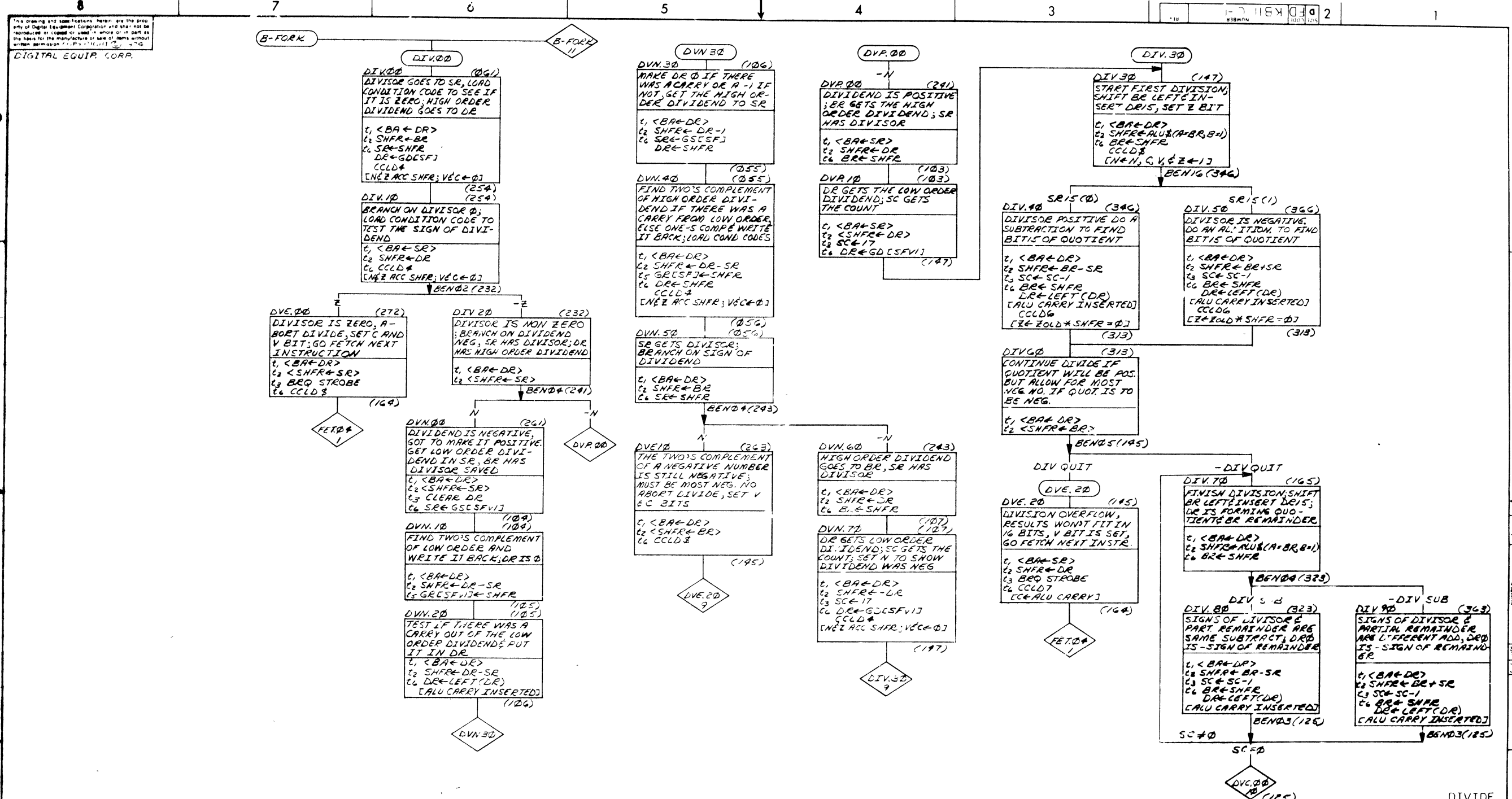
MUL 60 (317)
 LOW ORDER PRODUCT GOES TO GRC SF
 T, BR ← PCB, B ← DATA
 E2 SHFR ← DR
 E3 BUST
 E5 GRC SF ← SHFR
 E6 CLLD 8
 BEN 12 (292)

FET 10 (260)
 - BRQ

BRQ
 BRK 90 (290)

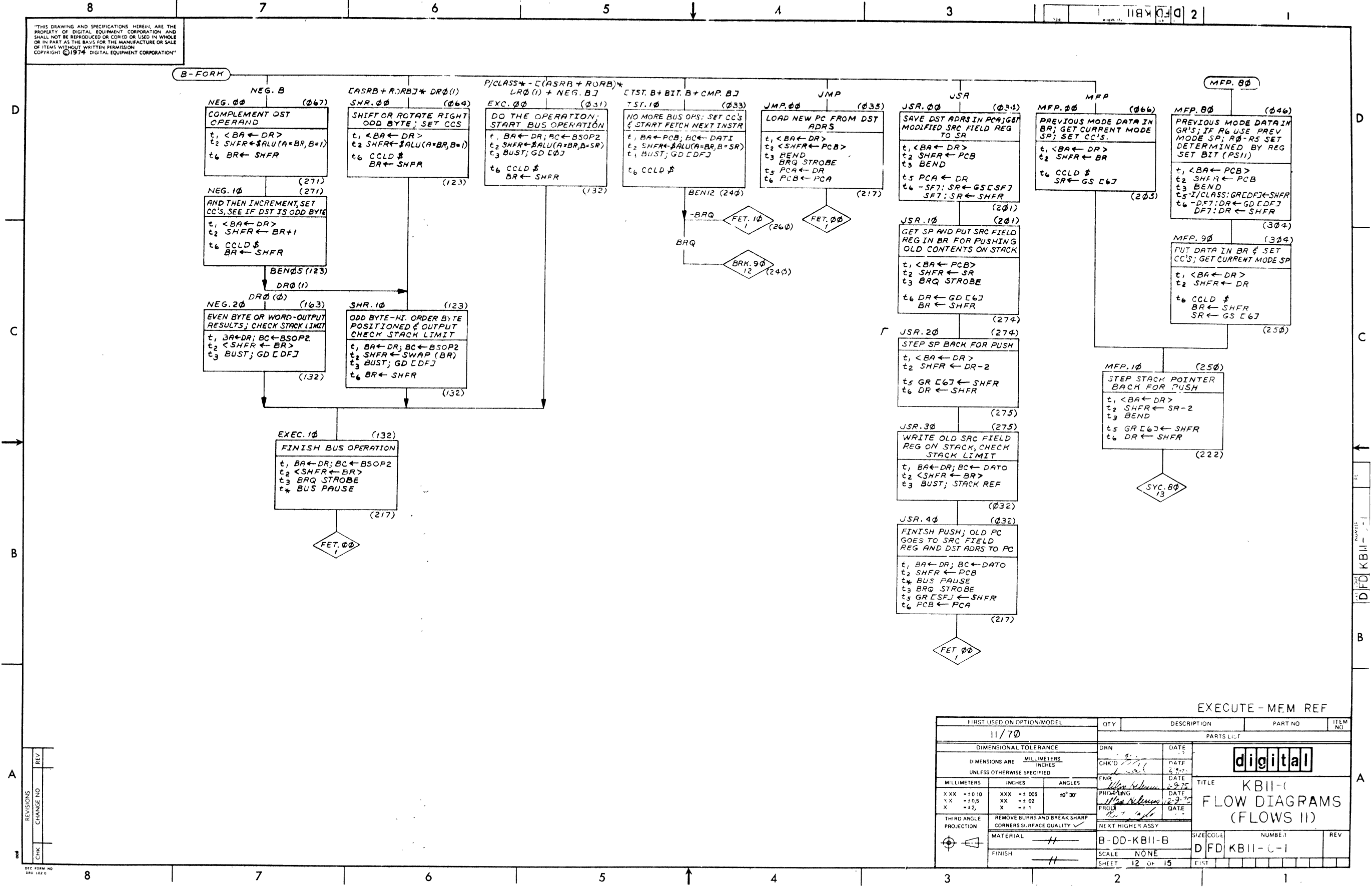
FIRST USE (DS OPTIC MODEL)		QTY	DESCRIPTION	UNIT
11/70				
MULTIPLY				
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES		DRY	DATE	DATE
DECIMALS	FRACTIONS	DATE	DATE	DATE
XXX 02	10 2	DATE	DATE	DATE
X 1		DATE	DATE	DATE
REMOVE BURRS AND BREAK EDGES UNLESS SURFACE QUALITY				
MATERIAL		NEXT HIGHER ASSY		
- 11		B-D0 KRII-B		
SCALE		SIZE CODE	NUMBER	REV
1:1		D	FD KRII-11	
SHEET		9 OF 15	UNIT	

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FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	PARTS LIST		
XXX - 005	10' 30	DRN	DATE	DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
XX - 02		CHK	DATE	
X - 1		ENG	DATE	TITLE KBII-1 FLOW DIAGRAMS (FLOWS 9)
		PROJ. NO.	DATE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	FINISH	SCALE	SIZE CODE	NUMBER
#	++	B-00-KBII-B	DFD	KBII-1
SHEET 10 OF 15				

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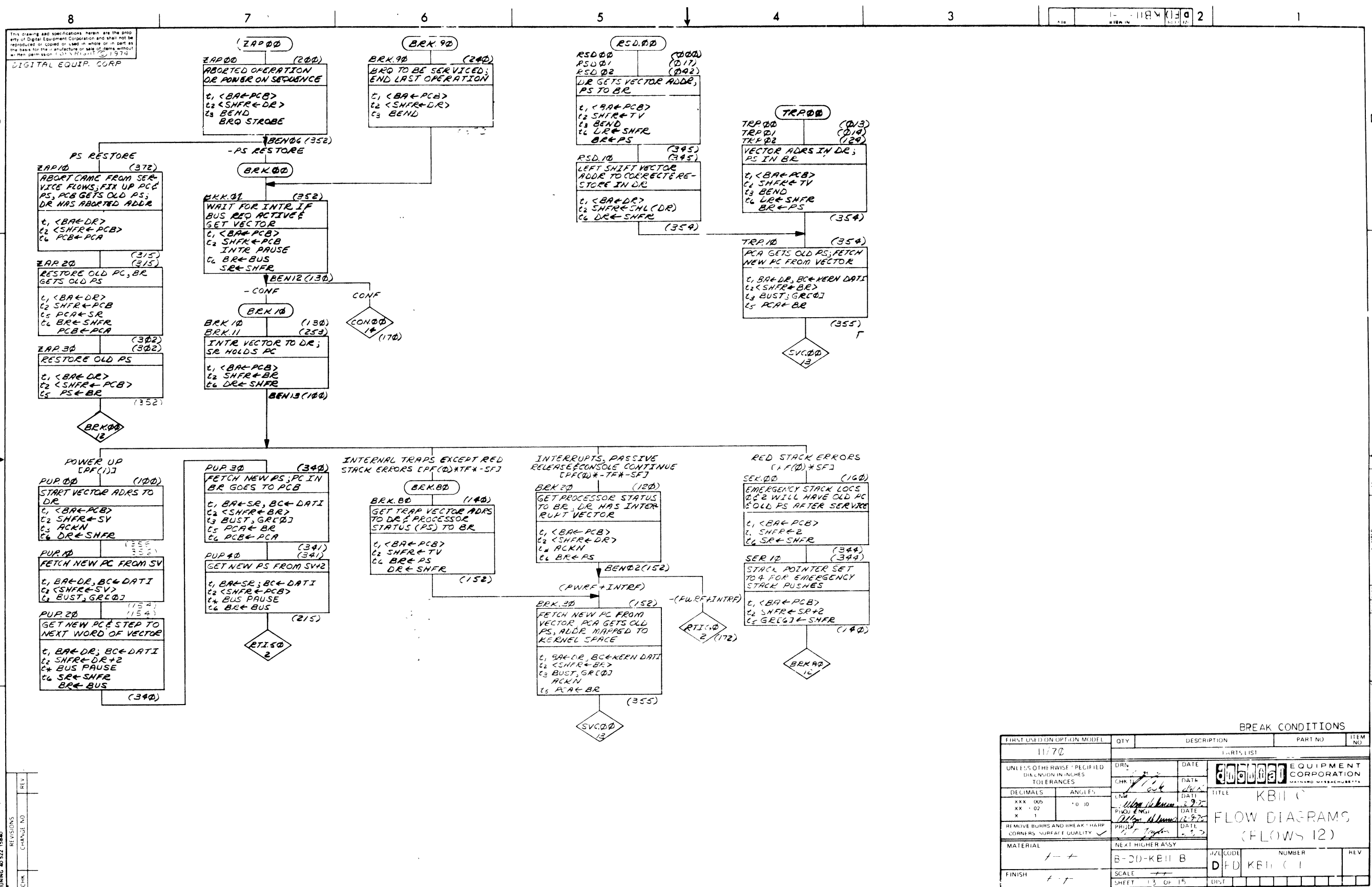
EXECUTE - MEM REF

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN	DATE	
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		CHK'D	DATE	
MILLIMETERS	INCHES	ANGLES	DATE	
XXX ±0.10	XXX ±0.005	±0°30'	DATE	
XX ±0.05	XX ±0.02		DATE	
X ±0.2	X ±0.1		DATE	
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY		
MATERIAL	FINISH			
H	H			

REV	CHANGE NO

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BREAK CONDITIONS				
FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX .005	*0.10	KBII C		
XX .02		FLOW DIAGRAMS		
X .1		(FLOWS 12)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEAT HIGHER ASSY	ALZ CODE	NUMBER	REV
1-1	B-20-KBII B	D10	KBII C 1	
FINISH	SCALE	SHEET	OF	
1-1	1:1	13	OF 15	

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D

C

B

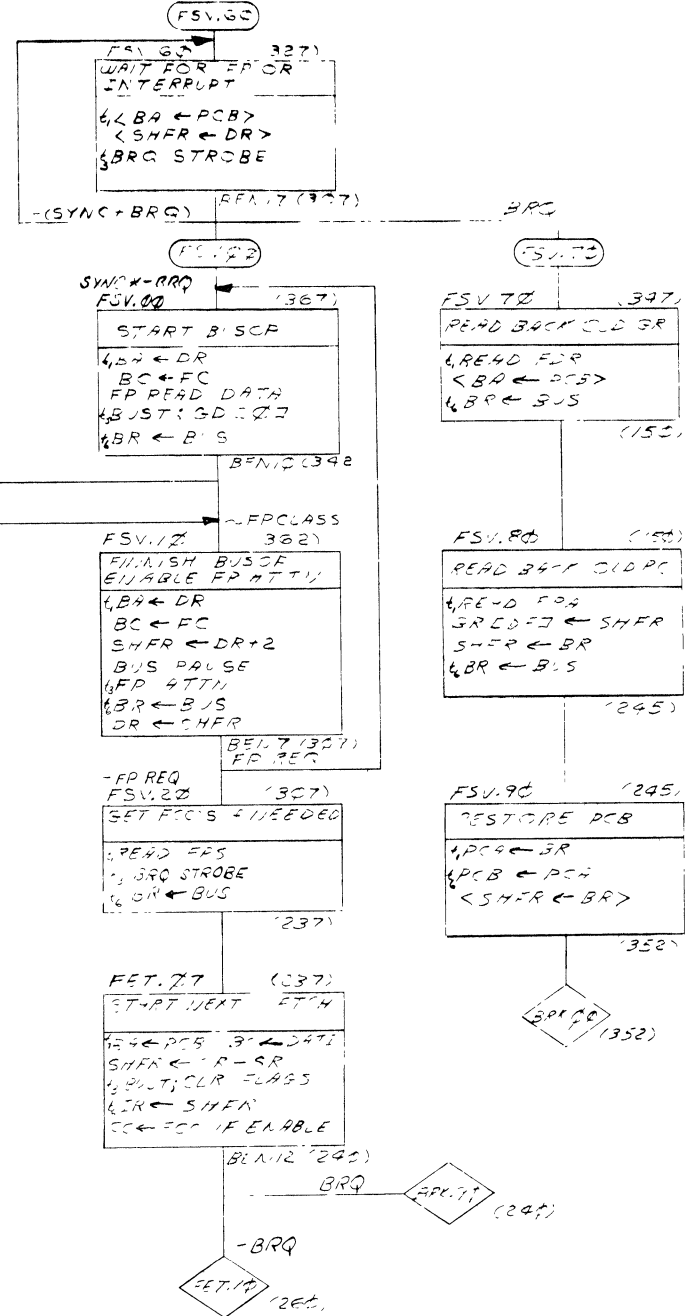
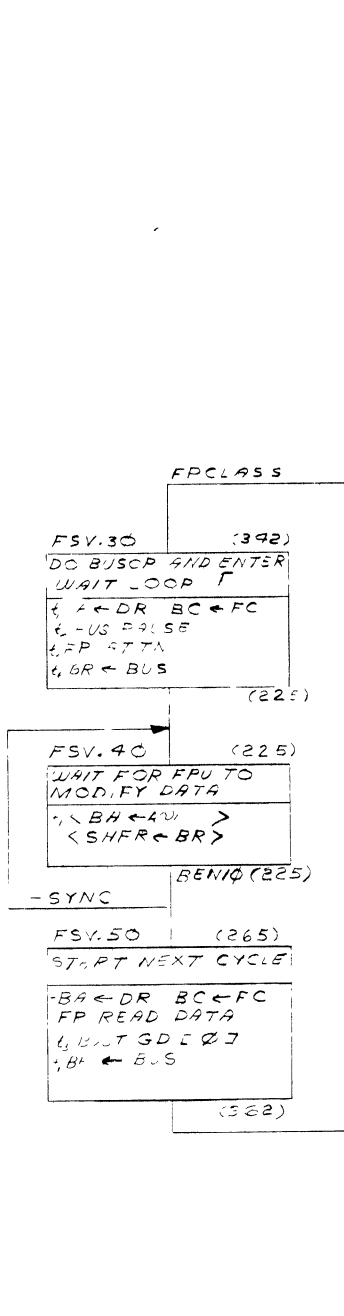
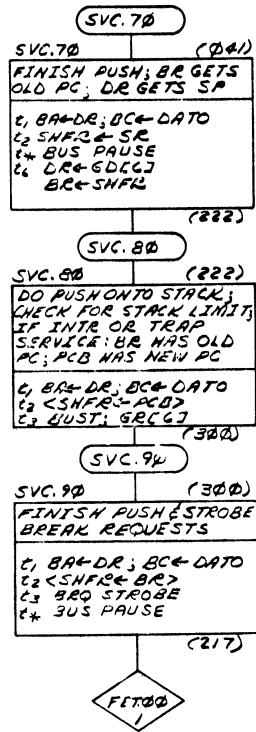
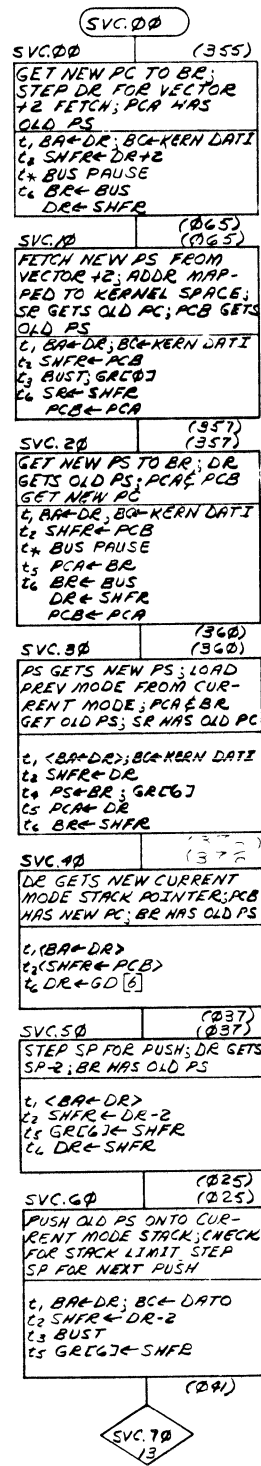
A

D

C

B

A



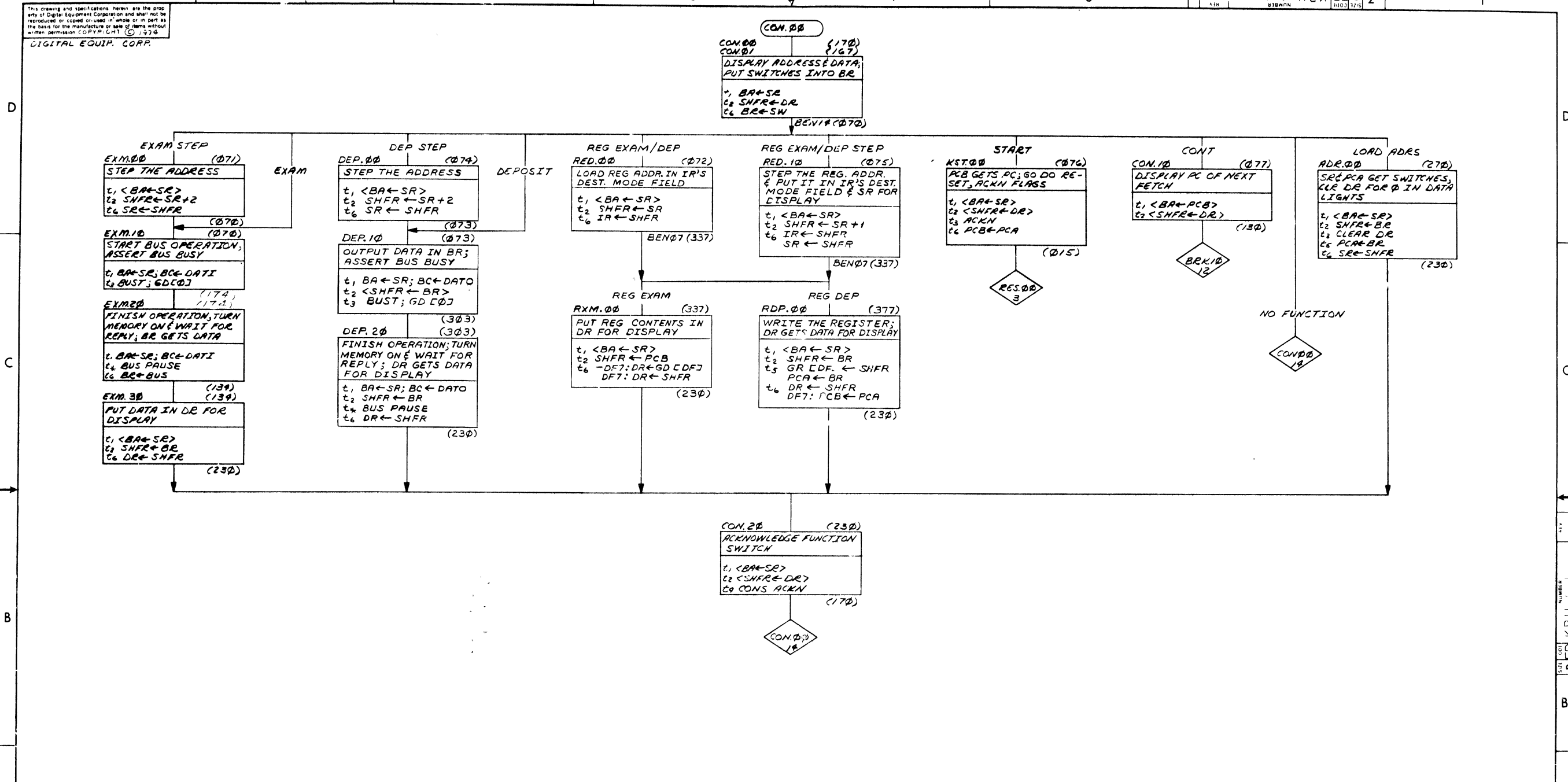
SERVICE SEQUENCE

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/70				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX - 005	10° 30'	KBII-C		
XX - 02		FLOW DIAGRAMS		
X - 1		(FLOWS 13)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL				
NEXT HIGHER ASSY				
FINISH				

REV	CHANGE NO
1	1

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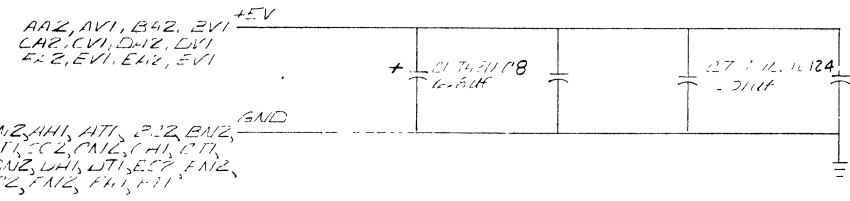
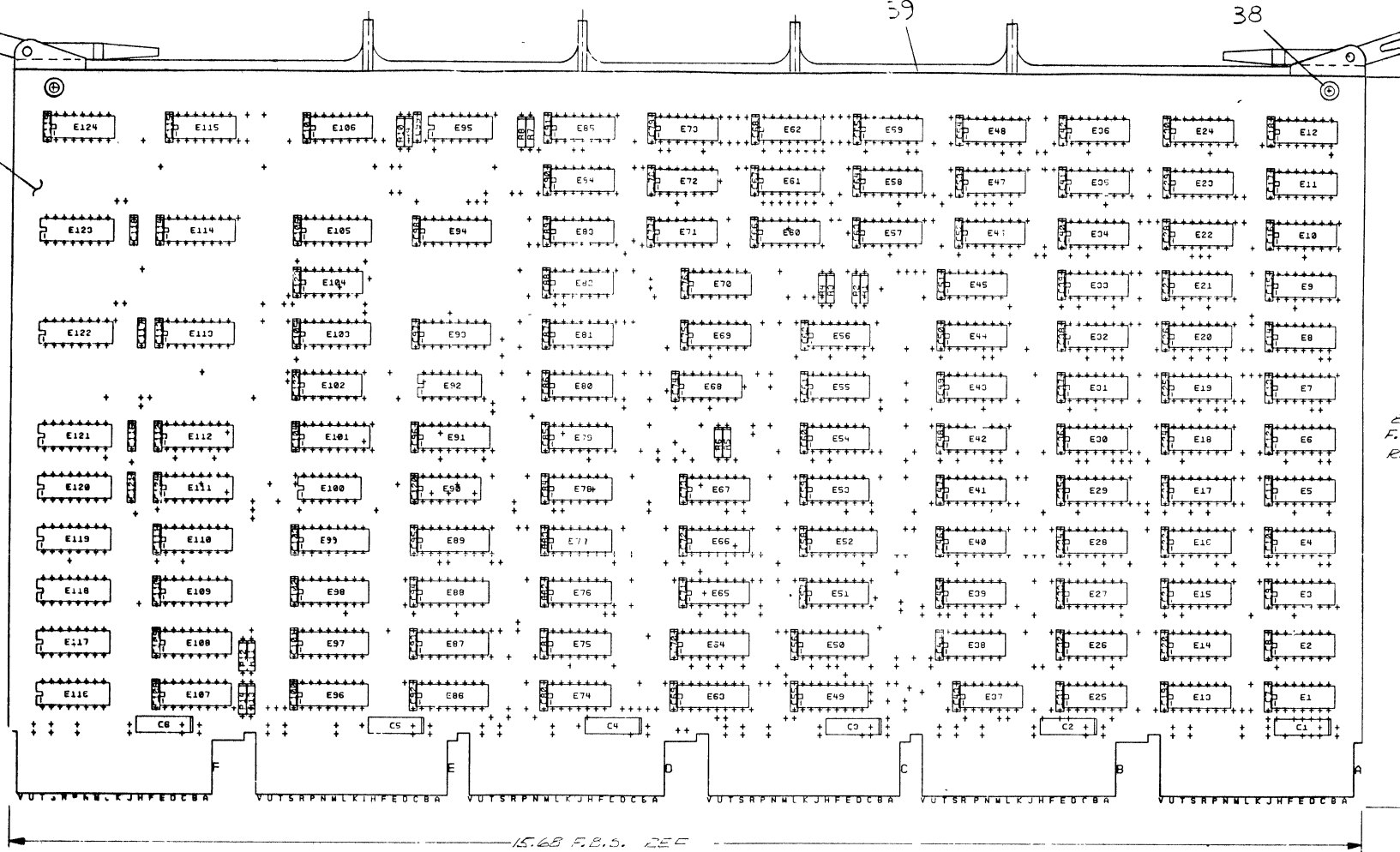
REV	NO	DATE	BY	CHK

DEC 1970
DRD 101-B

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
11/70					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES					
DECIMALS	ANGLES	DRN	DATE	PARTS LIST	
XXX + 000	+ 0.0	CHK	DATE	DIGITAL EQUIPMENT CORPORATION	
X 1		ENG	DATE	TITLE	
		PROJ	DATE	KBII-C	
		PROJ	DATE	FLOW DIAGRAMS	
		PROJ	DATE	(FLOWS 1-4)	
MATERIAL		NEXT HIGHER ASSY		SIZE/SCALE	NUMBER/REV
B 10-KBII-B		B 10-KBII-B		D FD	KBII C-1
FINISH		SCALE		SHEET	DIST
		15 OF 5		2	1

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NOTES: 1. UNLESS OTHERWISE NOTED RESISTANCE IS IN OHMS AND CAPACITANCE IS IN PICOFARADS. CAPS WITH OUT VALUENOTED ARE .01 MFD
2. E61 & E62 ARE SPARE I.C. LOCATIONS.
3. R5, R7, R9, R12 & R13 ARE NOT USED



REF	DESCRIPTION	QTY	PART NO.	ITEM NO.
REF	X-Y COORDINATE HOLE LOCATION		K-CO-M8123-B-4	1
REF	ASSY/DRILLING HOLE LAYOUT		D-AH-M8123-B-5	2
REF	MODULE ECO HISTORY		B-MH-M8123-B-6	3
1	ETCHED CIRCUIT BOARD		5011369	4
118	C7 THRU C124		1001F10-28	5
6	C1 THRU C6		1005306	6
5	R6, R8, R10, R11, R14		1300250	7
5	E4, E31, E58, E39, E104		1910532	8
12	E6, E27, E34, E52, F56, E57, E72, E78, E79, E84, E95, E100		1910534	9
12	E3, E10, E29, E29, E40, E48, E53, E59, E60, E67, E92, E102		1910536	10
4	E55, E66, E69, E85		1910537	11
3	E16, E30, E41		1910539	12
1	E15		1910541	13
37	E5, E7, E9, E8, E11, E12, E17, E18, E19, E20, E21, E22, E23, E24, E33, E35, E42, E43, E44, E45, E46, E47, E51, E54, E65, E70, E71, E74, E75, E76, E77, E80, E81, E82, E83, E82, E106		1910542	14
4	E49, E50, E83, E84		1910547	15
12	E86, E88, E96, E97, E98, E107, E108, E109, E116, E117, E118, E87		1910550	16
14	E1, E2, E13, E14, E25, E26, E36, E37, E38, E73, E115, E124, E88, E90		1910544	17
2	R1, R3		1301424	18
2	R2, R4		1300295	19
1	E94		23077A2	20
1	E94		23078A2	21
1	E93		23079A2	22
1	E89		23080A2	23
1	E91		23081A2	24
1	E120		23082A2	25
1	E111		1910957	26
1	E123		23066A2	27
1	E119		23067A2	28
1	E121		23068A2	29
1	E122		23069A2	30
1	E114		23070A2	31
1	E112		23071A2	32
1	E110		23072A2	33
1	E113		23073A2	34
1	E105		23074A2	35
1	E103		23075A2	36
1	E101		23076A2	37
12	EYELET		4900732	38
1	HANDLE MODULE		1210711-2	39

IC TYPE	QTY	REF	DESCRIPTION
IC DEC 74S175	16	B	
IC DEC 74S174	16	P	
IC DEC 74S153	16	B	
256 x 4 ROM	16	B	
IC TYPE		GND	+5V

IC PIN LOCATIONS	QTY	REF	DESCRIPTION
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTS ARE STATED ABOVE			

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.	DEC NO.	EIA NO.

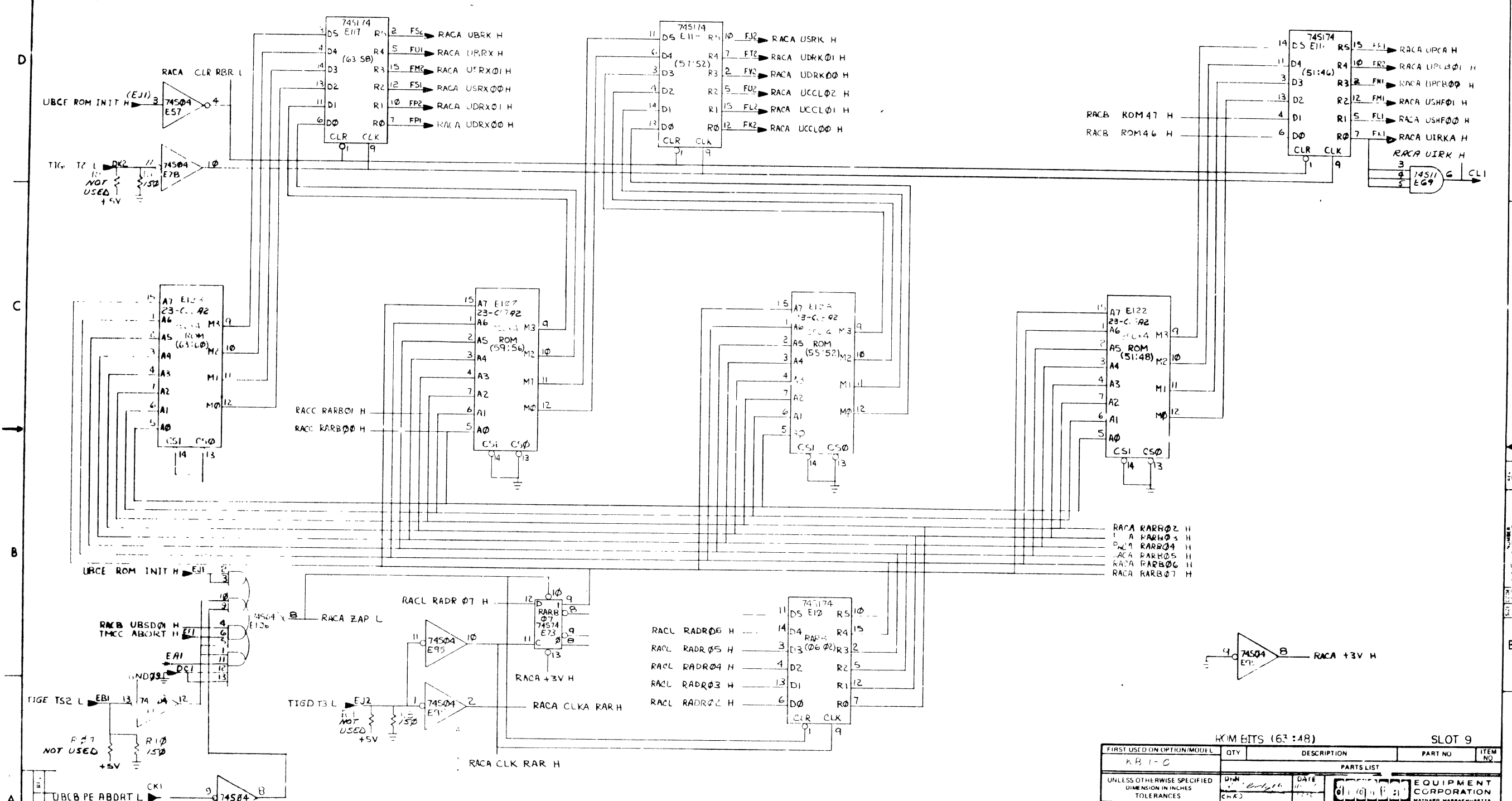
REVISIONS

CHK	CHANGE NO.	REV.

DATE: 11/2/75
TITLE: ROM & ADDR CONTROL (RAC)
SIZE: DCS M8123-B-1

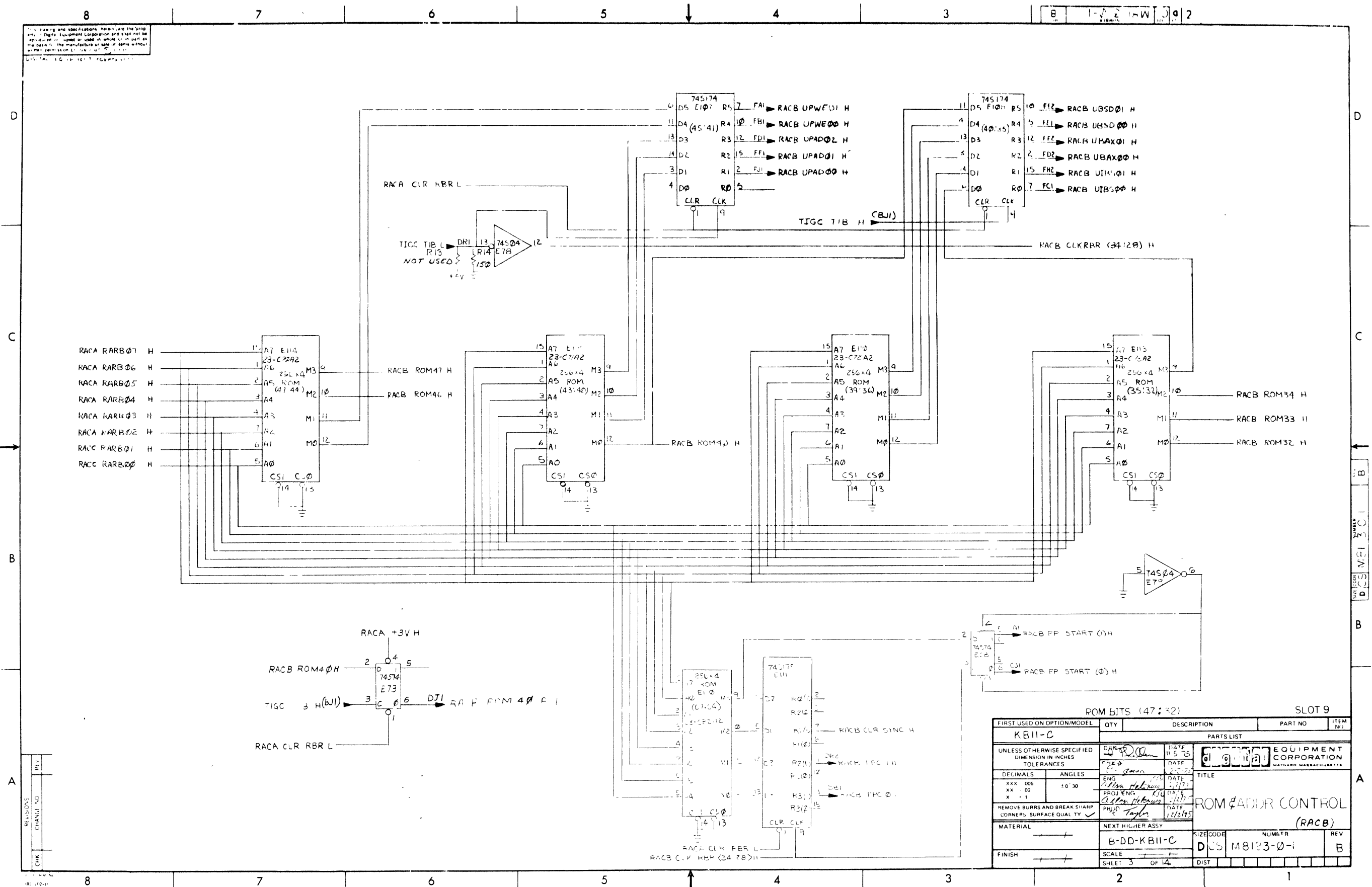
238

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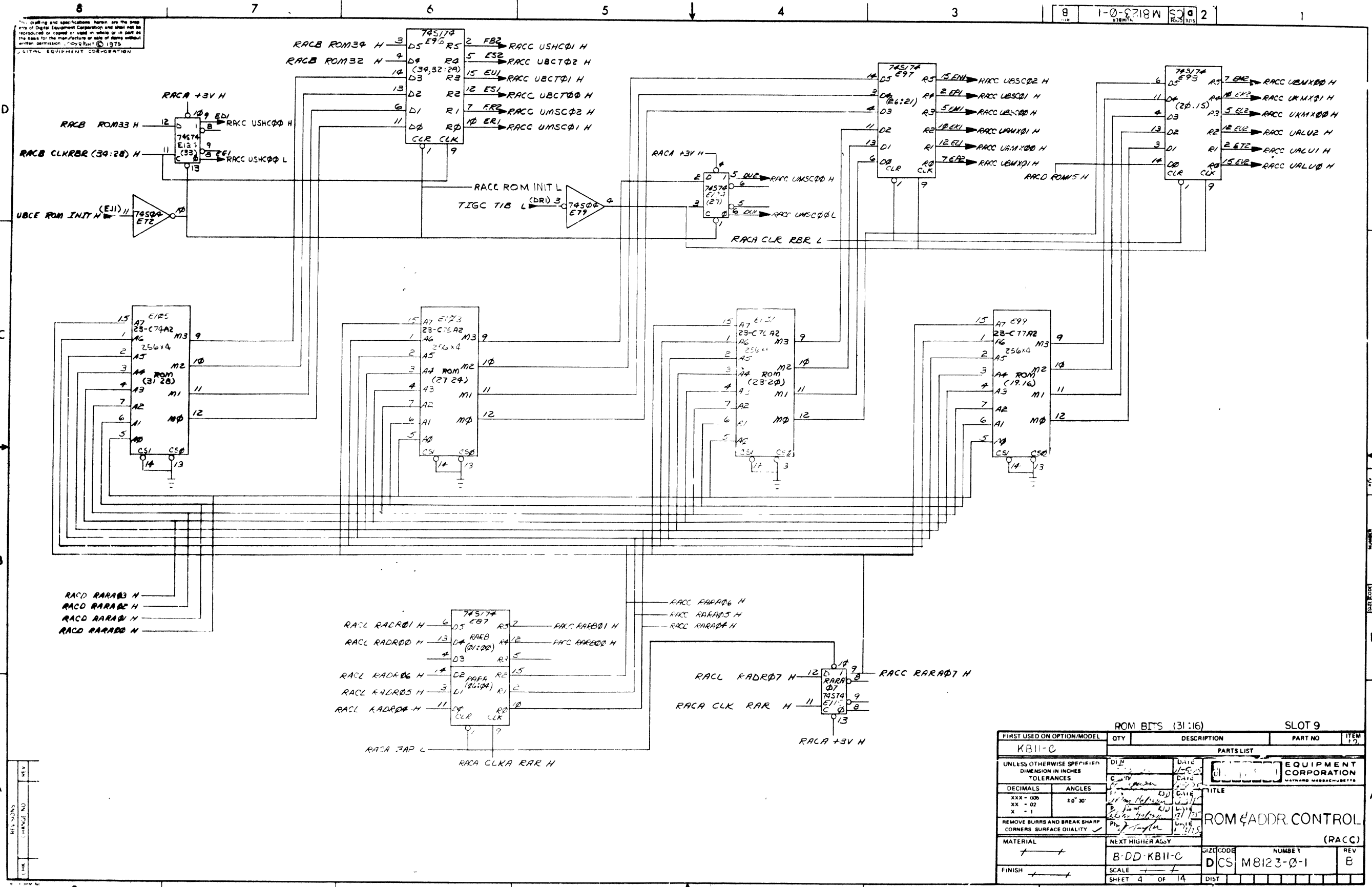
FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
KB1-C					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES			PARTS LIST		
DECIMALS	ANGLES	DATE	EQUIPMENT CORPORATION		
XXX - 006	10' 30	DATE	MAYNARD MASSACHUSETTS		
XX - 02		DATE	TITLE		
X - 1		DATE	ROM ADDRESS CONTROL (RACA)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			MATERIAL		
			NEXT HIGHER ASSY		
			B-00-KB11		
			SCALE		
			SHEET 2 OF 14		
			FINISH		
			DIST		

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FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
KB11-C				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE		
XXX .005	10' 30"	ROM #4049R CONTROL (RACB)		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL		NEXT HIGHER ASSY		SCALE
		B-DD-KB11-C		DCS M8123-0-1
FINISH		SHLET 3 OF 14		DIST

240

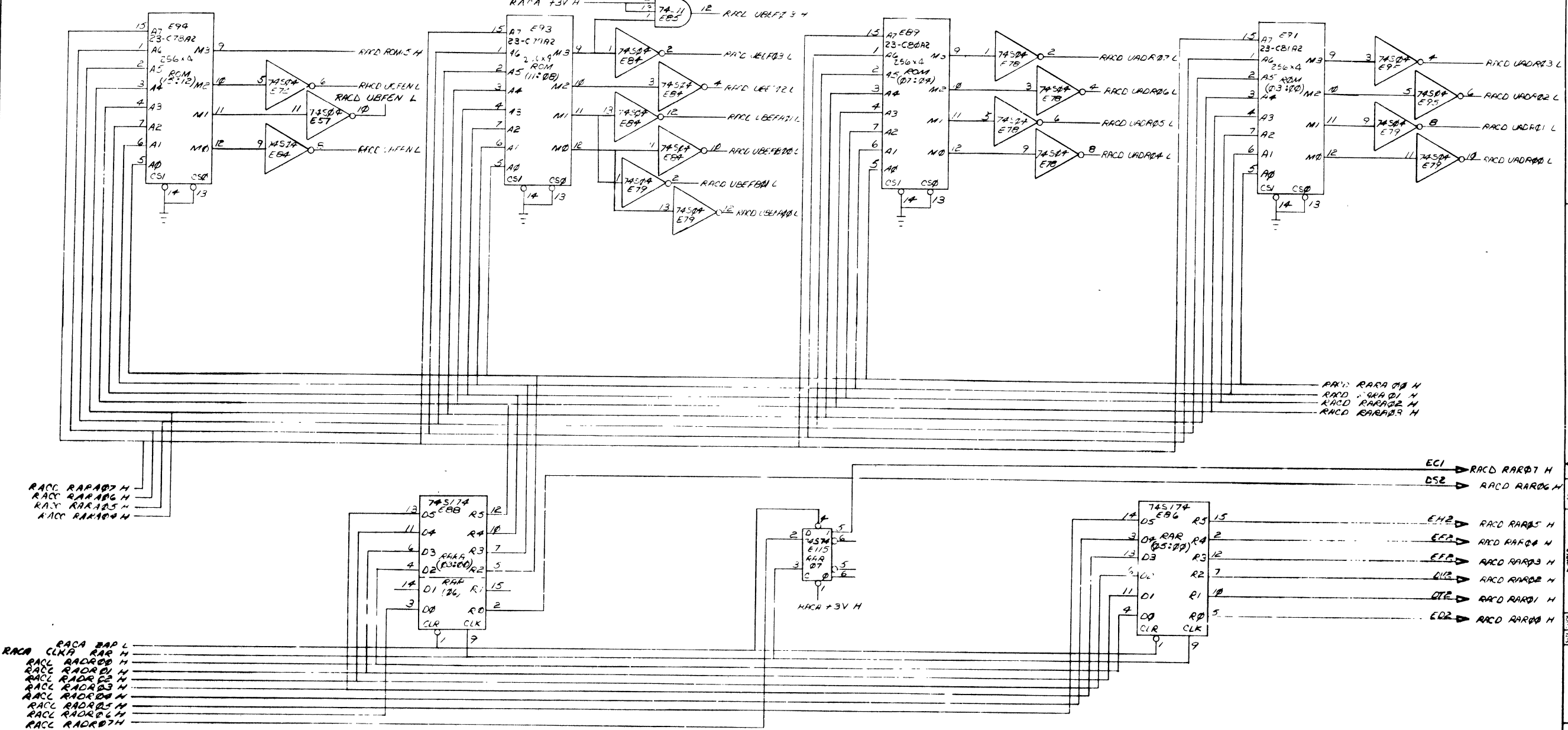


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1-0-0718W 2

PART NO. M8123-0-1
 REV. E

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM 1,2
KB11-C					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
DECIMALS	ANGLES			TITLE	
XXX - 006	±0° 30'			ROM ADDR. CONTROL (RACC)	
XX - 02				MATERIAL	
X - 1				NEXT HIGHER ASSY	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				FINISH	
				SCALE	
				SHEET 4 OF 14	
				DIST	



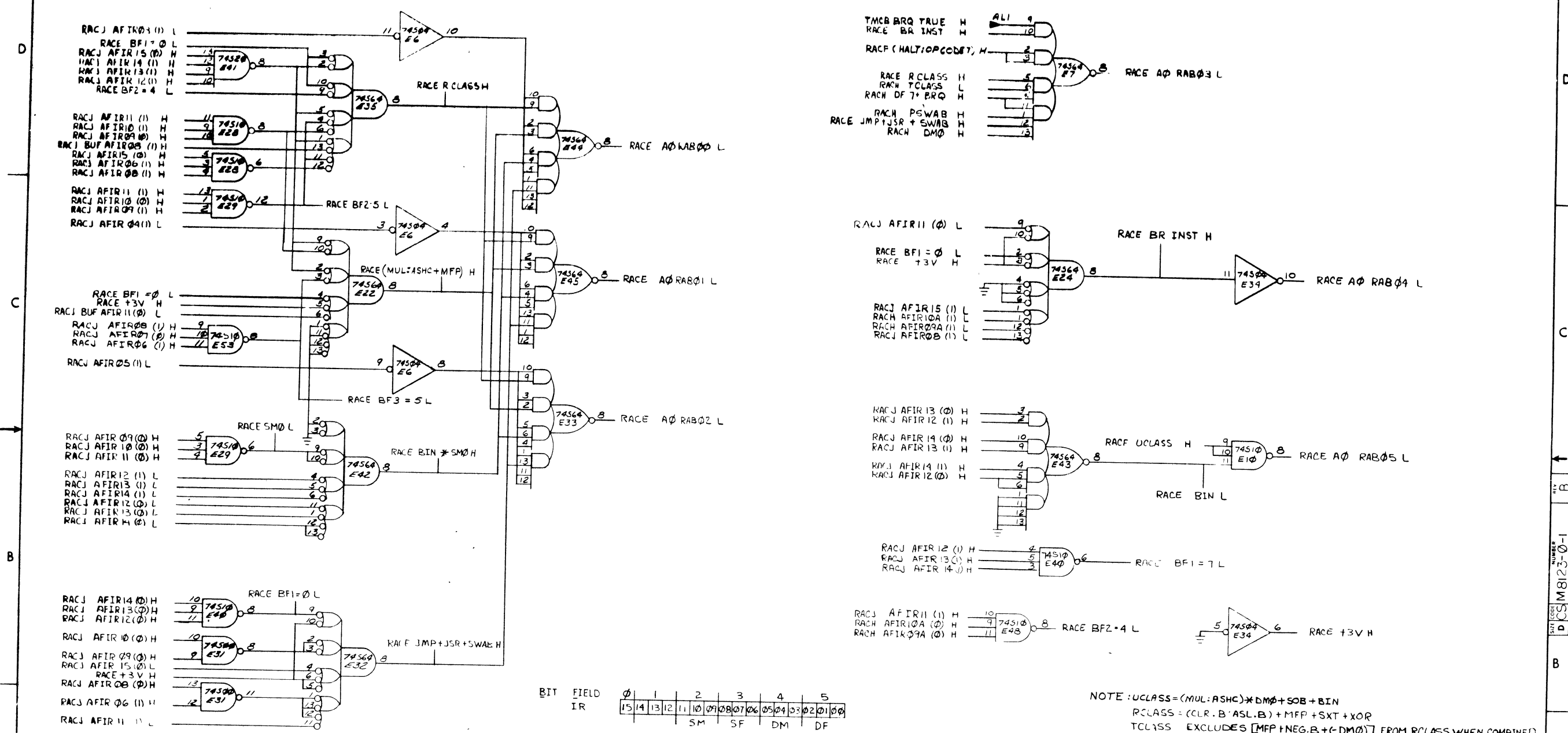
REV	CHANGED NO	DATE	DESCRIPTION	DATE	DESCRIPTION
1					
2					
3					
4					
5					
6					
7					
8					

REV	CHANGED NO	DATE	DESCRIPTION	DATE	DESCRIPTION
1					
2					
3					
4					
5					
6					
7					
8					

REV	CHANGED NO	DATE	DESCRIPTION	DATE	DESCRIPTION
1					
2					
3					
4					
5					
6					
7					
8					

REV	CHANGED NO	DATE	DESCRIPTION	DATE	DESCRIPTION
1					
2					
3					
4					
5					
6					
7					
8					

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BIT FIELD

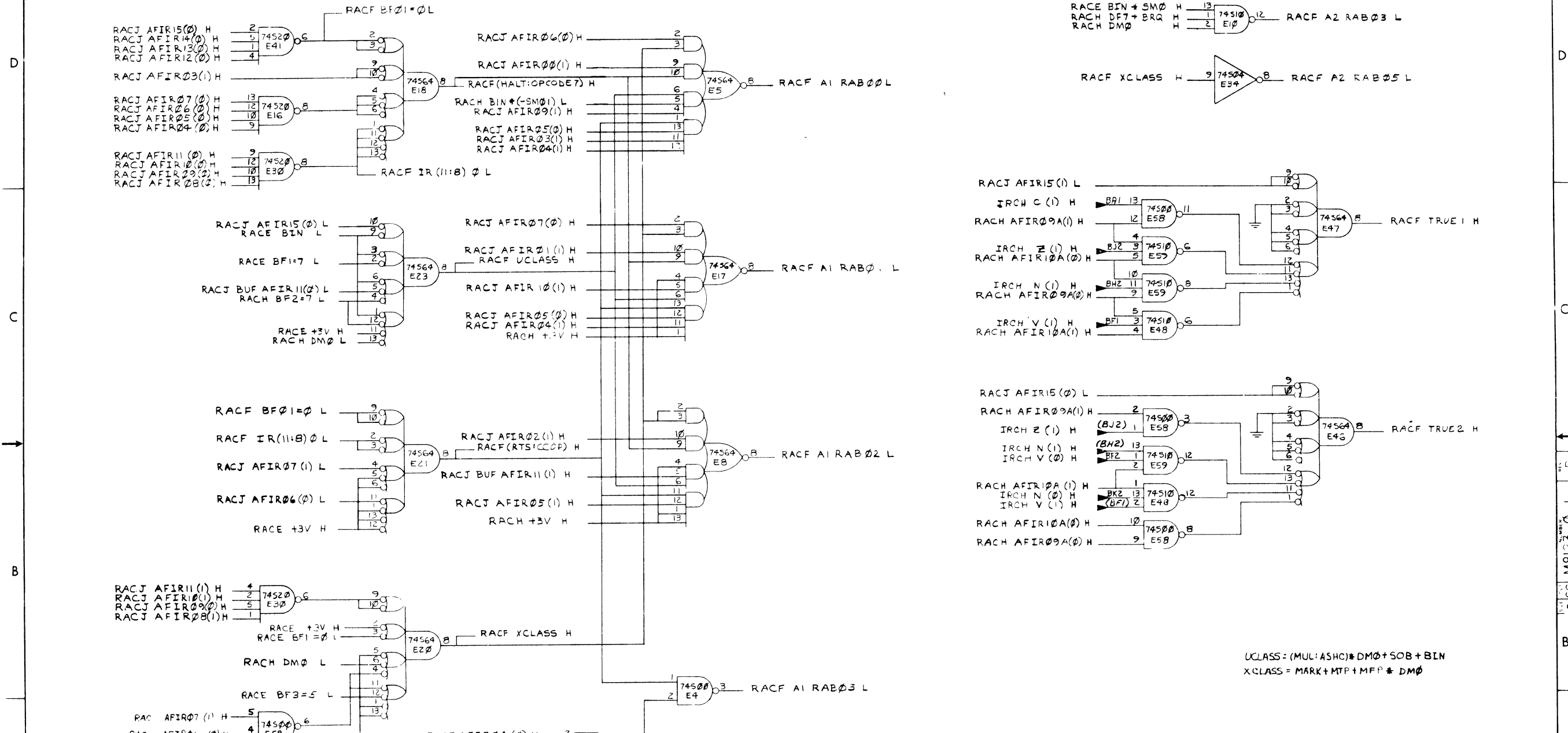
IR	0	1	2	3	4	5
	15	14	13	12	11	10
	09	08	07	06	05	04
	03	02	01	00		
		SM	SF	DM	DF	

NOTE: UCLASS = (MUL * ASHC) * DM0 + SOB + BIN
 RCLASS = (CLR * B * ASL * B) + MFP + SXT + XOR
 TCLASS EXCLUDES [MFP + NEG * B + (-DM0)] FROM RCLASS WHEN COMBINED

A-FORK LOGIC SLOT 9

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
KBI1-C				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES				
TOLERANCES				
DECIMALS	ANGLES	DATE		
XXX - 006	±0°30'	11/1/75		
XX - 02		DATE		
X - 1		12/1/75		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL				
NEXT HIGHER ASSY				
FINISH				
B-DD-KBI1-C		SIZE CODE	NUMBER	REV
SCALE		DCS	M8123-0-1	B
SHEET 6 OF 14		DIST		

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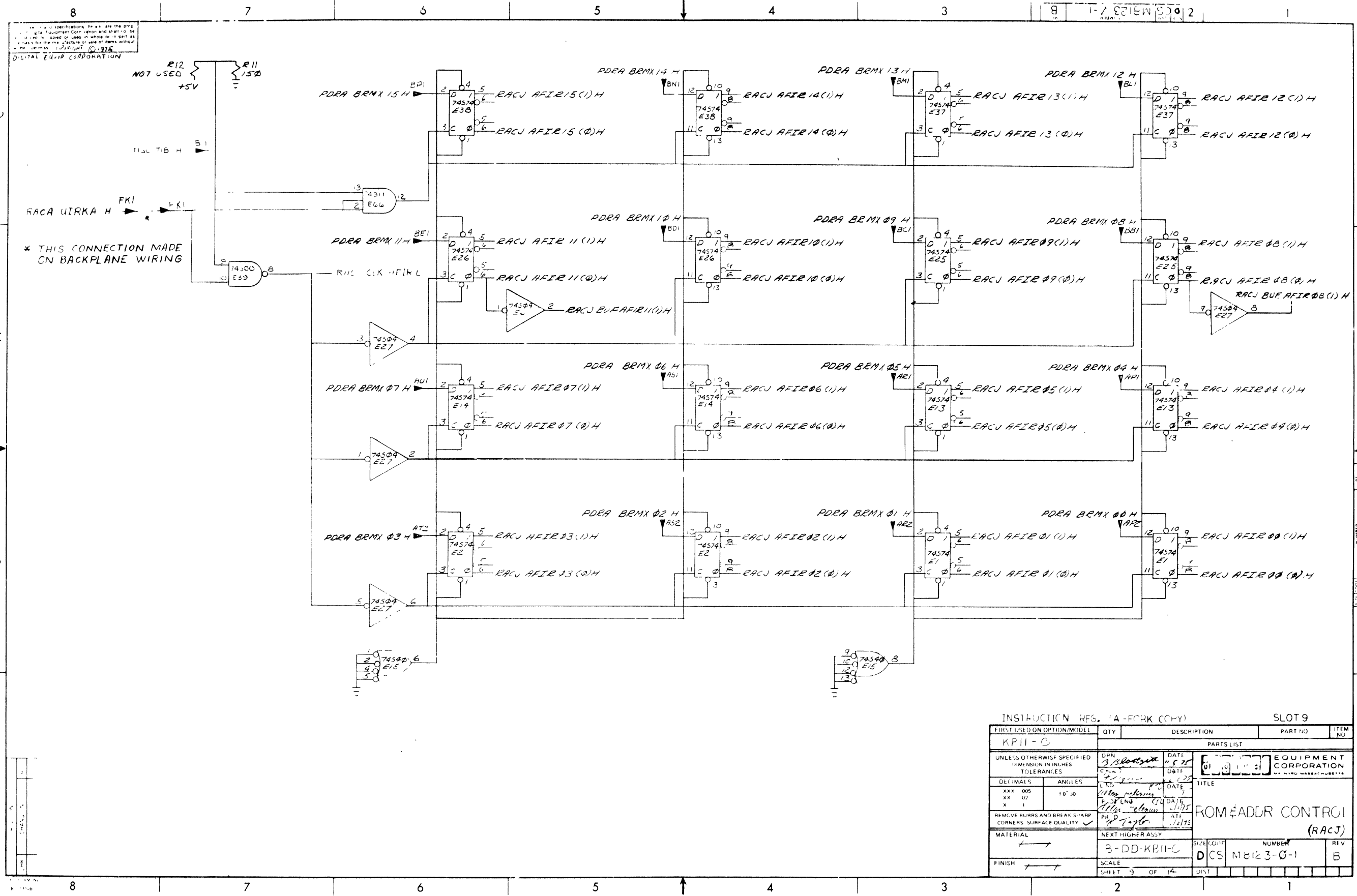


UCLASS = (MUL:ASHC)*DM(0)+SOB+BIN
 XCLASS = MARK+MTP+MFP*DM(0)

A-FORK LOGIC SLOT 9

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
KB11-C				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	EQUIPMENT CORPORATION	
DECIMALS	ANGLES	DATE	TITLE	
XXX - .005	±0°30'	DATE	ROM & ADUR CONTROL	
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY		DATE	(RACF)	
MATERIAL	NEAL HIGH R ASSY	DATE	SIZE CODE	REV
FINISH	B-DD-KB11-C	DATE	D.C.C. M8123-0-1	B

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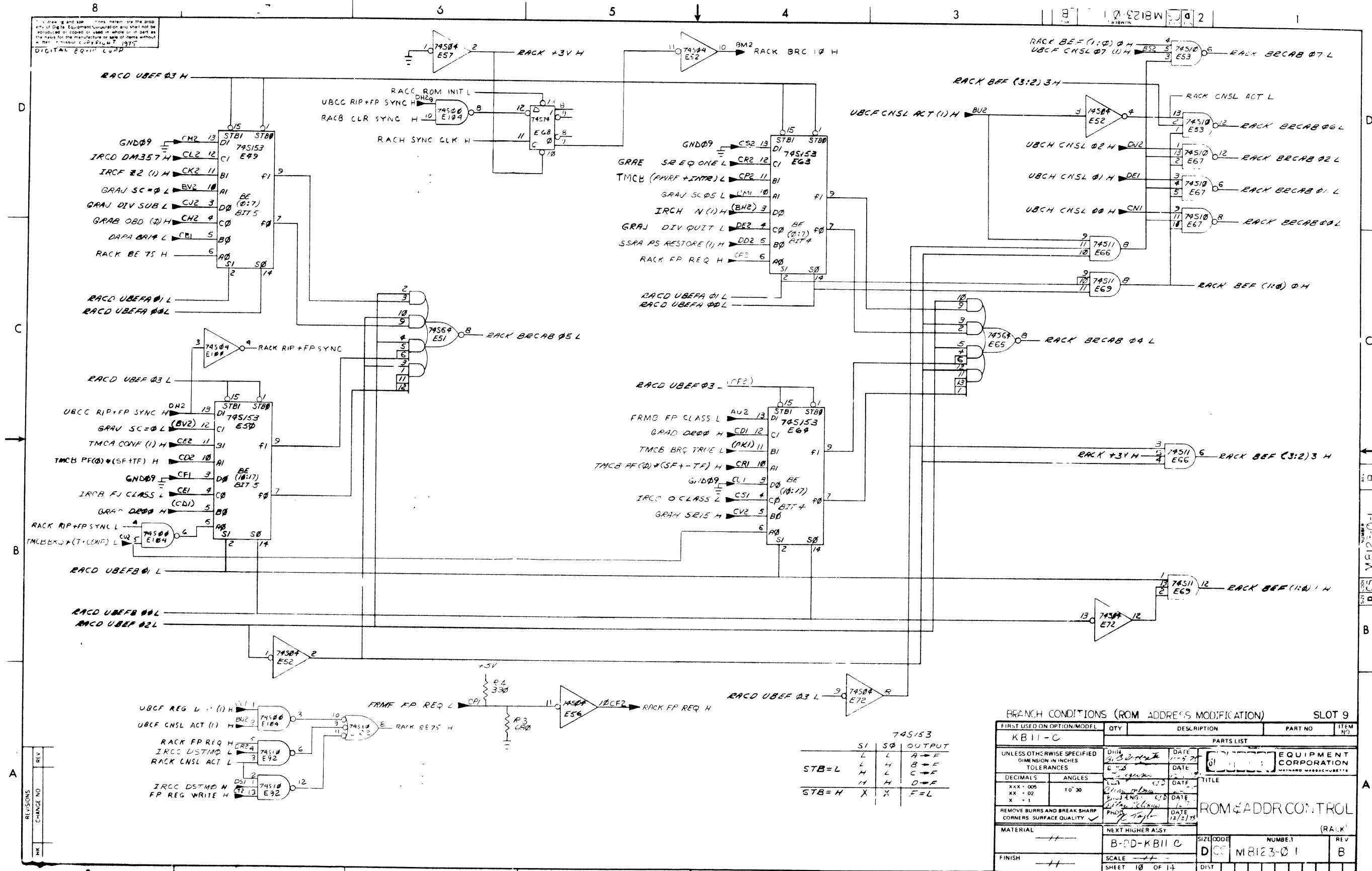


INSTRUCTION REF. (A-FORK COPY) SLOT 9

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
KP11-C		PARTS LIST		
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DWN 3/16/75	DATE 11 5 75	EQUIPMENT CORPORATION	
DECIMALS ANGLES	1/16	DATE 11 5 75	TITLE	
XXX 005 XX 02 X 1	10 30	DATE 11 5 75	ROM ADDR CONTROL (RACJ)	
REMOVE HURRS AND BREAK SHARP CORNERS SURFACE QUALITY	✓	DATE 11 5 75	REV	
MATERIAL	NEXT HIGHER ASSEMBLY	SCALE	NUMBER	REV
FINISH	B-DD-KP11-C	SHEET 9 OF 14	D CS M8123-0-1	B

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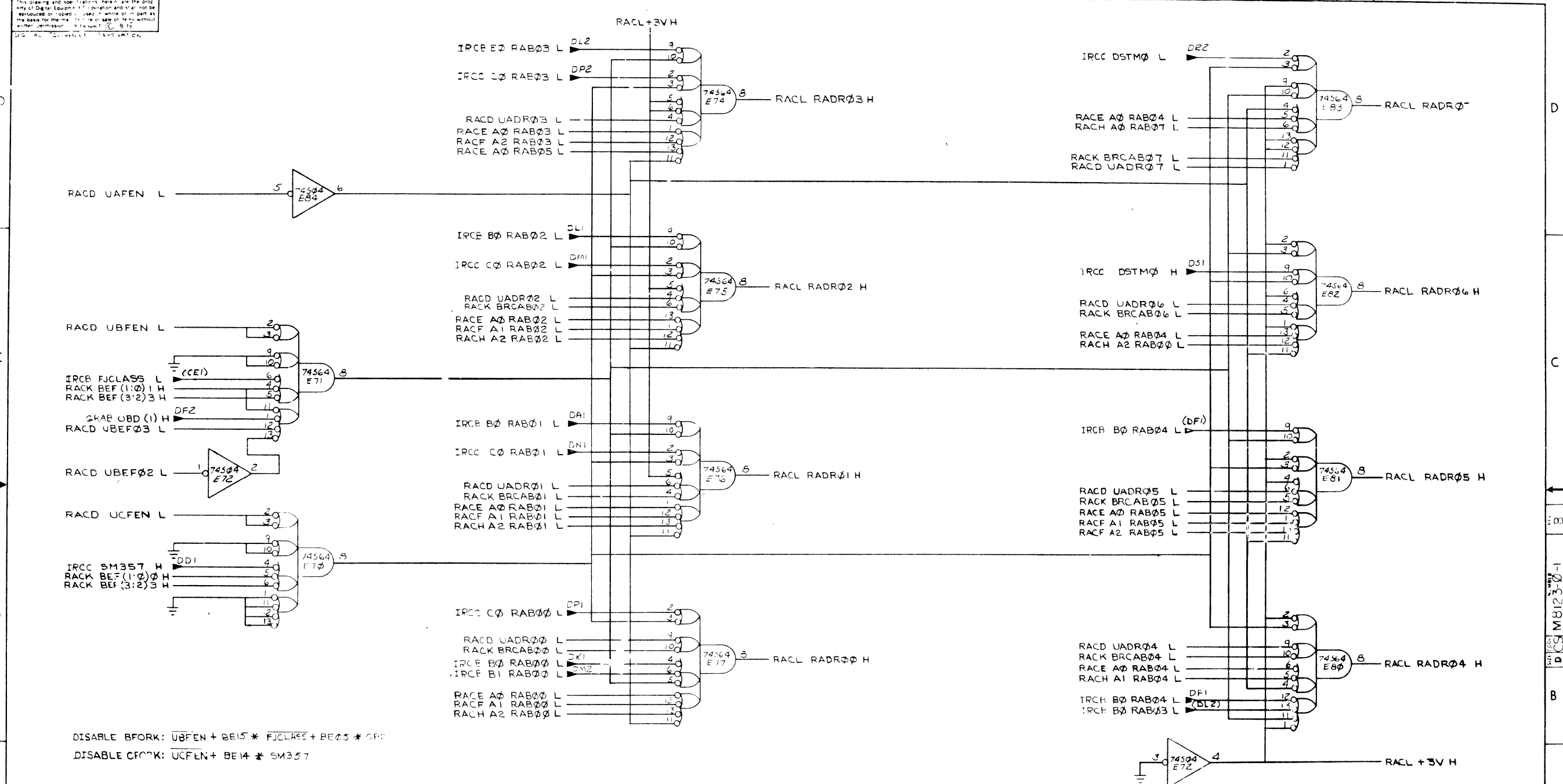


74S153

SI	S0	OUTPUT
L	L	A=F
L	H	B=F
H	L	C=F
H	H	D=F
X	X	F=L

FIRST USED ON OPTION/MODEL		QTY	DESCRIPTION	PART NO	ITEM NO
KB11-C					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED		DATE	EQUIPMENT CORPORATION		
DIMENSION IN INCHES		DATE	MILWAUKEE WISCONSIN 53190		
TOLERANCES		DATE	TITLE		
DECIMALS	ANGLES	DATE	ROM ADDRESS CONTROL		
XXX - 005	10° 30'	DATE	(RACK)		
XX - 02		DATE	REV		
X - 1		DATE	B		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	SIZE CODE		
MATERIAL		NEXT HIGHER ASST	B-PD-KB11-C	NUMB.1	
FINISH		SCALE	DCC	M8123-01	
		SHEET	10	OF 14	

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DISABLE BFOK: $\overline{UBFEN} + BE15 * \overline{FJCLASS} + BE03 * \overline{DFP}$
 DISABLE CFOK: $\overline{UCFEN} + BE14 * \overline{SM357}$

ROM ADDRESS SELECTION				SLOT 9	
FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.	
KB11-C					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED		DRAWN	DATE	EQUIPMENT CORPORATION	
DIMENSION IN INCHES		BY [Signature]	11/8 70	USA 1430 WABAC042474	
TOLERANCES		CHECKED	12/2 70		
DECIMALS	ANGLES	ENGINEERED	DATE	TITLE	
XXX - .005	10' 30	[Signature]	12/1/70	ROM & ADDR CONTROL (RACL)	
XX - .02		[Signature]	12/1/70		
X - .05		[Signature]	12/1/70		
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY					
MATERIAL	NXT HIGHER ASSY		SIZE CODE	NUMBER	REV
	B DD-KB11-C		DIG	M8123-01	B
FINISH	SCALE	SHEET		DIST	
		OF 14			

REV	CHANGED BY	DATE

248

8

7

6

5

4

3

B

DCS M8123-0-1

2

1

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BRK BRX SRX DRX SRK DRK CCL PCA PCB SHF IRK PHE PAU USD BAX IBS SHC BCI MDC BSC AMX BMX KMX ALU FEN BEN UAD FPS CLS FPC PGE

Table with 28 columns and 28 rows of numerical data for components 130-203.

BRK BRX SRX DRX SRK DRK CCL PCA PCB SHF IRK PHE PAD BSD BAX IBS SHC BCT MSC BSC AMX BMX KMX ALU FEN BEN UAD FPS CLS FPC PGE

Table with 28 columns and 28 rows of numerical data for components 204-257.

REVISIONS table with columns: CHK, CHANGE NO, REV.

Metadata table with fields: TITLE (ROM ADDR CONTROL), SIZE CODE (DCS), NUMBER (M8123-0-1), SHEET (13 OF 14), SCALE, DISF.

FORM NO 104

R

7

6

5

4

3

2

1

250

DCS M8123-0-1 B

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DCS M8123-0-1 2 B

Main data table with columns for various components (BRK, BRX, SRX, DRX, SRK, DRK, CCL, PCA, PCB, SHF, IRK, PWE, PAD, BSD, BAX, IRS, SHC, BCT, MSC, BSC, ANX, BMX, KM, ALU, FEN, BEN, UAD, FPS, CLS, FPC, PGE) and rows for component numbers (e.g., 260, 261, 262, 263, 264, 265, 266, 267, 270, 271, 272, 273, 274, 275, 276, 277, 300, 301, 302, 303, 304, 305, 306, 307, 310, 311, 312, 313, 314, 315, 316, 317, 320, 321, 322, 323, 324, 325, 326, 327, 330, 331, 332, 333, 334, 335, 336, 337, 340, 341, 342, 343, 344, 345, 346, 347, 350, 351, 352, 353, 354, 355, 356, 357, 360, 361, 362, 363, 364, 365, 366, 367, 370, 371, 372, 373, 374, 375, 376, 377).

REVISIONS table with columns: CHK, CHANGE NO, REV

Metadata table with fields: TITLE (ROM & ADDR. CONTROL), SIZE CODE (DCS), NUMBER (M8123-0-1), SHEET (14 OF 14), DIST



EQUIPMENT
CORPORATION
MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

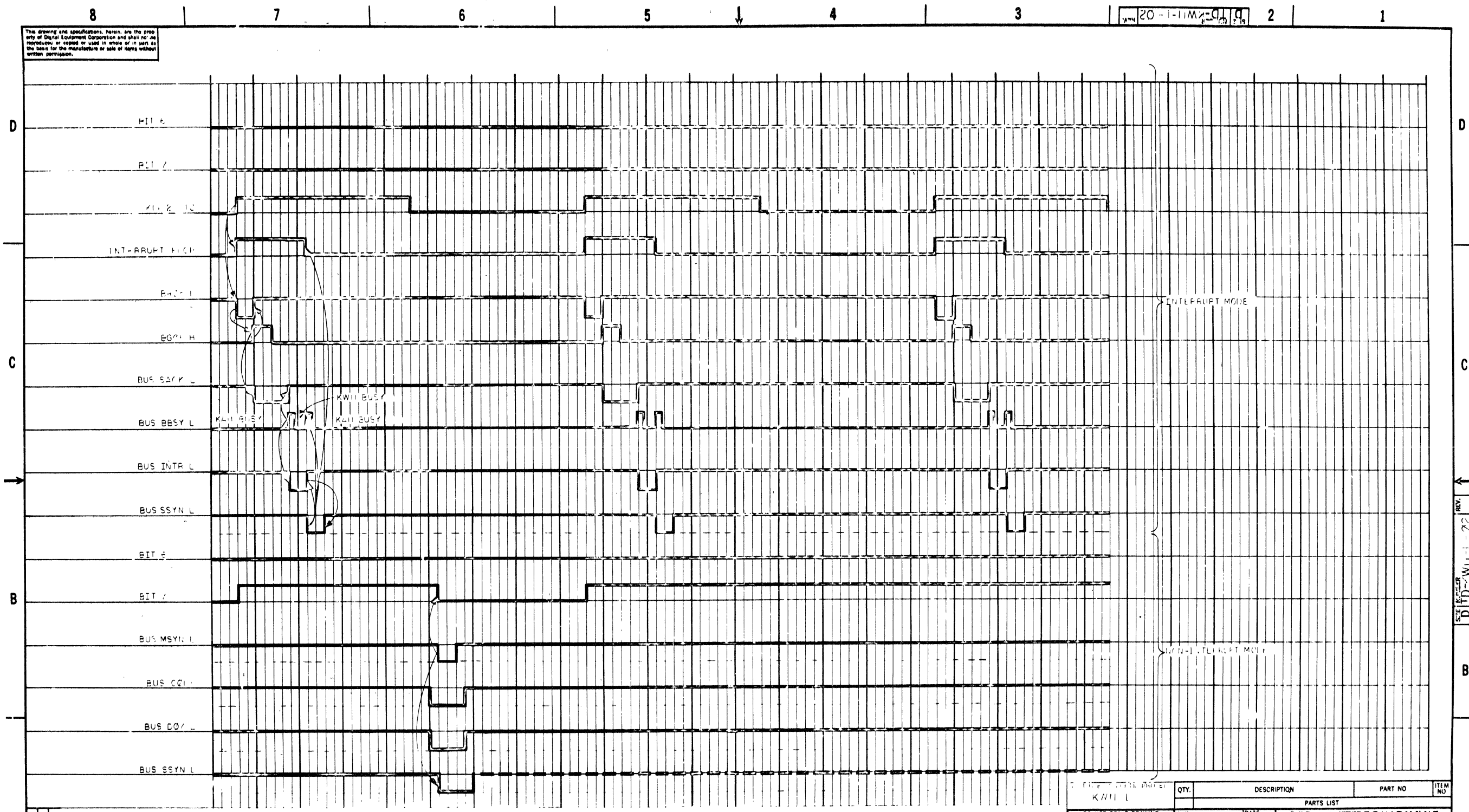
THIS IS PRINT SET

SEQUENCE		SEQUENCE
TIMING DIAGRAM	D-TD-KW11-L-02	
LINE FREQUENCY CLOCK	D-BS-KW11-L-01	
LINE CLOCK	D-CS-M787-0-1	
LINE FREQUENCY CLOCK	A-PI-KW11-L-0	
SOFTWARE LIST	A-SL-KW11-L-28	
MFG PRINTS		
TEST PROCEDURE	A-SP-KW11-L-03	

UNIT VARIATIONS		PRINT SET TYPE				
VARIATION	TITLE	L	B	DD	D	DD
KW11-L	LINE FREQUENCY CLOCK	X				

REVISIONS	CHG. NO.	REV	DATE	USED ON OPTION/MODEL	DRN.	DATE	TITLE	SIZE CODE		NUMBER	REV
					CHKD.	DATE		B	DD		
					S. P. [Signature]	2/11/71	LINE FREQUENCY CLOCK (KW11-L)			KW11-L-0	*
					[Signature]	10/18/72					
					PROG	6-11-77					
					PROG	6/27/77					
					FIELD SERV.	6-24-77					
					SHEET	1	OF	2	DIST		

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DO NOT SCALE DRAWING		QTY.	DESCRIPTION	PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED		PARTS LIST			
DIMENSION IN INCHES		EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			
TOLERANCES		TITLE			
DECIMALS	FRACTIONS	TIMING DIAGRAM			
± .005	± 1/64	(K11-L)			
FINAL SURFACE QUALITY		SIZE CODE			
REMOVE BURRS AND BREAK SHARP		D TD			
FINISH		NUMBER			
K11-L-K11-L		K11-L-02			
SCALE		REV.			
1 OF 1		1			

REV. NO. 1
CHANGE NO. 1
CHK
DHP

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PARTS REFERENCE

ITEM NO	DRAWING REFERENCE	DESCRIPTION	PART NUMBER	QUANTITY
1	R1, P3	390Ω (1/4 W 5% CC)	1300309	2
2	R2, R6 - R11	1K (1/4 W 5% CC)	1300385	7
3	R4, R5	180Ω (1/4 W 5% CC)	1301372	2
4	R12	2.2K (1/4 W 5% CC)	1303177	1
5	C1 - C15, C18, C19	0.1 MFD 100V 20% DISC	1001610	17
6	C16, C17	580 VWF 100V 5% D W	1000025	2
7	Q1, Q2	TRANSISTOR DEC 3009 B.S	1903100	2
8	E1, E5, E8, E9, E10	1 C DEC 380	1909485	5
9	E2	1 C DEC 7430	1905578	1
10	F3	1 C DEC 8815	1909713	1
11	E4	1 C DEC 7400	1905575	1
12	E6, E7, E13	1 C DEC 7474	1905577	3
13	F11	1 C DEC 7404	1909688	1
14	F12, F14, F15	1 C DEC 8881	1909705	3

INSTALLATION PROCEDURE

1. INSTALL JUMPER FROM B1C2 TO B12R2
2. INSTALL M797 LINE FREQUENCY CLOCK MODULE IN K411 SLOT B12
3. RUN MAIN DEC DEC-11-D2DA LINE FREQUENCY CLOCK TEST

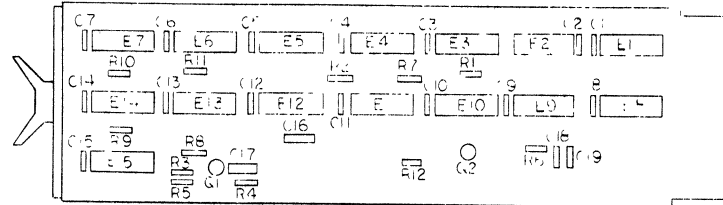
NOTES

1. PIN NOTATION THROUGHOUT IS ORDERED UPON MODULE PLACEMENT IN THE K411 PROCESSOR. MODULE REFERENCE ALONE IS OBTAINED BY DELETING THE NUMBER (SLOT LOCATION) AFTER THE FIRST LETTER AND CONVERTING THE FIRST LETTER ACCORDING TO THE PIN NOMENCLATURE CHART AT RIGHT.
2. ALL SIGNALS THAT HAVE MODULE PINS ARE SO NOTED. MULTIPLE NOTATIONS OF THE SAME SIGNALS WITHIN A MODULE HAVE THE PIN NOTED ON EACH. AN INPUT SIGNAL IS NOTED ONLY ONCE PER SHEET UNLESS SEPARATE PINS ARE USED. MULTIPLE INPUTS ARE CONNECTED. MODULE OUTPUT SIGNALS ARE BROUGHT TO THE EXTREME RIGHT OF EACH SHEET.
3. PROCESSOR SIGNAL SOURCE NOTATION (K10-2 FOR EXAMPLE) IDENTIFIES THE SIGNAL SOURCE (PRINT AND MODULE). THE FIRST NUMBER AFTER THE K INDICATES THE MODULE PRINT SET WHILE THE SECOND INDICATES THE SHEET WITHIN THE SET. IF ON A PRINT, THE FIRST NUMBER OF THE K PREFIXES COINCIDE FOR A SIGNAL NAME AND THE PRINT (SEE TITLE BLOCK). THE SIGNAL IS GENERATED ON THE MODULE. A DIFFERENCE IN THE FIRST NUMBER OF THE K PREFIXES INDICATES A SIGNAL GENERATED OFF THE MODULE. SIGNALS WITH A "BUS" PREFIX REPRESENT A "WIPED OFF" SITUATION AND MULTIPLE SOURCES FOR THE SIGNAL CAN EXIST.
4. DETAILS ON COMPONENTS ARE NOTED IN THE PARTS REFERENCE. PLACEMENT IS NOTED IN THE COMPONENT PLACEMENT DIAGRAM.
5. GND AND +5V ARE USUALLY PIN 7 AND PIN 14 RESPECTIVELY. EXCEPTIONS ARE

IC TYPE	GND	+5V
DEC 7481	PIN 10	PIN 4
DEC 7482	PIN 11	PIN 4
DEC 8251	PIN 8	PIN 16
DEC 8271	PIN 8	PIN 16
DEC 380	PIN 1	PIN 8
DEC 384	PIN 1	PIN 8

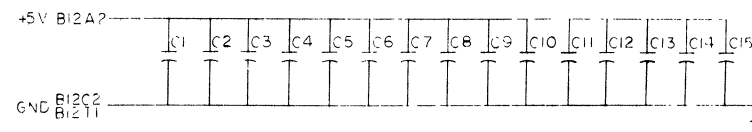
6. UNLESS OTHERWISE NOTED - RESISTANCE IS IN OHMS; CAPACITANCE IS IN MICRO-MICRO FARADS. CAPACITORS WITHOUT ANY NOTED VALUES ARE .01 MFD.

COMPONENT PLACEMENT



PIN NOMENCLATURE

EXAMPLE: SENSOR



REV	CHG	NO	DESCRIPTION
1			

FIRST USED ON OPTION/ MODEL
KVV-1-L

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES

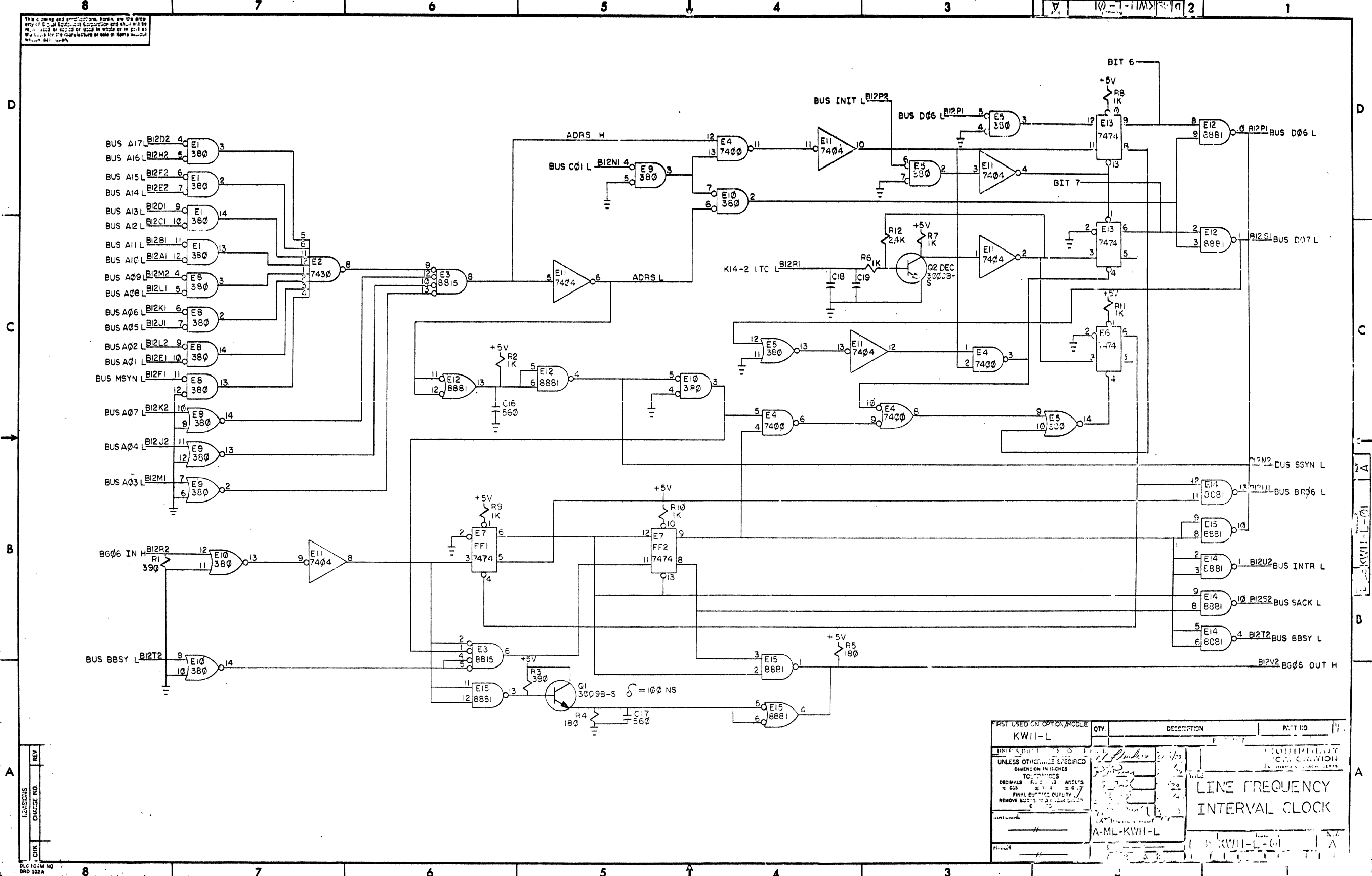
DRN	DATE
CHK'D	DATE
ENG	DATE
PROJ ENG	DATE
PS TO	DATE

MATERIAL: ---
FINISH: ---

QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST			

TITLE: LINE FREQUENCY INTERVAL CLOCK
SIZE CODE: D, NUMBER: BSKV11-1-01, REV: A

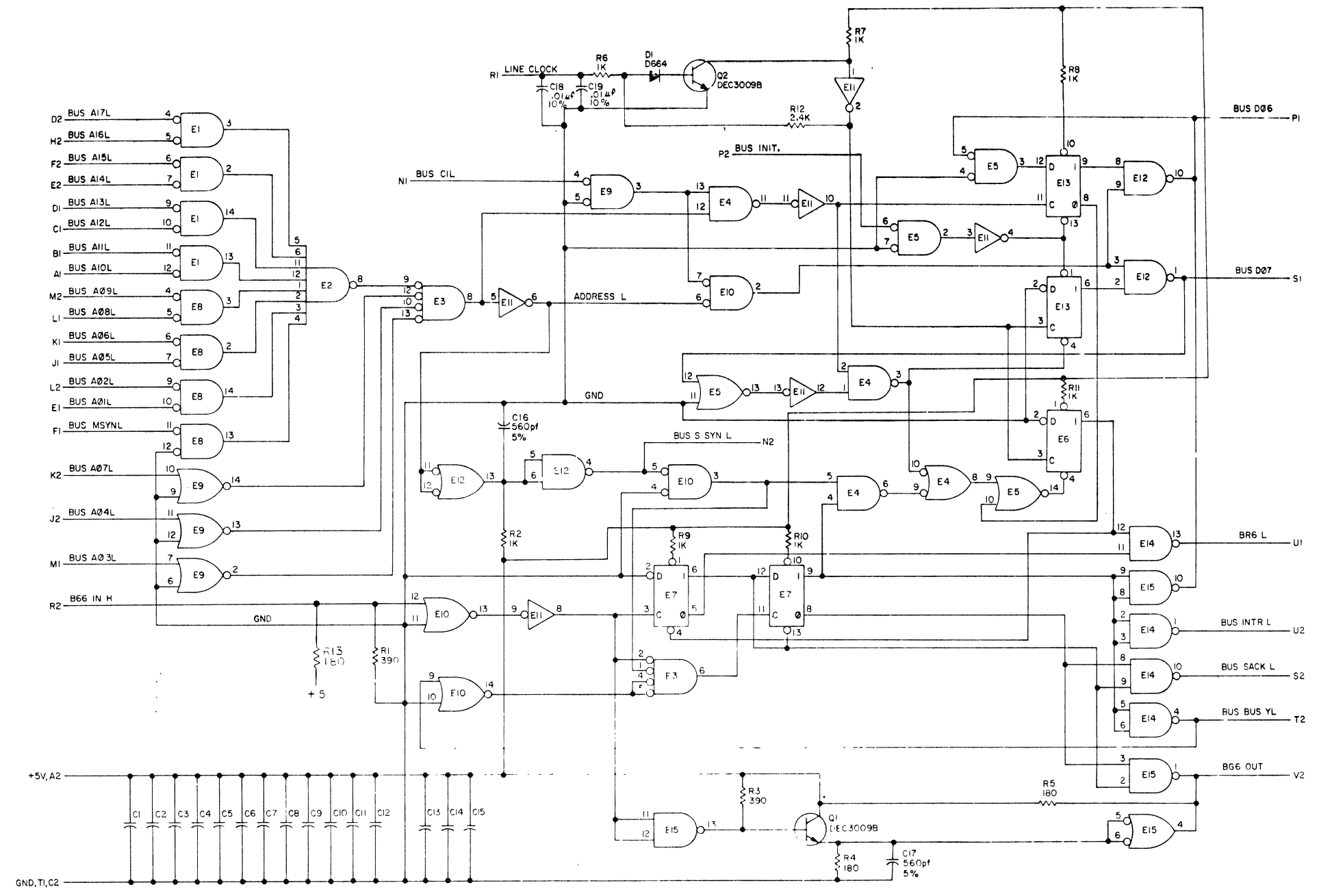
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FIRST USED ON OPTION/MODULE	QTY.	DESCRIPTION	PART NO.
KW11-L			
<p>UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS FRACTIONS ANGLES ± 0.03 ± 0.1 ± 0.07 FINAL SURFACE QUALITY REMOVE BURRS TO 0.005 IN. MAX. LENGTH</p>			
A-ML-KW11-L		LINE FREQUENCY INTERVAL CLOCK	
A-ML-KW11-L		KW11-L-01	

REV. 1
CHK. CHANGE NO.
LCS/SCS
DLC FORM NO. DRD 102A

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UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1/4W, 5%
CAPACITORS ARE .01uF, 100V, 20%
DEC740 = E1, E5, E8, E10, E9
DEC7430 = E2
DEC8815 = E3
DEC7400 = E4
DEC7404 = E11
DEC8881 = E15, E12, E14
DEC7474 = E6, E7, E13

PIN 1 = GND
PIN 8 = +5V ON E1, E8, E9, E10, E5

PIN 7 = GND ON E2, E3, E4, E11, E12, E14, E13, E7, E15, E6
PIN 14 = +5V

NOTES
1 DEC 8640 REPLACES THE OBSOLETE DEC 360

REVISIONS		TRANSISTOR & DIODE CONVERSION CHART				EQUIPMENT CORPORATION		TITLE	
DATE	BY	DEC	EIA	LC	LA	DATE	REV	CODE	NUMBER
12/10/70	OUTER	DEC	EIA	LC	LA	DATE	REV	CODE	NUMBER
12/10/70	OUTER	DEC	EIA	LC	LA	DATE	REV	CODE	NUMBER
12/10/70	OUTER	DEC	EIA	LC	LA	DATE	REV	CODE	NUMBER
12/10/70	OUTER	DEC	EIA	LC	LA	DATE	REV	CODE	NUMBER

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS					QUANTITY / VARIATION															
PARTS LIST																				
MADE BY M. PUCZYNSKI		CHECKED		SECTION																
DATE 6-15-72		DATE																		
ENG M. PUCZYNSKI		PROD		ISSUED SECT.																
DATE 6-15-72		DATE																		
ITEM NO	DWG NO. / PART NO.	DESCRIPTION																		
1	11787	LAMP TIME CONTROL UNIT																		
TITLE					ASSY NO.					SIZE CODE		NUMBER			REV		ECO NO			
LAMP TIME CONTROL UNIT										A PL		11787-10			*					
					SHEET					OF					DIST					

DEC FORM NO 16 1031
DRA 110

258

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

SOFTWARE LIST

MADE BY M. Buczynski	CHECKED <i>[Signature]</i>	SECTION
DATE 6-15-72	DATE <i>6/15/72</i>	
ENG M. Buczynski	PROD <i>[Signature]</i>	ISSUED SECT.
DATE 6-15-72	DATE <i>6/15/72</i>	

LEGEND

D DOCUMENT
DN DOCUMENT CHANGE NOTICE
PA PAPER TAPE ASCII
PB PAPER TAPE BINARY
PM PAPER TAPE READ-IN-MODE

QUANTITY / VARIATION

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION					KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE
1	MAINDEC 11-DZDA-PB	LINE FREQUENCY CLOCK TEST	1										
2	MAINDEC 11-D2DA-D	LINE FREQUENCY CLOCK TEST	1										

TITLE	ASSY. NO.	SIZE CODE	NUMBER	REV	CO NO
LINE FREQUENCY CLOCK (KW11-L)		A SL	KW11-L-28	.	
	SHEET 1 OF 1	DIST			

DEC FORM NO. DEC 16 (327) 1049 X171
DRA 120

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE	SEQUENCE
PRINT SET #1	PRINT SET #3
DRAWING DIRECTORY ASYNCHRONOUS LINE INTERFACE ASYNCHRONOUS LINE INTERFACE (PL) ASYNCHRONOUS LINE INTERFACE CABLE ASSEMBLY (KL81E) SOFTWARE LIST ACCESSORY LIST INSTALLATION PROCEDURE	DRAWING DIRECTORY ASYNCHRONOUS LINE INTERFAC ASYNCHRONOUS LINE INTERFACE (PL) ASYNCHRONOUS LINE INTERFACE CABLE, MODEM BC05C CABLE ASSEMBLY (KL81E) MODEM TEST CONN. INSTALLATION PROCEDURE
B-DD-DL11-0 C-UA-DL11-0-0 A-PL-DL11-0-0 E-CS-M7800-YA-1 D-IA-7008360-0-0 A-SL-DL11-0-4 A-AL-DL11-0-5 A-SP-DL11-0-2	B-DD-DL11-0 C-UA-DL11-0-0 A-PL-DL11-0-0 E-CS-M7800-0-1 D-UA-BC05C-0-0 D-IA 7008360-0-0 D-CS-H315-0-1 A SP-DL11-0-2
PRINT SET #2	
DRAWING DIRECTORY ASYNCHRONOUS LINE INTERFACE ASYNCHRONOUS LINE INTERFACE (PL) ASYNCHRONOUS LINE INTERFACE CABLE, MODEM P05C FILTER NETWORK MODEM TEST CONN. SOFTWARE LIST ACCESSORY LIST INSTALLATION PROCEDURE	
B-DD-DL11-0 C-UA-DL11-0-0 A-PL-DL11-0-0 E-CS-M7800-0-1 D-UA-BC05C-0-0 B-CS-G8000-0-1 D-CS-H315-0-1 A-SL-DL11-0-4 A-AL-DL11-0-5 A-SP-DL11-0-2	

UNIT VARIATIONS		PRINT SET	
VAR	TITLE	DL11-1	DL11-2
DL11-A	ASYNC LINE INTERFACE, CURRENT LOOP	0	1
DL11-B	ASYNC LINE INTERFACE, EIA	0	1
DL11-C	ASYNC LINE INTERFACE, CURRENT LOOP	1	0
DL11-D	ASYNC LINE INTERFACE, EIA	0	1
DL11-E	ASYNC LINE INTERFACE, DATA SET	0	1

REVISIONS	REV	K
	CHG. NO.	DL11-0005
	DATE	2-76

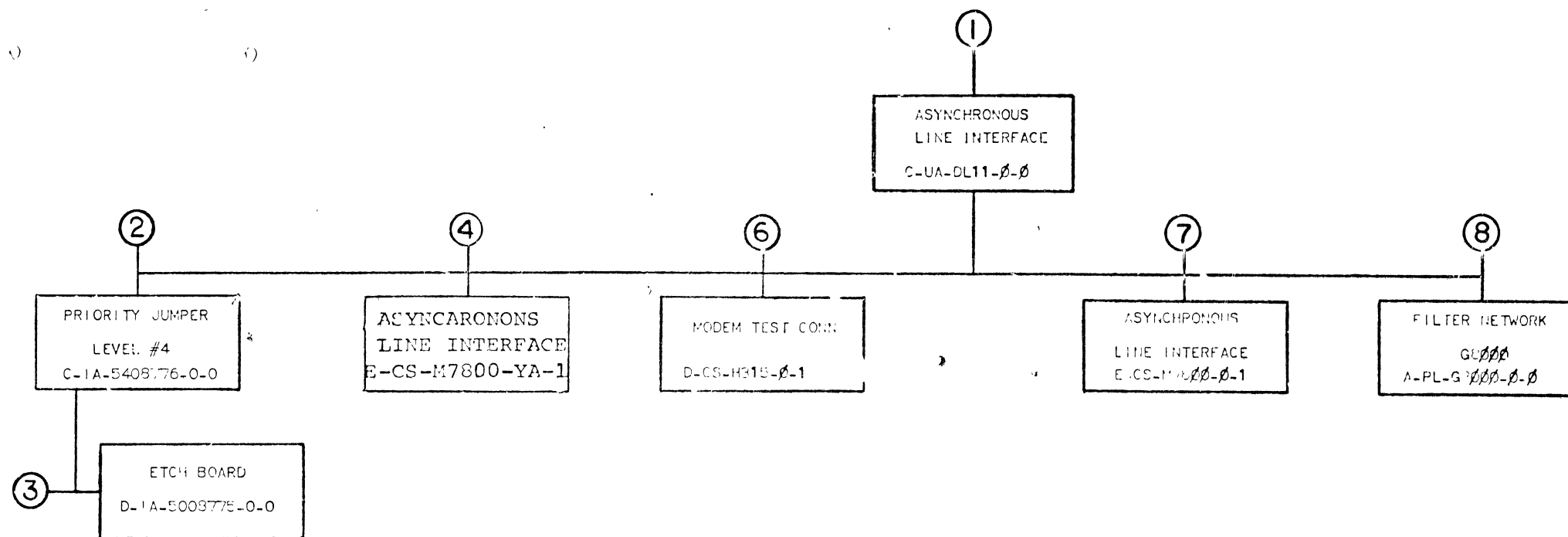
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DESIGNED BY	M. Pierce	DATE	4-28-72
CHECKED BY	P. Cook	DATE	5-9-72
PROJECT ENG.	P. E. Janson	DATE	5-11-72
PROD.	J. McIntyre	DATE	5-15-72
FIELD SERV.	R. Evans	DATE	5-15-72

TITLE	ASYNC LINE INTERFACE				
SIZE	CODE	NUMBER	REV		
0	00	DL11-0	K		

E71-01062-16-R972-(325)

260

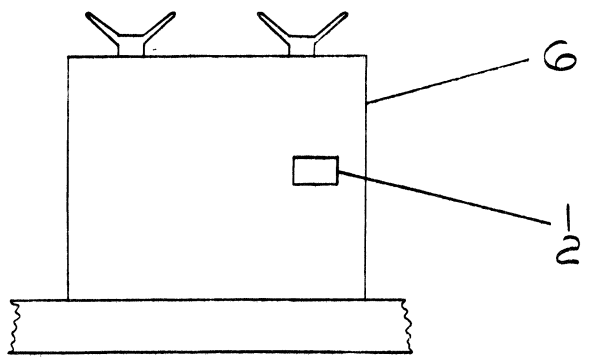


TITLE	ASYNCHRONOUS LINE INTERFACE	SHEET 2 OF 3	SIZE	CODE	NUMBER	REV
			D	CD	DL11-0	K

CUSTOMER PRINT SET					ELECTRICAL					CUSTOMER PRINT SET					MECHANICAL							
DL11-1	DL11-2	DL11-3		DEPT SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.	DL11-1	DL11-2	DL11-3		DEPT SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.	
X	X	X			1.	C-UA-DL11-0-0	F	1	ASYNCHRONOUS LINE INTERFACE							1.	C-UA-DL11-0-0	F	1	ASYNCHRONOUS LINE INTERFACE		
X	X	X				A-PL-DL11-0-0	F	1	ASYNCHRONOUS LINE INTERFACE (PL)								A-PL-DL11-0-0	F	1	ASYNCHRONOUS LINE INTERFACE (PL)		
	X	X				D-UA-DC05C-0-0	#	1	CABLE, MODEM BC05C								D-UA-DC05C-0-0		1	CABLE, MODEM BC05C		
X		X				D-1A-7008360-0-0	#	1	CABLE, ASSEMBLY (KL8/E)								D-1A-7008360-0-0		1	CABLE ASSEMBLY (KL8/E)		
						A-SP-DL11-0-1	#	11	ENGINEERING SPECIFICATION													
X	X	X				A-SP-DL11-0-2	F	9	INSTALLATION PROCEDURE													
						A-SP-DL11-0-3	F	8	TEST PROCEDURE (TEST & ACCEPTANCE)													
X	X					A-SL-DL11-0-4	#	1	SOFTWARE LIST													
X	X					A-AL-DL11-0-5		1	ACCESSORY LIST													
					2.	C-1A-5408776-0-0		1	PRIORITY JUMPER LEVEL #4							2.	C-1A-5408776-0-0		1	PRIORITY JUMPER LEVEL #4		
						R-CS-5408776-0-1		1	CIRCUIT SCHEMATIC								K-CO-5408776-0-4		1	X-Y COORDINATE HOLE LOC		
						K-CO-5408776-0-4		1	X-Y COORDINATE HOLE LOC								B-MH-5408776-0-6		1	ASSY/DRILLING HOLE LAYOUT		
						B-MH-5408776-0-6		1	MODULE ECO HISTORY													
					3.	C-AH-5408776-0-5		1	ASSY/DRILLING HOLE LAYOUT													
X					4.	E-CS-M7800-YA-1	#	6	ASYNCHRONOUS LINE INTERFACE													
						K-CO-M7800-YA-4		1	X-Y COORDINATE HOLE LOCATION													
						D-AH-M7800-YA-5		1	ASSY DRILLING HOLE LAYOUT													
						B-MH-M7800-YA-6		1	MODULE ECO HISTORY													
X	X				6.	D-CS-H315-0-1	#	1	MODEM TEST CONN							6.	D-CS-H315-0-1		1	MODEM TEST CONN		
						K-CO-H315-0-4		1	X-Y COORDINATE HOLE LOC								K-CO-H315-0-4		1	X-Y COORDINATE HOLE LOC		
						D-AH-H315-0-5		1	ASSY DRILLING HOLE LAYOUT								C-AH-H315-0-5		1	ASSY/DRILLING HOLE LAYOUT		
						B-MH-H315-0-6		1	MODULE ECO HISTORY								B-MH-H315-0-6		1	MODULE ECO HISTORY		
X	X				7.	E-CS-M7800-0-1	#	7	ASYNCHRONOUS LINE INTERFACE							7.	E-CS-M7800-0-1		7	ASYNCHRONOUS LINE INTERFACE		
						K-CO-M7800-0-4		1	X-Y COORDINATE HOLE LOC								K-CO-M7800-0-4		1	X-Y COORDINATE HOLE LOC		
						D-AH-M7800-0-5		1	ASSY/DRILLING HOLE LAYOUT								D-AH-M7800-0-5		1	ASSY/DRILLING HOLE LAYOUT		
						B-MH-M7800-0-6		1	MODULE ECO HISTORY								B-MH-M7800-0-6		1	MODULE ECO HISTORY		
X					8.	A-PL-G8000-0-0		1	FILTER NETWORK							8.	A-PL-G8000-0-0		1	FILTER NETWORK		
						K-CS-G8000-0-1	#	1	CIRCUIT SCHEMATIC								K-CS-G8000-0-4		1	X-Y COORDINATE HOLE LOC		
						K-CO-G8000-0-4		1	X-Y COORDINATE HOLE LOC								C-AH-G8000-0-5		1	ASSY/DRILLING HOLE LAYOUT		
						C-AH-G8000-0-5		1	ASSY/DRILLING HOLE LAYOUT								B-MH-G8000-0-6		1	MODULE ECO HISTORY		
						B-MH-G8000-0-6		1	MODULE ECO HISTORY													

TITLE	ASYNCHRONOUS LINE INTERFACE	SHEET 3 OF 3	SIZE	300L	300L	NUMBER	DL11-0	REV	K
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1972



NOTES:
 1. G 8000 IS REQUIRED ONLY IN PDP 11 SYSTEMS WHERE +15V IS NOT AVAILABLE. THE INSTALLATION REQUIRES 2 WIRES TO BE ADDED.
 A03V2 - A02V2
 A02N2 - CXXU1
 WHERE (XX) IS THE SLOT NUMBER CONTAINING THE DL11.
 2. ITEMS INDICATED WITH ASTERICK (*) ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS UNIT.

	A	B	C	D	E	F
4	M920 * UNIBUS OUT			G727 *		
3	G772 * POWER CONNECTOR			G727 *		
2	G8000 FILTER NETWORK SEE NOTE 1			G727 *		
1	M920 * UNIBUS IN			M7800 / M7800-YA		

DD11-A* (pointing to the right side of the table)

SEE NOTE 2 (pointing to the M920 * in row 1, column A)

REV.	CHANGE NO.	CHK	DATE
A	00001	PJ	7-18-72
B	00002	RS	7-17-72
C	00005	PM	8-5-72
D	00006	JK	7-31-73
E	00008	JK	7-31-73
F	00009	SB	12-FEB 76

REVISIONS

DL11-00001 A
 P. JANSON
 DL11-00002 B
 R. J. JANSON
 DL11-00005 C
 P. M. JANSON
 DL11-00006 D
 J. CHARLES
 CONDON
 DL11-00008 E
 E. BETHUNE
 L. CONDON
 DL11-00009 F
 J. MCINTYRE

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-11				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES			
XXX = .005	± 0° 30'			
XX = .02				
X = .1				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	✓			
MATERIAL	+ +			
FINISH	+ +			
PARTS LIST		DRN. <i>M. P. Jans</i> DATE 7/18/72 CHK'D <i>J. Jans</i> DATE 7/24/72 ENGR. <i>R. E. Jans</i> DATE 5-11-72 PROJ. ENG. <i>R. E. Jans</i> DATE 5-11-72 PROD. <i>J. Jans</i> DATE 5-15-72		
NEXT HIGHER ASSY.		TITLE ASYNCHRONOUS LINE INTERFACE		
B-00-DL11-0		SIZE CODE	NUMBER	REV.
		C UA	DL11-0-0	F
SCALE NONE		DIST		
SHEET 1 OF 1				

REV. F
 NUMBER DL11-0-0
 SIZE CODE C UA

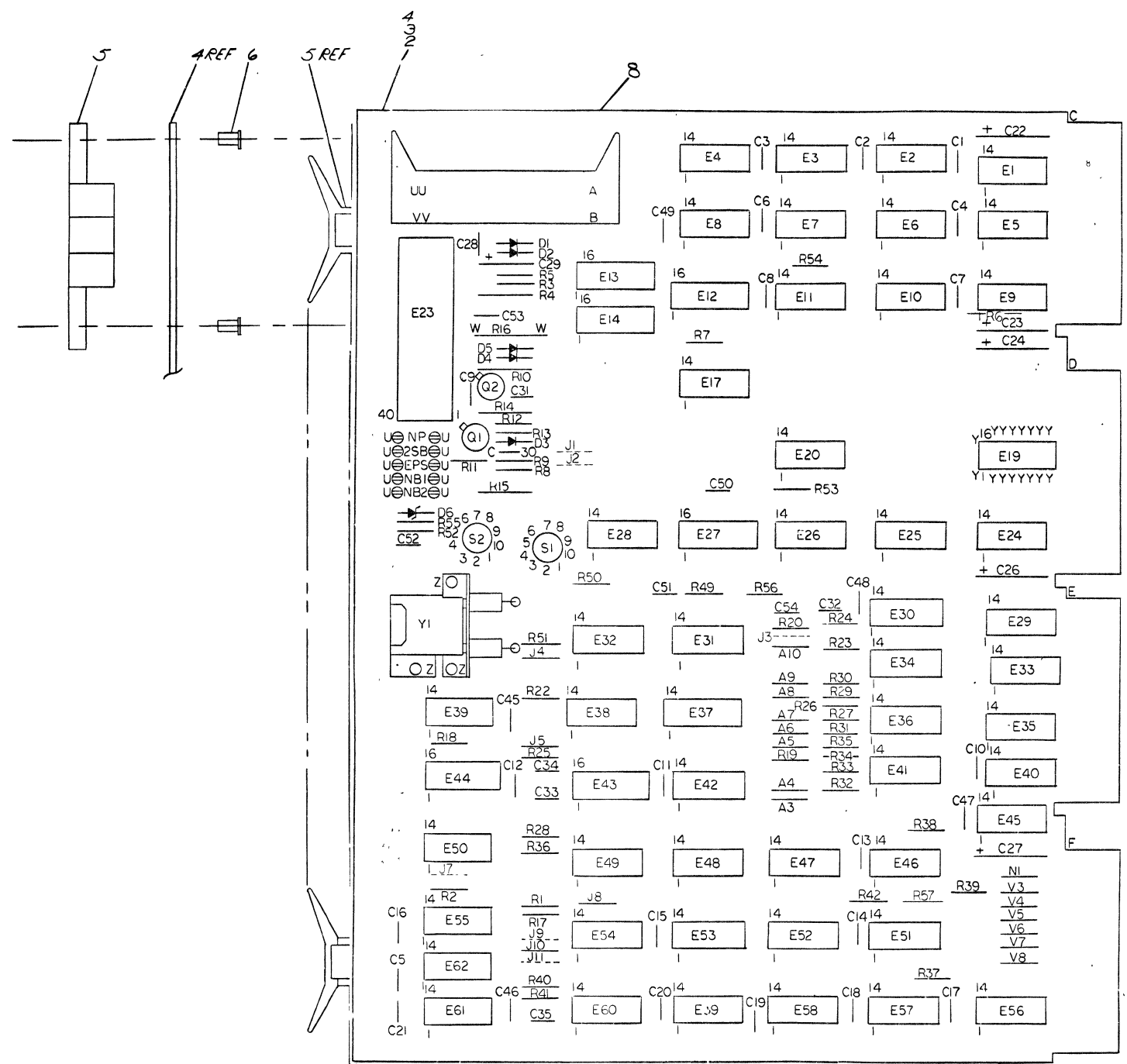
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			QUANTITY / VARIATION												
PARTS LIST			DL11-A	DL11-B	DL11-C	DL11-D	DL11-E								
MADE BY M. PIERCE		CHECKED J. FERGUSON	SECTION												
DATE 4/27/72		DATE 4/27/72	1												
ENG P. E. JANSON		PROD	ISSUED SECT.												
DATE 5/11/72		DATE 5/15/72	1												
ITEM NO	DWG NO. / PART NO.	DESCRIPTION	DL11-A	DL11-B	DL11-C	DL11-D	DL11-E								
1	C-IA-5408776-0-0	PRIORITY JUMPER LEVEL #4	1	1	1	1	1								
3	D-UA-RC05C-25	CABLE MODEM RC05C	-	1	-	1	1								
4	D-IA-7008360-0-0	CABLE ASSEMBLY (K18E)	1	-	1	-	-								
5	D-CS-H315-0-1	MODEM TEST CONNECTOR	-	-	-	-	-	A/R	See Note 2						
6	E-CS-M7800-0-1	ASYNCHRONOUS LINE INTERFACE	-	1	-	1	1								
7	A-PL-68000-0-0	FILTER NETWORK	-	A/R	-	A/R	A/R	A/R	See Note 1						
8		CRYSTAL	A	RA	RA	RA	RA	R	See Note 3						
9	E-CS-M7800-YA-1	ASYNCHRONOUS LINE INTERFACE	1	-	1	-	-								
10	9008269	TRANSPARENT VINYL TAPE	A/R												
NOTES:															
1. 68000 IS REQUIRED ONLY IN PDP11 SYSTEMS WHERE +15V IS NOT AVAILABLE. ONE PER DD11-A															
2. ONE H315 PER PDP11 SYSTEM															
3. CRYSTAL FREQUENCY DEFINED BY CUSTOMER SPECIFIED BAUD RATE OR BY THE DOCUMENTATION OF AN OPTION WHICH USES THE DL11.															
4. APPLY TAPE TO TOP SURFACES OF CRYSTAL AND MOUNTING BRACKETS TO INSULATE FROM ADJACENT MODULES.															
5. PRIORITY LEVELS 5, 6, or 7 MAY BE SPECIFIED BY THE CUSTOMER OR THE DOCUMENTATION OF AN OPTION WHICH USES THE DL11.															
TITLE ASYNCHRONOUS LINE INTERFACE			ASSY NO. C-UA-DL11-0-0		SIZE CODE A PL		NUMBER DL11-0-0		REV. F		ECO NO. DL11-00009				
SHEET 1 OF 1			DIST.												

DEC FORM DEC 16 (325) 1031 N870
DRA 110

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The drawing and assembly...
DIGITAL EQUIPMENT CORPORATION.

NOTES:
1.) PIN NOTATION THROUGHOUT IS ORDERED UPON MODULE PLACEMENT IN THE SYSTEM UNIT MODULE REFERENCE ALONE IS OBTAINED BY CONVERTING THE FIRST LETTER ACCORDING TO THE PIN NOMENCLATURE CHART AT THE LEFT
2.) NUMBERS TO BE USED AT CONNECTIONS A3-A10, J4-J5, J8, J10, V3-V8, AND N1.
3.) LETTERS ENCLOSED IN PARENTHESIS REFER TO PINS ON THE BERG CONNECTOR. EXAMPLE: (K).

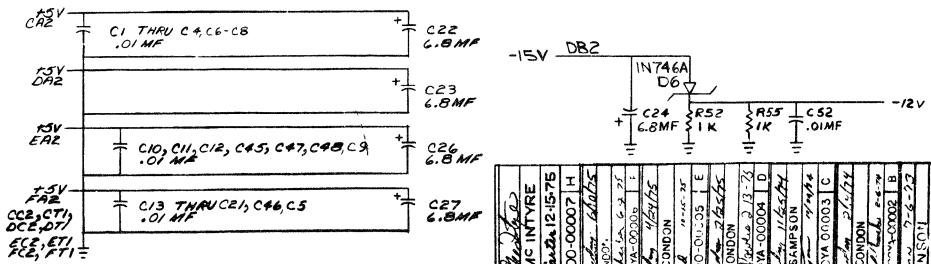


PIN NOMENCLATURE
MODULE SYSTEM UNIT

4.) DEC 8640S WERE PHASED IN AT 380 REPLACEMENTS ANY 380 FAILURES SHOULD BE REPLACED BY 8640 S, EXCEPT E28. E28 MUST BE REPLACED WITH A 7380 CHIP.

QTY	REF DESIGNATION	DESCRIPTION	PART NO	REV
3		WASHERS, INTERNAL TOOTH LOCK	9006631	73
1	E28	IC DEC 7380	1910390	69
19	J1 THRU J19	TERMINAL INSULATED	9000144	105
1	R3	RES 750 OHM 1/4W 5%	1301401	17
1	R38	RES 390 OHM 1/4W 5%	1300309	44
1	D2	DIODE 1N746A	1104860	65
2	Q1, Q2	TRANSISTOR 6534D	1503409-00	64
1	C53	CAP 100PF 100V 5% TANT	10000016	63
1	C54	CAP 560PF 100V 5% TANT	10000025	62
2	C50, C51	CAP .047MF CERAMIC	1009678	61
1	E27	IC DEC 74161	1910650	60
2	C34, C35	CAP 330PF 100V 5% DIPPED MICA	10000023	59
1	C32	CAP 330PF 100V 5% DIPPED MICA	10000024	58
1	C51	CAP 1000PF 100V 5% DIPPED MICA	10000022	57
29	C28, C29, C30, C45, C46, C52	CAP .01UF 100V 5% CERAMIC USC	1001410	56
1	E29	CAP .47UF 35V 10% TANT	1005965	55
5	C22, C24, C26, C27	CAP .68UF 35V 20% TANT	10000027	54
1	C33	CAP 150PF 100V 5% DIPPED MICA	10000021	53
2	R14, R15	RES 1.5K 1/2W 5%	1300394	52
5	R23, R24, R40, R52, R55	RES 1K 1/2W 5%	1300394	51
1	R41	RES 47 OHM 1/2W 5%	1300202	50
1	R10	RES 68 OHM 1/2W 5%	1300202	49
1	R5	RES 82 OHM 1/2W 5%	1300477	48
1	R24	RES 100 OHM 1/2W 5%	1300229	47
1	R17	RES 150 OHM 1/2W 5%	1300230	46
2	R22, R57	RES 200 OHM 1/2W 5%	1300382	45
1	R25	RES 220 OHM 1/2W 5%	1300382	44
5	D1-D5	DIODE 1N4148 201 100MA	10000112	43
3	R9, R13, R51	RES 470 OHM 1/2W 5%	1300316	42
1	R4	RES 360 OHM 1/2W 5%	1300338	41
3		NUT HEX #2-26	9006655	40
1	R16	RES 750 OHM 1/2W 5%	1302385	39
26	R1, R2, R6, R7, R11, R10, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56	RES 1K 1/2W 5%	1300391	37
2	R19, R12	RES 1.5K 1/2W 5%	1300391	36
1	E23	IC DEC UART	1910439	35
4	E32, E33, E61, E62	IC DEC 7474	1910547	34
2	E36, E41	IC DEC 6212	1909712	33
3	E34, E43, E39	IC DEC 7408	1910135	32
3	E20, E28	IC DEC 74121	1909601-1	31
11	E12, E13, E17, E19, E11, E30, E42, E54, E56	IC DEC 8881	1909705	30
2	E43	AUSAT 8000 RS-1	1802812	29
1	E43	IC DEC 74123	1910436	28
3	E43, E57, E58	IC DEC 74174	1909667	27
3	E42, E54, E58	IC DEC 7400	1909673	26
1	E10	IC DEC 74173	1909673	25
2	E50, E53	IC DEC 7402	1909604	24
7	E3, E4, E33, E35, E49, E45, E46	IC DEC 8640	1911467	23
1	E12	IC DEC 74133	1909637	22
1	E40	IC DEC 74104	1909931	21
1	E45	IC DEC 7492	1909033	20
4	E6, E13, E38, E39	IC DEC 7404	1909606	19
1	E24	IC DEC 74173	1909673	18
1	E25	IC DEC 74173	1909673	17
1	E29	IC DEC 314	1909704	16
1	E37	IC DEC 7442	1910064	15
1	E44	IC DEC 8271	1909615	14
2	E13, E14	IC DEC 7475	1910651	13
1		SPACER, CRYSTAL HOLDER	3000285	12
1		SPACER, CRYSTAL HOLDER	3000285	11
1	E19	IC DEC 74121	1909601-1	10
2	S1, S2	SWITCH, SINGLE POLE, 10 POS	1200042-1	9
1		40 PIN CONNECTOR BERG	1205141-02	8
1		SPLIT LUGS	9006735	7
8		RELAY #354-7 E 3 ST. 180VDC	9006732	6
4		M-NOLE, FLIP-CHIP, ARGENTA	9006737-06	5
1		ETCHED CIRCUIT BOARD	3000377	4
1		IC HISTORY	3000377	3
1		IC HISTORY	3000377	2
1		IC HISTORY	3000377	1

IC TYPE	QTY	REV	DATE
DEC 74161	8	16	
DEC 7380	1	8	
DEC UART	3	1	2
DEC 74173	8	16	
DEC 8271	8	16	
DEC 7442	8	16	
DEC 314	1	8	
DEC 7493	10	5	
DEC 74173	8	16	
DEC 8640	7	8	
DEC 7490	13	5	
DEC 74123	8	16	
IC TYPE	GND	+5V	+12V



IC PIN LOCATIONS
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

ETCH BOARD REV H

ASSEMBLY

DEC NO. EIA NO. ETP. (1)

CONDUCTOR CONNECTION CHART

EQUIPMENT CORPORATION

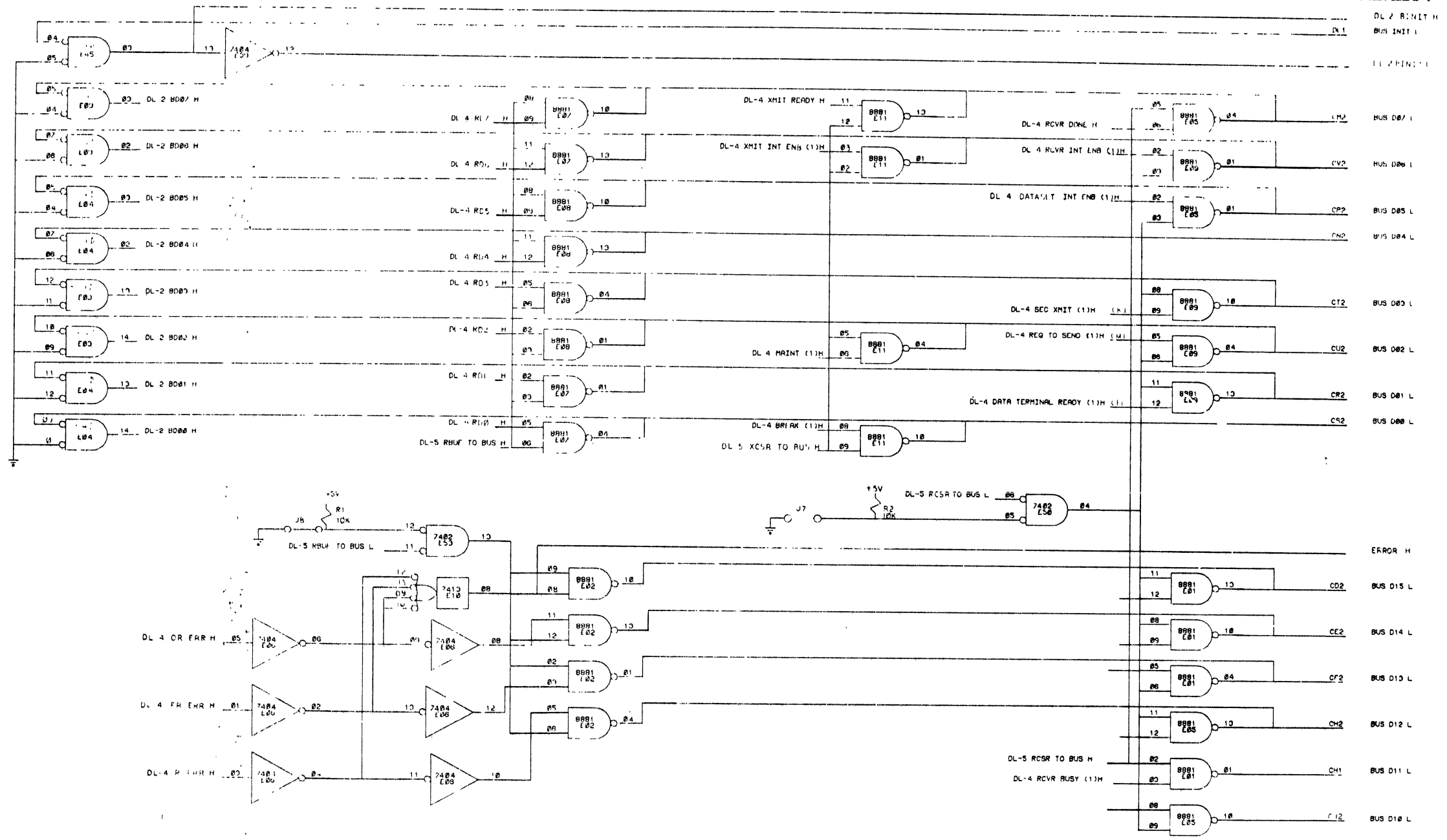
ASYNCHRONOUS LINE INTERFACE

RJCS M7C00 -YA-1

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DIGITAL EQUIPMENT CORPORATION

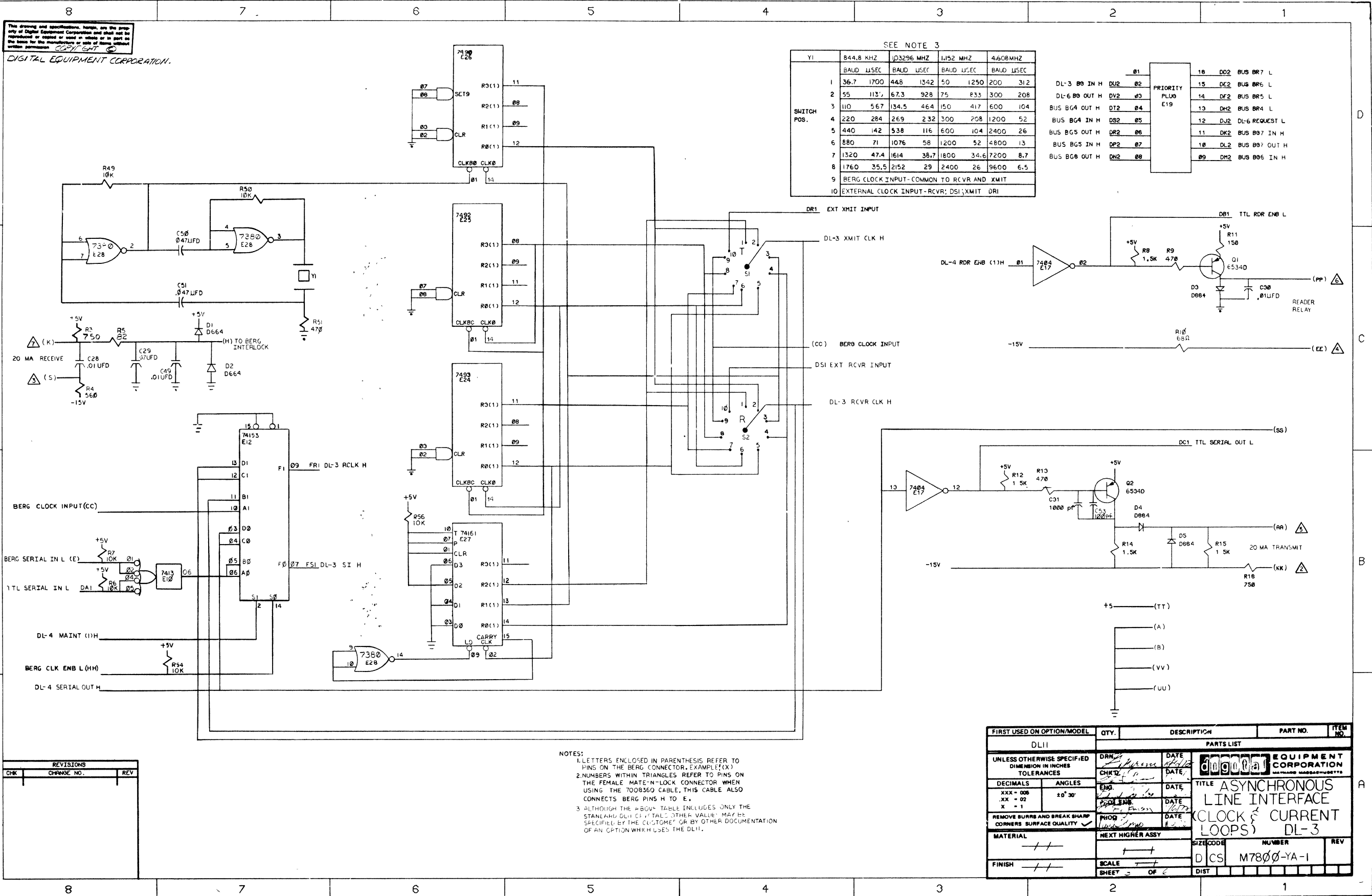


REVISIONS		NO.	REV.
CHK	DATE		
1	11/17/76	1	J
S. MA...			

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DL11				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	TITLE ASYNCHRONOUS LINE INTERFACE (BUS RECEIVERS & DRIVERS) DL-2		
XXX - 008	±0° 30'	EQUIPMENT CORPORATION		
XX - 02		DATE		
X - 1		DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	FINISH	NEXT HIGHER ASSY		
++	++	SIZE CODE NUMBER REV		
SCALE		D CS M7800 YA-1		
E: ET		DIST		

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SEE NOTE 3

Y1	844.8 KHZ	103296 MHZ	1152 MHZ	4.608MHZ
	BAUD U/SEC	BAUD U/SEC	BAUD U/SEC	BAUD U/SEC
1	36.7 1700	44.8 1342	50 1250	200 312
2	55 1137	67.3 928	75 833	300 208
3	110 567	134.5 464	150 417	600 104
4	220 284	269 232	300 208	1200 52
5	440 142	538 116	600 104	2400 26
6	880 71	1076 58	1200 52	4800 13
7	1320 47.4	1614 38.7	1800 34.6	7200 8.7
8	1760 35.5	2152 29	2400 26	9600 6.5
9	BERG CLOCK INPUT - COMMON TO RCVR AND XMIT			
10	EXTERNAL CLOCK INPUT - RCVR: DSI; XMIT: DRI			

DL-3	DL-6	BUS BG4	BUS BG5	BUS BG6
IN H	OUT H	IN H	OUT H	OUT H
DL2 02	DV2 03	DT2 04	DR2 06	DP2 07
DL-3	DL-6	BUS BG4	BUS BG5	BUS BG6
IN H	OUT H	IN H	OUT H	IN H
DL2 02	DV2 03	DT2 04	DR2 06	DP2 07
DL-3	DL-6	BUS BR7	BUS BR5	BUS BR4
IN H	OUT H	IN H	OUT H	IN H
DL2 02	DV2 03	DM2 05	DN2 08	PLU0 E19
DL-3	DL-6	BUS BR7	BUS BR5	BUS BR4
IN H	OUT H	IN H	OUT H	IN H
DL2 02	DV2 03	DM2 05	DN2 08	PLU0 E19
DL-3	DL-6	BUS BR7	BUS BR5	BUS BR4
IN H	OUT H	IN H	OUT H	IN H
DL2 02	DV2 03	DM2 05	DN2 08	PLU0 E19

NOTES:

- LETTERS ENCLOSED IN PARENTHESIS REFER TO PINS ON THE BERG CONNECTOR. EXAMPLE: (K).
- NUMBERS WITHIN TRIANGLES REFER TO PINS ON THE FEMALE MATE-N-LOCK CONNECTOR WHEN USING THE 7008360 CABLE. THIS CABLE ALSO CONNECTS BERG PINS H TO E.
- ALTHOUGH THE ABOVE TABLE INCLUDES ONLY THE STANDARD DLII (ITALIC OTHER VALUES) MAY BE SPECIFIED BY THE CUSTOMER OR BY OTHER DOCUMENTATION OF AN OPTION WHICH USES THE DLII.

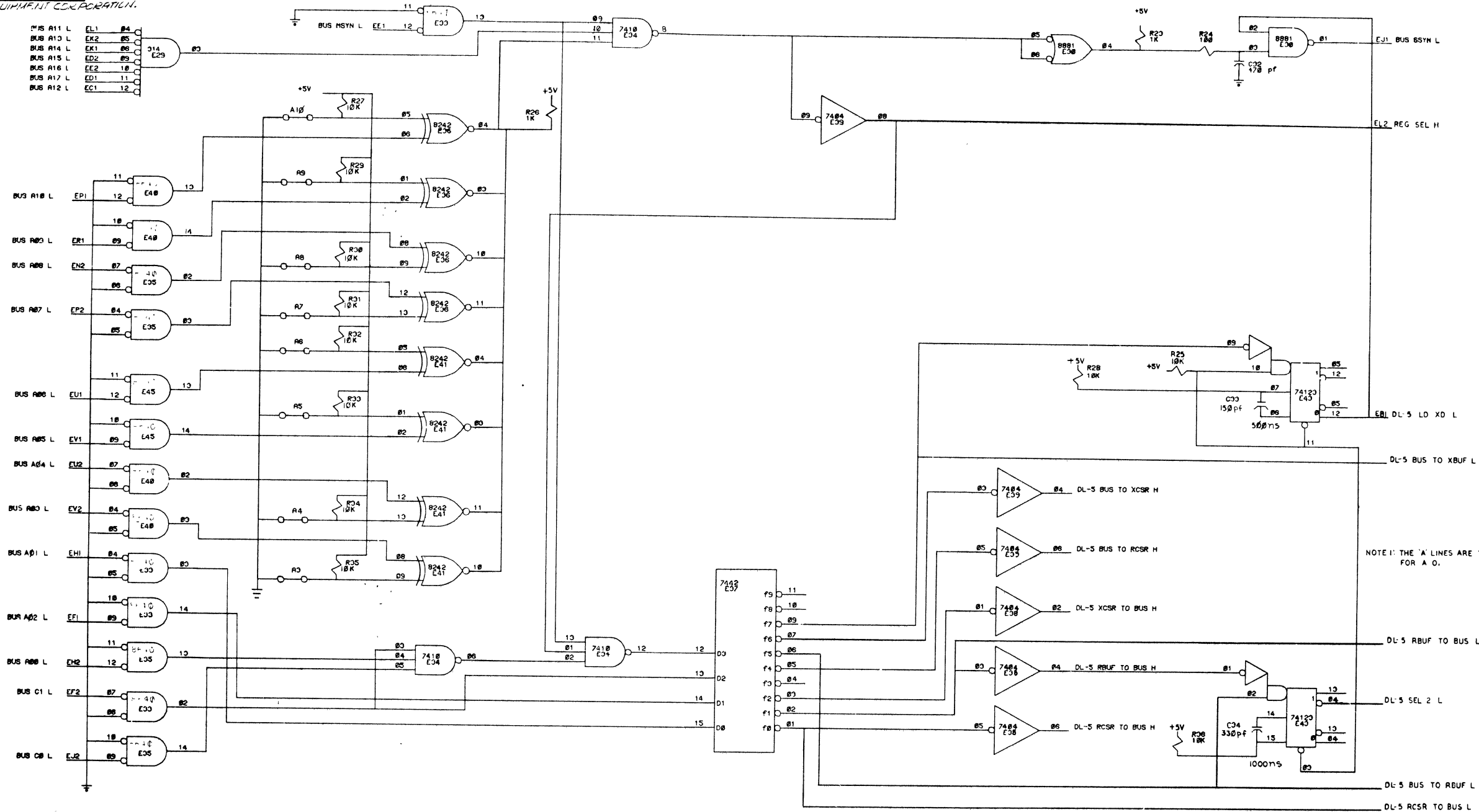
REVISIONS		
CHK	CHANGE NO.	REV

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DLII		PARTS LIST		
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE	DIGITAL EQUIPMENT CORPORATION	
DECIMALS ANGLES	CHK'D	DATE	TITLE ASYNCHRONOUS LINE INTERFACE	
XXX - 008 XX - 02 X - 1	ENG.	DATE	(CLOCK & CURRENT LOOPS) DL-3	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PRIOD	DATE	SIZE CODE	NUMBER
MATERIAL	NEXT HIGHER ASSY		D CS	M7800-YA-1
FINISH	SCALE		SHEET	OF

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DIGITAL EQUIPMENT CORPORATION

- BUS A11 L EL1 04
- BUS A13 L EL2 05
- BUS A14 L EL1 06
- BUS A15 L ED2 09
- BUS A16 L EE2 10
- BUS A17 L ED1 11
- BUS A12 L EC1 12



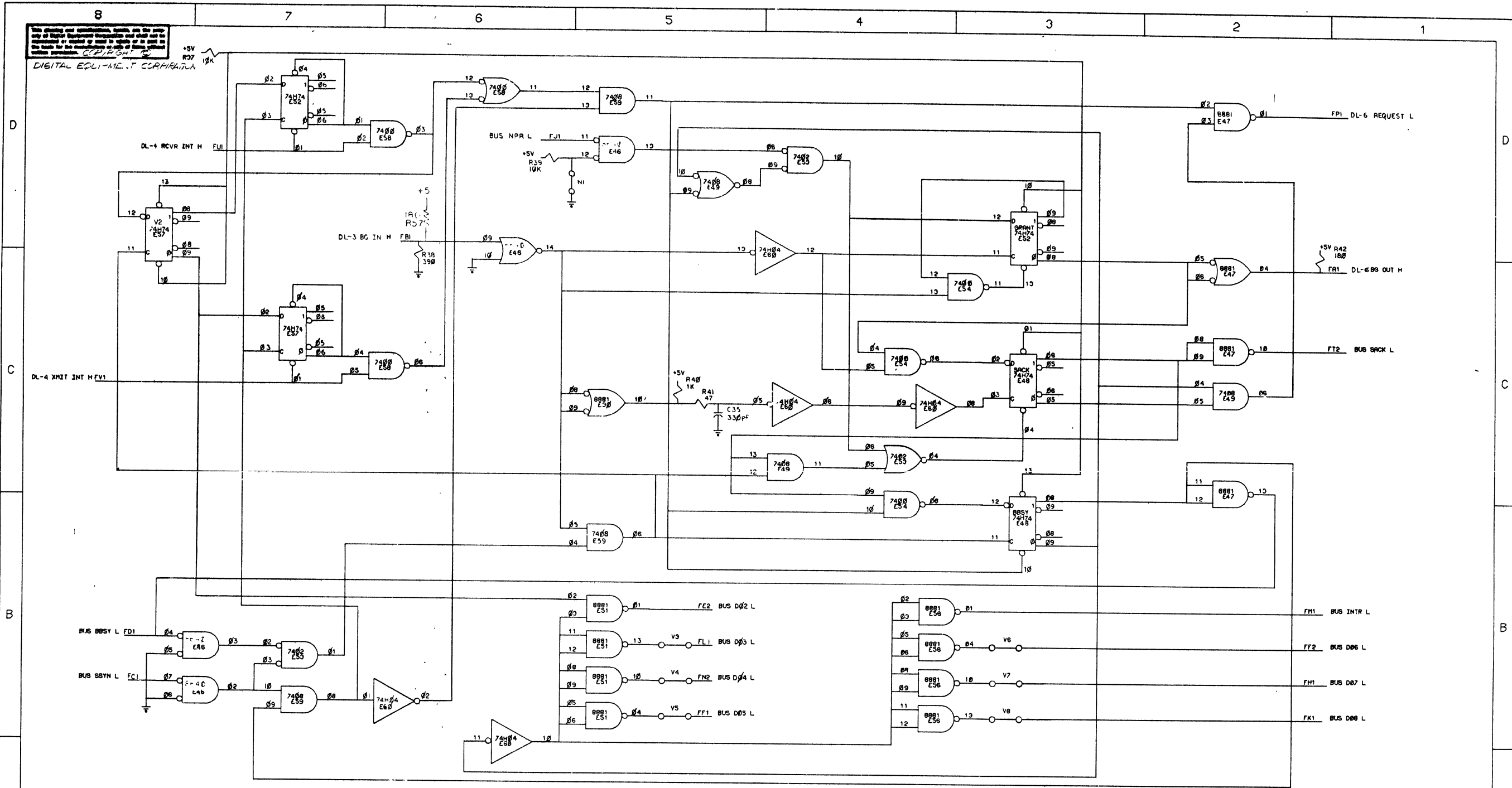
NOTE 1: THE 'A' LINES ARE TO BE JUMPERED FOR A.D.

REVISIONS		
CHK.	CHANGE NO.	REV.

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DL11				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES				
DECIMALS	ANGLES	DATE	PARTS LIST	
XXX - 008	20° 30'	DATE	TITLE ASYNCHRONOUS LINE INTERFACE (ADDRESS SELECTION) DL-5	
XX - 02		DATE	D E S I G N	
X - 1		DATE	MATERIAL	
		DATE	FINISH	
		DATE	NEXT HIGHER ASSY	
		DATE	SCALE	
		DATE	SHEET 5 OF 6	
		DATE	MATERIAL	
		DATE	FINISH	
		DATE	NEXT HIGHER ASSY	
		DATE	SCALE	
		DATE	SHEET 5 OF 6	

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DIGITAL EQUIPMENT CORPORATION



NOTE: THE V LINES ARE TO BE JUMPERED FOR A1.

REVISIONS		
CHK.	CHANGE NO.	RCV.

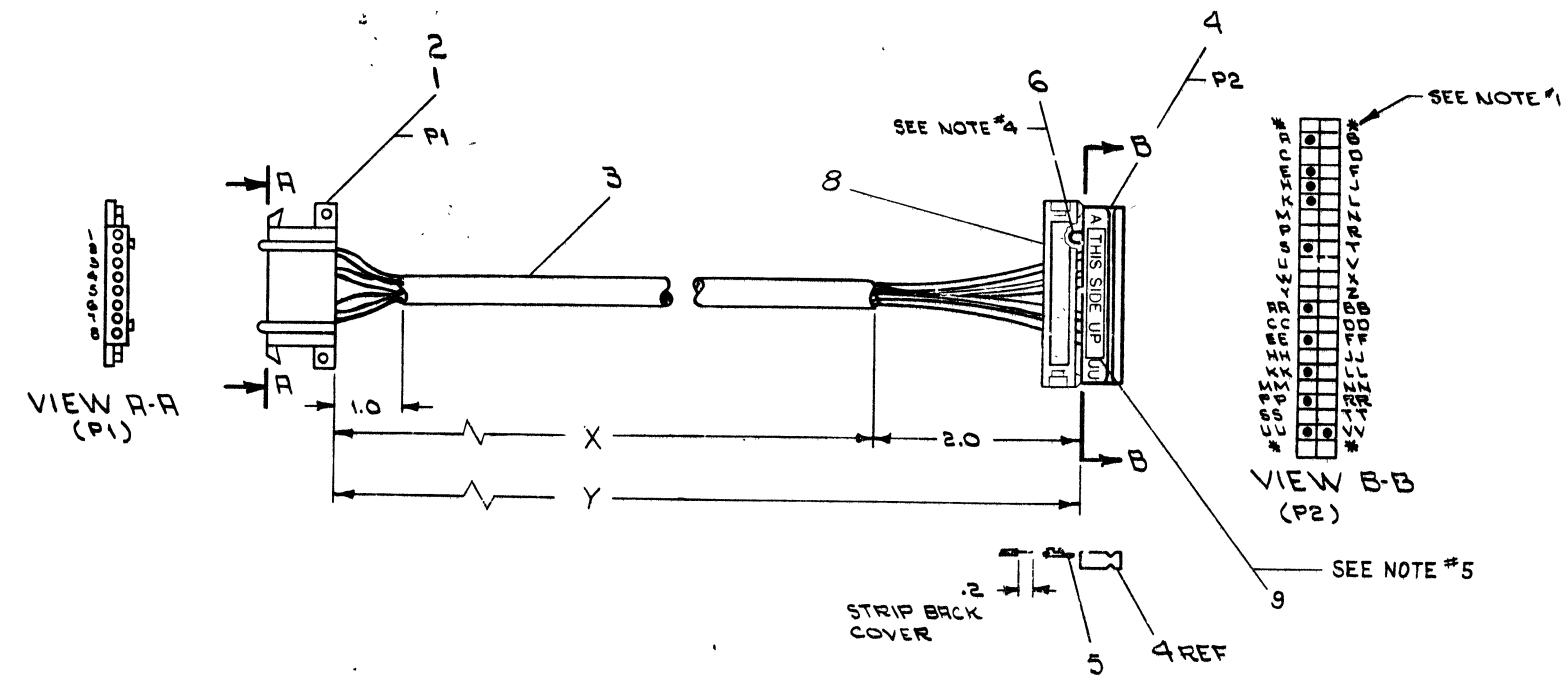
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DL11		PARTS LIST		
UNLESS OTHERWISE SPECIFIED		DATE	EQUIPMENT CORPORATION	
DIMENSION IN INCHES		DATE	MAYNARD MASSACHUSETTS	
TOLERANCES		DATE	TITLE ASYNCHRONOUS	
DECIMALS	ANGLES	DATE	LINE INTERFACE	
.XXX - .008	±0° 30'	DATE	(INTERRUPT CONTROL)	
.XX - .02		DATE	DL-6	
.X - .1		DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PHOD		
MATERIAL		NEXT HIGHER ASSY.		
FINISH		SCALE	SIZE CODE	NUMBER
		SHEET OF	D CS M7800-YA-1	REV.
		DIST.		

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WIRE TABLE							
ITEM NO.	AWG	COLOR	PAIR NO.	FROM CONNECTION	WITH CONNECTION	TO CONNECTION	WITH CONNECTION
3	22	BLK	1	P1-2	2	P2-KK	5
3		RED		P1-3	2	P2-S	
3,7		SHIELD		SEE NOTE #2	-	P2-R(NOTE#3)	
3		BLK	2	P1-4	2	P2-EE	
3		WHT		P1-5	2	P2-RR	
3,7		SHIELD		SEE NOTE #2	-	P2-UU(NOTE#3)	
3		BLK	3	P1-6	2	P2-PP	
3		GRN		P1-7	2	P2-K	
3,7		SHIELD		SEE NOTE #2	-	P2-VV(NOTE#3)	
6	22	BLK	-	P2-E	5	P2-H	5

LEGEND		
VARIATION	LENGTH	
	X	Y
7008360-0	25 IN ± 1.0	27 IN ± 1.0
7008360-1	46 IN ± 1.0	48 IN ± 1.0
7008360-9	9 FT ± 2 IN	9 FT 2 IN ± 2 IN

- NOTES:
- * ASTERISKS INDICATE CAVITIES NOT USED OR DESIGNATED BY LETTERS.
 - DRAIN WIRES TO BE CUT BACK TO OUTER INSULATION ON P1 END OF CABLE ONLY. SHIELDS TO BE CUT BACK TO OUTER INSULATION ON BOTH ENDS OF CABLES.
 - DRAIN WIRES ON P2 END OF CABLE TO BE EACH ENCLOSED WITH ITEM #7 (TUBING) FROM END OF CABLE JACKET TO POINT WHERE THEY ENTER P2 CONNECTOR.
 - ITEM #6 (WIRE) TO BE APPROXIMATELY ONE (1) INCH LONG.
 - PLACE ITEM #9 ("THIS SIDE UP" STICKER) ON LETTERED SIDE OF ITEM #4 (BERG HOUSING) AS SHOWN.



QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	LABEL, THIS SIDE UP	3611567	9
1	STRAIN RELIEF	1211166	8
R/R	TUB. #18 TEF. THINWALL NAT	9101278-11	7
R/R	WIRE #22 AWG STRO TEF BLK	9107350-00	6
11	SOCKET, CRIMP # 47216	1210089-07	5
1	HOUSING, BERG # 65043-015	1210917-15	4
R/R	CABLE, BELDEN #8TTT-3PR SHLD	9107125-0	3
6	CONTACT MATE-N-LOCK (FEMALE)	1209379-03	2
1	CONN. MATE-N-LOCK (FEMALE)	1209340-00	1

REV.	CHANGE NO.	DATE	BY	CHKD.
A	KLBE-00002	5/17/71	J. McNamara	
B	KLBE-00006	3/15/73	E. Clark	
C	7008360-00001	10-29-73	B. Regan	
D	7008360-00002			
E	7008360-00003	3/21/74	R. Regan	
F	7008360-00001			
G	7008360-00004			
H	7008360-00004			

FIRST USED ON OPTION / MODEL
PDP-8E

DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	TOLERANCES
ANGLES ± 0°30'	FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP EDGES	MATERIAL
SEE PARTS LIST	FINISH	

DATE 12/22/71	DATE 4-3-71	DATE 4-4-71	DATE 4-1-71	DATE 4/19/71
EQUIPMENT CORPORATION				
CABLE ASSEMBLY (KLBE)				
SCALE NONE	SHEET 1 OF 2	DIST.	REV H	

PART NUMBER DIA7008360-0-0

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			LEGEND		QUANTITY/VARIATION													
SOFTWARE LIST			D DOCUMENT		DL11-A	DL11-B	DL11-C	DL11-D	DL11-E			KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE	
			DN DOCUMENT CHANGE NOTICE															
MADE BY EMPellegrini		SECTION	PA PAPER TAPE ASCII															
DATE 8/29/72		CHECKED <i>P. Janson</i>	DN DOCUMENT CHANGE NOTICE															
DATE 8/29/72		DATE 8-30-72	PB PAPER TAPE BINARY															
ENG P. Janson		ISSUED SECT.	PM PAPER TAPE READ-IN-MODE															
DATE 8/29/72		DATE 8-31-72																
ITEM NO.	DWG NO./PART NO.	DESCRIPTION	DL11-A	DL11-B	DL11-C	DL11-D	DL11-E					KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE	
1	LIBKIT-11-KL11-04	KL11 MAINDEC	1	1	0	0	0											
2	LIBKIT-11-DL11C-A-K	DL11 MAINDEC	0	0	1	1	0											
3	LIBKIT-11-DL11E-A-K	DL11 MAINDEC	0	0	0	0	1											
TITLE			ASSY. NO.	SIZE CODE	NUMBER		REV	ECONC										
DL11 SOFTWARE LIST				A SL	DL11-0-4													
SHEET 1 OF 1			DIST.															

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DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				LEGEND		QUANTITY / VARIATION											
ACCESSORY LIST				D	DOCUMENT												
MADE BY	E. Pellegrini	CHECKED	<i>[Signature]</i>	SECTION	PA	PAPER TAPE ASCII											
DATE	June 26, 1972	DATE	8-8-72		PB	PAPER TAPE BINARY											
ENG	Paul Hanson	PROD	<i>[Signature]</i>	ISSUED SECT.	PM	PAPER TAPE READ-IN-MODE											
DATE	June 26, 1972	DATE	3-7-72														
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION				DL11-A	DL11-B	DL11-C	DL11-D	DL11-E		KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE
1	M7800	ASYNCHRONOUS LINE INTERFACE (FIA)				1	1	1	1	1							
2	68000	FILTER NETWORK				0	A/R	0	A/R	A/R							
3	M7800-YA	ASYNCHRONOUS LINE INTERFACE (CURRENT LOOP)				1	0	1	0	0							
4	3408776	PRIORITY JUMPER LEVEL #4				1	1	1	1	1							
5	EC05-C-25	MODEM CABLE				0	1	0	1	1							
6	7008360	TTY CABLE				1	0	1	0	0							
7	-	CRYSTAL				1	1	1	1	1							
8	-	DL11 ENGINEERING DRAWINGS				1	1	1	1	1							
9	DEC-11-HDLAA-A-D	DL11 ASYNCHRONOUS LINE INTERFACE MANUAL				1	1	1	1	1							
10	L1BKIT-11-KL11-04	KL11 MAINDEC				1	1	0	0	0							
11	L1BKIT-11-DL11C-A-K	DL11 MAINDEC				0	0	1	1	0							
12	L1BKIT-11-DL11E-A-K	DL11 MAINDEC				0	0	0	0	1							
13	H315	MODEM TEST CONNECTOR				0	0	0	0	0							
NOTES: 1. 68000 IS REQUIRED ONLY IN PDP-11 SYSTEMS WHERE +16V IS NOT AVAILABLE. ONE PER DD11-A.																	
2. CRYSTAL FREQUENCY DEFINED BY CUSTOMER SPECIFIED BAUD RATE.																	
3. ONE H315 PER PDP11 SYSTEM																	
4. INSURE THAT TRANSPARENT VINYL TAPE HAS BEEN APPLIED TO THE TOP SURFACE OF THE CRYSTAL AND MOUNTING BRACKET.																	
TITLE				ASSY. NO.	SIZE CODE	NUMBER			REV.	ECO NO							
DL11 CHECK LIST					A AL	DL11-0-5			C	DL11-00005							
SHEET 1 OF 1				DIST.													

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DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS						
						DATE 6-21-72
TITLE DL11 INSTALLATION PROCEDURE						
REVISIONS						
REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
C	CHANGE PER ECO	DL11-4	JANSON	3/73	P. Janson	4/6/73
D	CHANGE PER ECO	DL11-5	CONDON	7/73	R. Condon	8/2/73
E	CHANGE PER ECO	DL11-7	CONDON	8/74	R. Condon	2/21/74
F	CHANGE PER ECO	DL11-8	CONDON	4-75	R. Condon	11/8/75

ENG Paul E. Janson	APPD R. Condon	SIZE A	CODE SP	NUMBER DL11-0-2	REV F
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SHEET 1 OF 9

ENGINEERING SPECIFICATION				CONTINUATION SHEET
TITLE DL11 INSTALLATION PROCEDURE				
DL11 INSTALLATION PROCEDURE:				
Installation of the M7800 module or its variation as a DL11-A through DL11-E option consists of the following preparations:				
<ol style="list-style-type: none"> 1. Jumper insertion/deletion for selection of operation mode (A, B, C, D, or E). 2. Register address assignment. 3. Vector address assignment. 4. Priority assignment. 5. Special NPR jumper insertion/deletion. 6. Selection of data format (data bits, stop bits, parity). 7. Selection of crystal for baud rate. 8. Installation of G8000 in systems where +15v is not available. 9. Filter capacitor selection for high baud rate current-loop. 				
A. OPERATION MODE:				
The following describes the jumpers associated with controlling the mode of operation (A,B,C,D, or E):				
<ol style="list-style-type: none"> J1. Ties EIA driver to REQUEST-TO-SEND lead (pin 4) of dataset cable. IN for DL11-B,D, and E; does not affect DL11-A and C. Drawing DL-7. J2. Ties EIA driver, normally used for the REQUEST-TO-SEND lead, to FORCE BUSY lead (pin 25) for use with Bell 103E. This is a customer option. If not specified, jumper is OUT for all DL11's. Drawing DL-7. J3. When inserted, allows REQUEST-TO-SEND lead (pin 4) to be controlled by bit 2 of the receiver status register. OUT for DL11-B and D; IN for DL11-E; does not affect DL11-A and C. Drawing DL-4. J4. When inserted, forces "DATA LEADS ONLY" mode of EIA operation. Turns DATA TERMINAL READY (pin 20) and REQUEST-TO-SEND (pin 4) on. IN for DL11-B and D; OUT for DL11-E; does not affect DL11-A and C. Drawing DL-4. J5. When inserted, allows the BREAK bit to function. OUT for DL11-A and B; IN for DL11-C,D, and E. Drawing DL-4. J6. When inserted, allows DSET INT to cause interrupts. OUT for DL11-A,B,C and D; IN for DL11-E. Drawing DL-4. J7. When inserted, allows dataset control bits to be read as part of the receiver status register. 				
				SHEET 2 OF 9

ENGINEERING SPECIFICATION		CONTINUATION SHEET																																																																																																			
TITLE DL11 INSTALLATION PROCEDURE																																																																																																					
<p>J7. (con't)</p> <p>OUT for DL11-A,B,C and D; IN for DL11-E. Drawing DL-2.</p> <p>J8. When inserted, allows error bits to be read as part of the receiver data register. OUT for DL11-A and B; IN for DL11-C,D and E. Drawing DL-2.</p> <p>Summary of mode control jumpers:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>JUMPER</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>DRAWING</th> </tr> </thead> <tbody> <tr> <td>J1</td> <td>*</td> <td>IN</td> <td>*</td> <td>IN</td> <td>IN</td> <td>DL-7</td> </tr> <tr> <td>J2</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>DL-7</td> </tr> <tr> <td>J3</td> <td>*</td> <td>OUT</td> <td>*</td> <td>OUT</td> <td>IN</td> <td>DL-4</td> </tr> <tr> <td>J4</td> <td>*</td> <td>IN</td> <td>*</td> <td>IN</td> <td>OUT</td> <td>DL-4</td> </tr> <tr> <td>J5</td> <td>OUT</td> <td>OUT</td> <td>IN</td> <td>IN</td> <td>IN</td> <td>DL-4</td> </tr> <tr> <td>J6</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>IN</td> <td>DL-4</td> </tr> <tr> <td>J7</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>OUT</td> <td>IN</td> <td>DL-2</td> </tr> <tr> <td>J8</td> <td>OUT</td> <td>OUT</td> <td>IN</td> <td>IN</td> <td>IN</td> <td>DL-2</td> </tr> </tbody> </table> <p>*= don't care</p> <p>B. REGISTER ADDRESS ASSIGNMENTS:</p> <p>The DL11 can respond to addresses with the following format:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>17</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td> </tr> <tr> <td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p style="text-align: center;">Selects 1 of 4 Registers</p> <p style="text-align: center;">Byte Control</p> <p>Bits 10 through 3 are controlled by jumpers A10 to A3. A jumper inserted indicates a zero.</p> <p>For the DL11-A and B used as the console device, address 777560 is assigned. For additional units, assign 776XX0, where XX=50 for the first additional unit and XX=67 for the 16th unit.</p> <p>For the DL11-C,D and E assign address 77XXX0, where XXX=561 for the first line, and XXX=617 for the 31st line. Assign all C's first, then D's, and then E's.</p>			JUMPER	A	B	C	D	E	DRAWING	J1	*	IN	*	IN	IN	DL-7	J2	OUT	OUT	OUT	OUT	OUT	DL-7	J3	*	OUT	*	OUT	IN	DL-4	J4	*	IN	*	IN	OUT	DL-4	J5	OUT	OUT	IN	IN	IN	DL-4	J6	OUT	OUT	OUT	OUT	IN	DL-4	J7	OUT	OUT	OUT	OUT	IN	DL-2	J8	OUT	OUT	IN	IN	IN	DL-2	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1	1	1	1	1	1	1											
JUMPER	A	B	C	D	E	DRAWING																																																																																															
J1	*	IN	*	IN	IN	DL-7																																																																																															
J2	OUT	OUT	OUT	OUT	OUT	DL-7																																																																																															
J3	*	OUT	*	OUT	IN	DL-4																																																																																															
J4	*	IN	*	IN	OUT	DL-4																																																																																															
J5	OUT	OUT	IN	IN	IN	DL-4																																																																																															
J6	OUT	OUT	OUT	OUT	IN	DL-4																																																																																															
J7	OUT	OUT	OUT	OUT	IN	DL-2																																																																																															
J8	OUT	OUT	IN	IN	IN	DL-2																																																																																															
17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																																																																				
1	1	1	1	1	1	1																																																																																															
		SHEET 3 OF 9																																																																																																			

ENGINEERING SPECIFICATION		CONTINUATION SHEET												
TITLE DL11 INSTALLATION PROCEDURE														
<p>C. VECTOR ADDRESS ASSIGNMENT:</p> <p>Jumpers V8 through V3 control the interrupt vector. A jumper inserted provides a vector bit of one. Vectors can be produced in the form XX0 and XX4 where XX ranges from 00 to 77.</p> <p>For the DL11-A and B used as a console device the vector address is 060/064. For additional units vectors are floating.</p> <p>For the DL11-C,D, and E vector addresses are floating. Assign all C's first, then D's, then E's.</p> <p>D. PRIORITY ASSIGNMENT:</p> <p>Interrupt priority is established by inserting a "priority plug" in the socket at IC location E19. For DL11-A,B,C,D and E use level 4, for the standard assignment or level 5-7 as specified by the customer or the documentation of an option which uses the DL11.</p> <p>SUMMARY OF REGISTER, VECTOR AND PRIORITY ASSIGNMENTS:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>ADDRESS</th> <th>VECTOR</th> <th>PRIORITY</th> </tr> </thead> <tbody> <tr> <td>DL11-A,B CONSOLE</td> <td>777560 777562 777564 777566</td> <td>60/64 BR4</td> </tr> <tr> <td>DL11-A,B ADDITIONAL UNITS</td> <td>776XX0 776XX2 776XX4 776XX6</td> <td>FLOATING BR4</td> </tr> <tr> <td>DL11-C,D,E</td> <td>77XXX0 77XXX2 77XXX4 77XXX6</td> <td>Floating 4</td> </tr> </tbody> </table> <p>Where XX= 50 for line #1 and XX= 67 for line #16</p> <p>Where XXX= 561 for line #1 and XXX= 617 for line #31</p>			ADDRESS	VECTOR	PRIORITY	DL11-A,B CONSOLE	777560 777562 777564 777566	60/64 BR4	DL11-A,B ADDITIONAL UNITS	776XX0 776XX2 776XX4 776XX6	FLOATING BR4	DL11-C,D,E	77XXX0 77XXX2 77XXX4 77XXX6	Floating 4
ADDRESS	VECTOR	PRIORITY												
DL11-A,B CONSOLE	777560 777562 777564 777566	60/64 BR4												
DL11-A,B ADDITIONAL UNITS	776XX0 776XX2 776XX4 776XX6	FLOATING BR4												
DL11-C,D,E	77XXX0 77XXX2 77XXX4 77XXX6	Floating 4												
		SHEET 4 OF 9												

ENGINEERING SPECIFICATION		CONTINUATION SHEET		
TITLE DL11 INSTALLATION PROCEDURE				
E. SPECIAL NPR JUMPER:				
Jumper N1, shown on drawing DL-6, controls the response of the interrupt circuit to an NPR request. The jumper should normally be IN, except for 11/20 and 11/15 systems without the KH11 option.				
F. SELECTION OF DATA FORMAT:				
1. Data Bits				
Split lug pairs NB2 and NB1 control the number of data bits in the serial character as follows:				
<u>NB2</u>	<u>NB1</u>	<u># OF DATA BITS</u>		
OUT	OUT	8		
OUT	IN	7		
IN	OUT	6		
IN	IN	5		
2. Parity				
Parity is controlled by split lug pairs NP and EPS as follows:				
<u>NP</u>	<u>EPS</u>	<u>PARITY</u>		
OUT	OUT	OFF		
OUT	IN	OFF		
IN	OUT	EVEN		
IN	IN	ODD		
3. Stop Bits				
Split lug pair 2SB and jumpers J9, J10 and J11 control the number of stop bits in the serial character as follows:				
<u>2SB</u>	<u>J9</u>	<u>J10</u>	<u>J11</u>	<u># OF STOP BITS</u>
OUT	OUT	IN	OUT	2
IN	OUT	IN	OUT	1
IN	OUT	OUT	IN	1.5 for TI, GI, and SCM UARTS
IN	IN	OUT	OUT	1.5 for WD UARTS
G. CRYSTAL SELECTION:				
The clocking scheme of the DL11 consists of a single crystal oscillator feeding a divider network, with two 10-position switches tapping various points to feed into the UART's				
SIZE	CODE	NUMBER	REV	
A	SP	DL11-0-2	F	

ENGINEERING SPECIFICATION		CONTINUATION SHEET			
TITLE DL11 INSTALLATION PROCEDURE					
G. Con't					
transmitter and receiver sections. Thus, for a given crystal frequency, 8 baud rates are independently selectable for transmit and receive. The two addition switch positions select external clocks.					
SPEED GROUP	1	2	3	4	
	CRYSTAL (HZ)				
POSITION	FACTOR	844.8K	1.03296M	1.152M	4.608M
1*	23040	36.7	44.8	50	700
2	15360	55	67.3	75	300
3	7680	110	134.5	150	600
4	3840	220	269	300	1200
5	1920	440	538	600	2400
6	960	880	1076	1200	4800
7	640	1320	1614	1800	7200
8	480	1760	2152	2400	9600
*Most counter-clock wise position.					
To determine a crystal frequency for a non-standard baud rate, pick the position of the closest baud rate in the 1.152MHz column, and then multiply the non-standard baud rate by the factor for that position. For example, if the customer specifies 1050 baud, this is closest to 1200 baud, position 6.					
$1050 \times 960 = 10080000 = 1.008\text{MHz}$.					
The crystal frequency should not fall outside the range of the standard crystals. Although the above table included only the standard DL11 crystals other values may be specified by the customer or by other documentation of an option which uses the DL11.					
DEC part number for the standard crystals are as follows:					
844.8 KHz	18-10245-1*				
1.03296 MHz	18-05501-6				
1.152 MHz	18-05501-5				
4.608 MHz	18-05501-7				
*Use A or C cut crystals only. Do not use crystals marked NE-6D.					
When ordering a special crystal, refer to purchase specification 18-05501 for crystal specification.					
Insure that transparent vinyl tape (9008269) is applied to the top surfaces of the crystal and mounting brackets to insulate from adjacent modules.					
SIZE	CODE	NUMBER	REV		
A	SP	DL11-0-2	F		

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
TITLE DL11 INSTALLATION PROCEDURE			
H. G8000 INSTALLATION:			
For DL11-B, D, and E a positive voltage is required between 9 and 15 volts to operate the EIA drivers. For PDP-11/20 and PDP-11/15 systems with the H720 power supply, a G8000 module must be installed to provide this voltage. Using a filter network, this module converts the full-wave rectified "+8V" signal to a positive DC voltage.			
1. Install G8000 into slot A02 of DD11-A.			
2. Wire A03V2 to A02V2.			
3. Wire A02N2 to CXXU1 where XX is the slot location of the M7800.			
Refer to diagram 1.			
I. FILTER CAPACITOR SELECTION:			
For DL11-A's and DL11-C's, which operate with 20ma current loops, capacitors are used to filter the receive line and slow the switching time of the transmit line. To avoid excessive distortion above 150 baud, the capacitance in each of these two circuits must be reduced. This is accomplished by clipping C29 (.47 mfd) and C31 (1000 pf), both shown on drawing DL-3.			
J. DL11-B,D,E in Systems with +15V available using DD11-A			
There is a special situation of using a DD11-A to mount a DL11-B, D, or E in systems with +15V available. These systems have +15V available and it appears at pin A03V2 of the DD11-A when using power harness such as 7009177, 7008855, or 7008909. In this situation, no G8000 is necessary, and +15V can be wired directly from A03V2 to CXXU1, where XX is the slot number of the DL11.			
NOTE: this does not apply to DL11-A or C or DD11-B.			
K. When using the DL11-B,D,E in an 11/05 processor pin CXXU1 has +15V available on it so no G8000 or no jumpers are required.			
SIZE	CODE	NUMBER	REV
A	SP	DL11-0-2	F

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
TITLE DL11 INSTALLATION PROCEDURE			
DIAGRAM 1. G8000 INSTALLATION			
SIZE	CODE	NUMBER	REV
A	SP	DL11-0-2	F

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ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE DL11 INSTALLATION PROCEDURE

DL11-A

C29-IN FOR 110, 150 BAUD ONLY

C31-IN FOR 110, 150 BAUD ONLY

(NO PARITY) NP-OUT
 (2 STOP BITS) 2SB-OUT
 EPS-IN SIGNIFICANT
 (8 DATA BITS) NB1-OUT
 (8 DATA BITS) NB2-OUT
 S2
 SEE NOTE 2 { S1
 CRYSTAL
 J4-IN SIGNIFICANT
 J5-OUT
 J8-OUT
 J9-OUT
 J10-IN
 J11-OUT

ADDRESS
 N11 (EXCEPT FOR 11/20 & 11/15 SYSTEMS WITHOUT KH11 OPTION)
 VECTOR ADDRESS

NOTES

- For further information on the DL11-A configuration or the installation of DL11-B, DL11-C, DL11-D or DL11-E refer to:
 - DL11 Asynchronous Line Interface Manual
 - ASP-DL11-0-2 (DL11 installation procedure) in the DL11 Engineering Drawings.

SPEED GROUP	1	2	3	4
CRYSTAL FREQ (HZ)	844.8K	1 012 96M	1 142M	4 608M
S1 S2 POS	BAUD RATE			
1	36.7	44.8	50	200
2	45	67.3	75	310
3	110	134.5	150	600
4	220	269	300	1200
5	440	538	600	2400
6	880	1076	1200	4800
7	1320	1614	1800	7200
8	1760	2152	2400	9600

Position 1 is most counter clockwise position

11-2454

DEC FORM NO DEC 16-(381)-1022-4370
DRA 108

SHEET 9 OF 9

REV F
 NUMBER DL11-0-2
 DATE SP

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

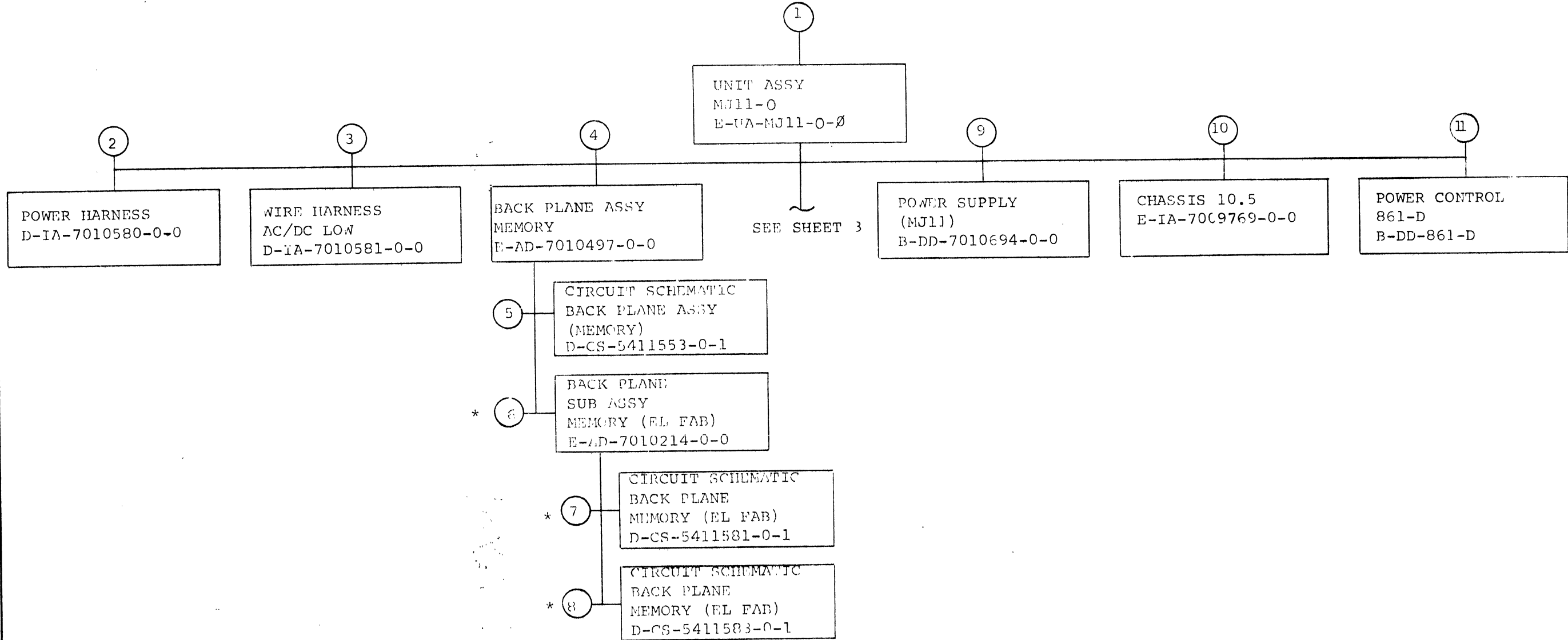
SEQUENCE		SEQUENCE
	DRAWING DIRECTORY MJ11-0	B-DD-MJ11-0
	UNIT ASSY MJ11-0	B-UA-MJ11-0-0
	POWER SUPPLY (MJ11)	B-DD-7010624-0
	PARTS LIST MJ11-0	A-PL-MJ11-0
	BLOCK DIAGRAM (MJ11)	
	(MEMORY TIMING AND CONTROL)	B-BD-MJ11-0-BD
	TIMING DIAGRAM READ/WRITE	D-TD-MJ11-0-TD
	MEM. CONTROL & TIMING MOD.	D-CS-M8148-0-1
	MEM. TRANSDUCER CARD	D-CS-M8149-0-1
	16K SENSE INHIBIT BOARD	D-CS-G114-0-1
	16K X 18 BIT STACK	D-CS-H117-C-1
	16K MEM. DRIVE BOARD	D-CS-G235-0-1
	CIRCUIT SCHEM. MEMORY	D-CS-5411553-0-1
	CIRCUIT SCHEM. (MEM-EL-FAB)	D-CS-5411581-0-1
	CIRCUIT SCHEM. (MEM-EL-FAB)	D-CS-5411583-0-1
	POWER HARNESS	D-IA-7010580-0-0
	WIRE HARN. AC/DC LOW	D-IA-7010581-0-0
	POWER CONTROL 861-D	B-DD-861-D
	POWER CONTROL 861-E	B-DD-861-E
	EXP. DATA CABLE ASSY	D-AP-7010824-0-0
	EXP. CABLE ASSY (INTER BAY)	D-AP-7010826-0-0
	CABLE DETAIL	D-IA-7010974-0-0
	CABLE DETAIL	D-IA-7010974-0-0
	PACKAGING INSTRUCTION (CUSTOMER SHIP)	A-SP-3700195-0-0
	PACKAGING INSTRUCTION (INTERPLANT)	A-SP-3700194-0-0
	MEM. CONTROL & TIMING MOD.	D-CS-M8147-0-1
	32K SENSE INHIBIT BOARD	D-CS-G116-0-1
	32K X 18 BIT STACK	D-CS-H224-C-1
	32K MEM. DRIVE BOARD	D-CS-G236-0-1

UNIT VARIATIONS		PRINT SET	
VAR	TITLE		
MJ11-AA	32K 18 BIT MEM. 115V	X	
MJ11-AB	32K 18 BIT MEM. 230V	X	
MJ11-AC	MJ11-AA/CAB 115V	X	
MJ11-AD	MJ11-AB/CAB 230V	X	
MJ11-AE	32K 18 BIT EXPAN. (2 MJ11-AM)	X	
MJ11-AG	MJ11-AA/(3) MJ11-AE 115V	X	
MJ11-AH	MJ11-AB/(3) MJ11-AE 230V	X	
MJ11-AY	MJ11-AA - NO CABLES 115V	X	
MJ11-AZ	MJ11-AB - NO CABLES 230V	X	
MJ11-BA	64K 18 BIT MEM 115V	X	
MJ11-BB	64K 18 BIT MEM. 230V	X	
MJ11-BC	MJ11-BA/CAB 115V	X	
MJ11-BD	MJ11-BB/CAB 230V	X	
MJ11-BE	64K 18 BIT EXPAN (2MJ11-B.)	X	
MJ11-BG	MJ11-BA/(3) MJ11-BE 115V	X	
MJ11-BH	MJ11-BB/(3) MJ11-BE 230V	X	
MJ11-BM	32K 18BIT MEM MOD SET NO CONT	X	
MJ11-BY	MJ11-BA-NO CABLES 115V	X	
MJ11-BZ	MJ11-BB-NO CABLE 230V	X	

REVISIONS												
DATE	CHG.	REV										
5-75	MJ11-A-1	A										
6-75	MJ11-A-2	B										
8-75	MJ11-A-3	C										
12-75	MJ11-A-4	D										
3-76	MJ11-A-5	E										
5-76	MJ11-A-6	F										
6-76	MJ11-A-7	H										
8-76	MJ11-A-8	J										
1-77	MJ11-I	K										

USED ON OPTION/MODEL		DRN.	DATE	TITLE			
		CHK'D.	DATE	DRAWING DIRECTORY MJ11-0			
		PROJ ENG.	DATE				
		PROD.	DATE	SIZE	CODE	NUMBER	P V
		FIELD SERV.	DATE	B	DD	MJ11-0	K
SHEET 1 OF 10				DIST			

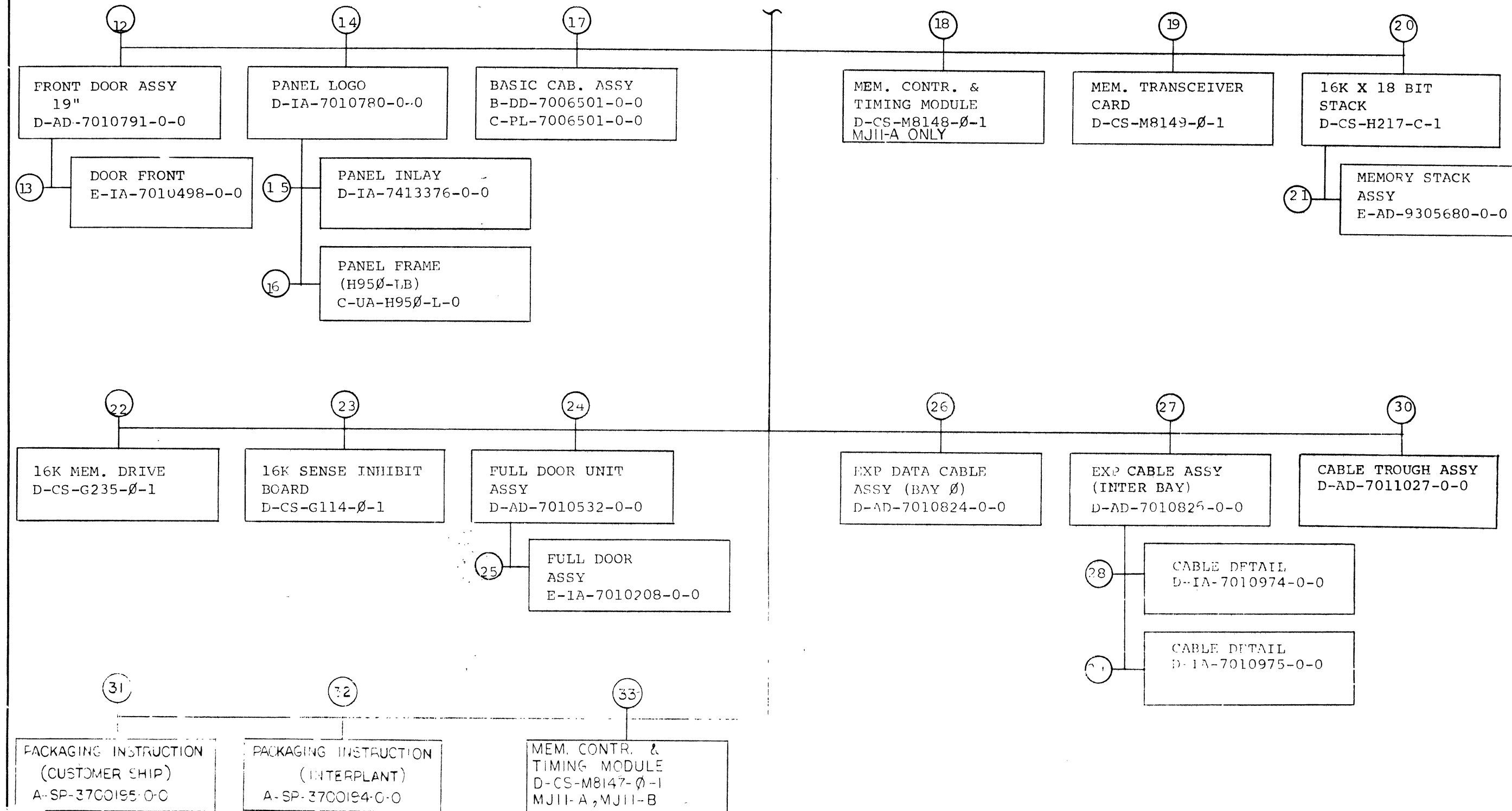
DEC 16(1325)1062-1A-R972



* #6, #7, and #8 are optional and are to be used if item #5 is not available. This information pertains only to 7010497-1-0. (MJ11-A ONLY)

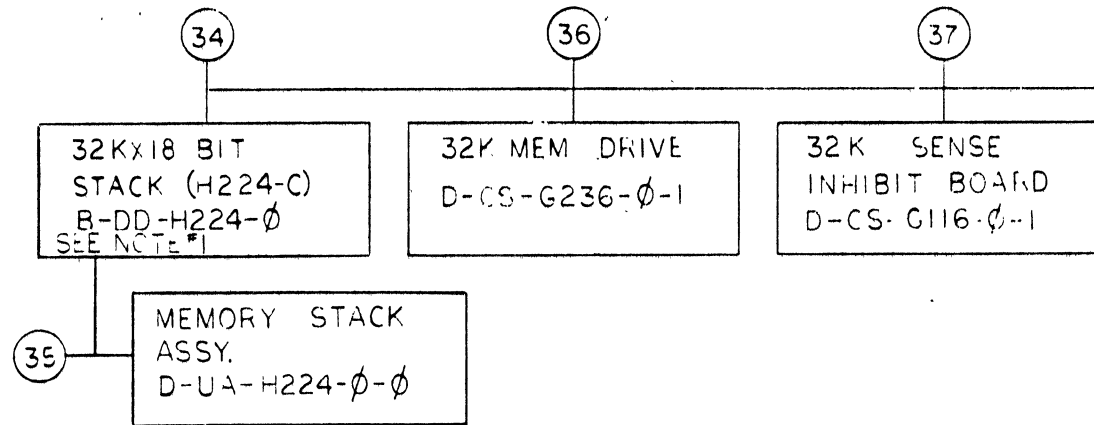
TITLE	SIZE	CODE	NUMBER	R
DRAWING DIRECTORY (MJ11-0)	B	DD	MJ11-0	k
SHEET 2 OF 10				

CONTINUED FROM SHEET 2



TITLE	SHEET	SIZE	CODE	NUMBER	REV
DRAWING DIRECTORY MJ11-Ø	3 OF 10	B	DD	MJ11-Ø	K

CONTINUED FROM PAGE 3



NOTES:
1. USE H224B STACKS WHEN NECESSARY.

TITLE DRAWING DIRECTORY MJ11-φ	SHEET 4 OF 10	SIZE CODE B DD	NUMBER MJ11-φ	REV K
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280

CUSTOMER PRINT SET		ELECTRICAL					CUSTOMER PRINT SET		ELECTRICAL						
	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE		MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	E-UA-MJ11-0-0	J	4	UNIT ASSY MJ11-0		X		8	D-CS-5411583-0-1	#	2	CIRCUIT SCHEMATIC (MEM. EL-FAB)	
X			A-PL-MJ11-0-0	J	2	UNIT ASSY MJ11-0 (PL)									
X			B-BD-MJ11-0-BD	*	2	BLOCK DIAGRAM (MJ11) (MEMORY									
X			D-TD-MJ11-0-TD	*		TIMING CONTROL)									
			C-IA-7010695-0-0		1	TIMING DIAGRAM READ/WRITE		C		9	B-DD-7010694-0	#	4	POWER SUPPLY (MJ11)	
					1	861-D TO 861-D HARNESS					D-CS-H744-0-1		1	CIRCUIT SCHEMATIC H744	
											E-CS-H754-0-1		2	CIRCUIT SCHEMATIC H754	
											D-CS-5411086-0-1		4	CIR. SCHEM. PWR. LINE MONITOR 15V/RFG	
								C		11	B-DD-861-D	#		POWER CONTROL 861-D	
								C			B-DD-861-E	#		POWER CONTROL-861-E	
X		2	D-IA-7010580-0-0	#	2	POWER HARNESS									
								X		18	D-CS-M8148-0-1	#	9	MEM. CONTR. & TIMING MOD.	
X		3	D-IA-7010581-0-0	#	1	WIRE HARNESS. AC/DC LOW									
								X		19	D-CS-M8149-0-1	#	5	MEMORY TRANSCIEVER CARD	
								X		20	D-CS-H217-C-1	#	3	16K X 18 BIT STACK	
X		5	D-CS-5411553-0-1	#	4	CIRCUIT SCHEMATIC (MEMORY)				21	E-AD-9305080-0-0		1	MEMORY STACK ASSY	
											D-IA-9605973-0-0		1	BACK PLANE WIRING ASSY	
X		7	D-CS-5411581-0-1	#	2	CIRCUIT SCHEMATIC (MEM. EL-FAB)									

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE
DRAWING DIRECTORY (MJ11-0)

SHEET 5 OF 10
SIZE CODE B DD
NUMBER MJ11-0
REV K

CUSTOMER PRINT SET		ELECTRICAL					CUSTOMER PRINT SET								
1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE	1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
X		22	D-CS-G235-0-1	#	6	16K MEM. DRIVE BD.		X		34	B-DD-H224-0	#	3	32K X 18 BIT STACK (H224-C)	
X		23	D-CS-G114-0-1	#	9	16K SENSE/INHIBIT BOARD				35	D-UA-H224-0-0 E-IA-7012189-0-0	#	1 2	MEMORY STACK ASSY. CORE PLANE WIRING ASSY.	
X		26	D-AD-7010824-0-0 D-UA-BC06R-0-0	#		EXP DATA CABLE ASSY (BAY0) BC06R I/O CABLE				36	D-CS-G236-0-1	#	4	32K MEM. DRIVE	
X		27	D-AD-7010826-0-0	#		EXP CABLE ASSY (INTER BAY)				37	D-CS-G116-0-1	#	11	32K SENSE INHIBIT	
X		28	D-IA-7010974-0-0 D-UA-BC06R-0-0	#	1 1	CABLE DETAIL I/O CABLE BC06R									
X		29	D-IA-7010975-0-0 D-UA-BC06R-0-0	#	1 1	CABLE DETAIL I/O CABLE BC06R									
X		33	D-CS-M8147-0-1	#		MEM. CONTR. & TIMING MOD.									

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE: DRAWING DIRECTORY MJ11-0
SHEET 6 OF 10
SIZE CODE: B DD
NUMBER: MJ11-0
REV: K

CUSTOMER PRINT SET		MECHANICAL					CUSTOMER PRINT SET		MECHANICAL						
	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE		MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
X		1	E-UA-MJ11-0-0	J	4	UNIT ASSY MJ11-0				6	E-AD-7010214-0-0		1	BACK PLANE (MEMORY EL-FAB)	
X			A-PL-MJ11-0-0	J	2	UNIT ASSY MJ11-0 (PI.)									
			D-IA-7409768-0-0		1	COVER, CHASSIS									
			B-MD-7413664-0-0		1	BRKT., LOCKING (SHIPPING)									
			C-IA-7010695-0-0		1	861-D to 861-D HARNESS				7	D-CS-5411581-0-1		2	CIRCUIT SCHEMATIC (MEM. EL-FAB)	
			C-MD-7414018-0-0		1	PROTECTOR, RIGHT, METAL EDGE					K-CO-5411581-0-4		-	X-Y COORD. HOLE LOCATION	
			C-MD-7414016-0-0		1	PROTECTOR, LEFT, METAL EDGE					D-AH-5411581-0-5		1	ASSY/DRILLING HOLE LAYOUT	
			C-IA-7011222-0-0		1	BASKET BAR ASSY					B-MH-5411581-0-6		1	MODULE ECO HISTORY	
			D-IA-7011223-2-0		1	WIRE CABLE BASKET					D-IA-5011580-0-0		1	ETCHED CIRCUIT BOARD	
			C-MD-7413983-0-0		1	CLAMP, WIRE BASKET									
			C-MD-7413659-0-0		1	BRACKET, SHIPPING									
		2	D-IA-7010580-0-0		2	POWER HARNESS									
			A-DC-7409873-0-0		1	DECAL				8	D-CS-5411583-0-1		2	CIRCUIT SCHEMATIC (MEM. EL-FAB)	
			A-DC-7409872-0-0		1	DECAL					K-CO-5411583-0-4		-	X-Y COORD. HOLE LOCATION	
											D-AH-5411583-0-5		1	ASSY/DRILLING HOLE LAYOUT	
											B-MH-5411583-0-6		1	MODULE ECO HISTORY	
											D-IA-5011582-0-0		1	ETCHED CIRCUIT BOARD	
											D-SS-5011582-0-1		1	SCREEN WHT	
		3	D-IA-7010581-0-0		1	WIRE HARNESS AC/DC LOW									
			A-DC-7409873-0-0		1	DECAL									
			A-DC-7409872-0-0		1	DECAL									
		4	E-IA-7010497-0-0		1	BACK PLANE ASSY (MEM)									
			A-DC-7411881-0-0		1	DECAL ASSY REV									
			A-DC-7409873-0-0		1	DECAL (J)									
			C-MD-7412993-0-0		1	MEMORY MTG. BAR				10	E-IA-7009769-0-0		1	CHASSIS 10.5	
			D-MD-7410882-0-0		1	SUPPORT, LOGIC					E-IA-7411703-0-0		1	CHASSIS FRONT	
			C-MD-7412933-0-0		1	MEMORY MTG. BRKT.					D-MD-7411705-0-0		1	BRKT. CARD GUIDE	
			A-SP-MJ11-0-PSA		8	MJ11 MEM. BACKPLANE ASSY PROCESS					D-MD-7411706-0-0		1	BRKT. HAT	
			A-SP-3700196-0-0		2	PACKAGING INSTRUCTION					E-IA-7411707-0-0		1	CHASSIS SIDE	
			A-SP-9905016-05		2	COMPRESSO CARTON									
		5	D-CS-5411553-0-1		4	CIRCUIT SCHEMATIC (MEMORY)									
			D-CO-5411553-0-4		-	X-Y COORD. HOLE LOCATION									
			D-AH-5411553-0-5		1	ASSY/DRILLING HOLE LAYOUT				11	B-DE-861-D			POWER CONT. 861-D	
			B-MH-5411553-0-6		1	MODULE ECO HISTORY					B-DE-861-E			POWER CONT. 861-E	
			D-IA-5011552-0-1		1	ETCHED CIRCUIT BOARD									

CUSTOMER PRINT SET CODES
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TITLE
DRAWING DIRECTORY (MJ11-0)

SHEET 7 OF 10

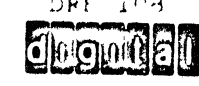
SIZE CODE
B DD

NUMBER
MJ11-0

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85	D-UA-H224-Ø-Ø E-IA-7012189-Ø-Ø	#	1	32 Kx18 BIT MEMORY STACK ASSY					
			2	CORE PLANE WIRING ASSY					
36	D-UA-G236-Ø-Ø		1	UNIT ASSY G236					
	D-CS-G236-Ø-1		4	32K MEM DRIVE					
	K-CO-G236-Ø-4		-	X-Y COORD HOLE LOCATION					
	D-AH-G236-Ø-5		4	ASSY DRILL HOLE LAYOUT					
	B-MH-G236-Ø-6		1	MODULE ECO HISTORY					
	A-PL-G236-Ø-Ø		5	PARTS LIST					
37	D-UA-G116-Ø-Ø		1	UNIT ASSY G116					
	A-PL-G116-Ø-Ø		5	PARTS LIST					
	D-CS-G116-Ø-1		11	32K SENSE INHIBIT					
	K-CO-G116-Ø-4		-	X-Y COORD HOLE LOCATION					
	D-AH-G116-Ø-5		4	ASSY DRILL HOLE LAYOUT					
	B-MH-G116-Ø-6		1	MODULE ECO HISTORY					

CUSTOMER PRINT SET
 CODES



EN-01062 29-10-1972 (325)

10 10 MJ11-Ø

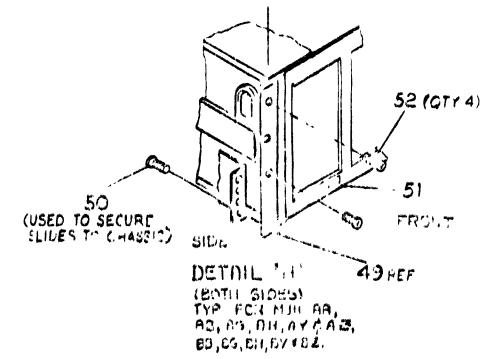
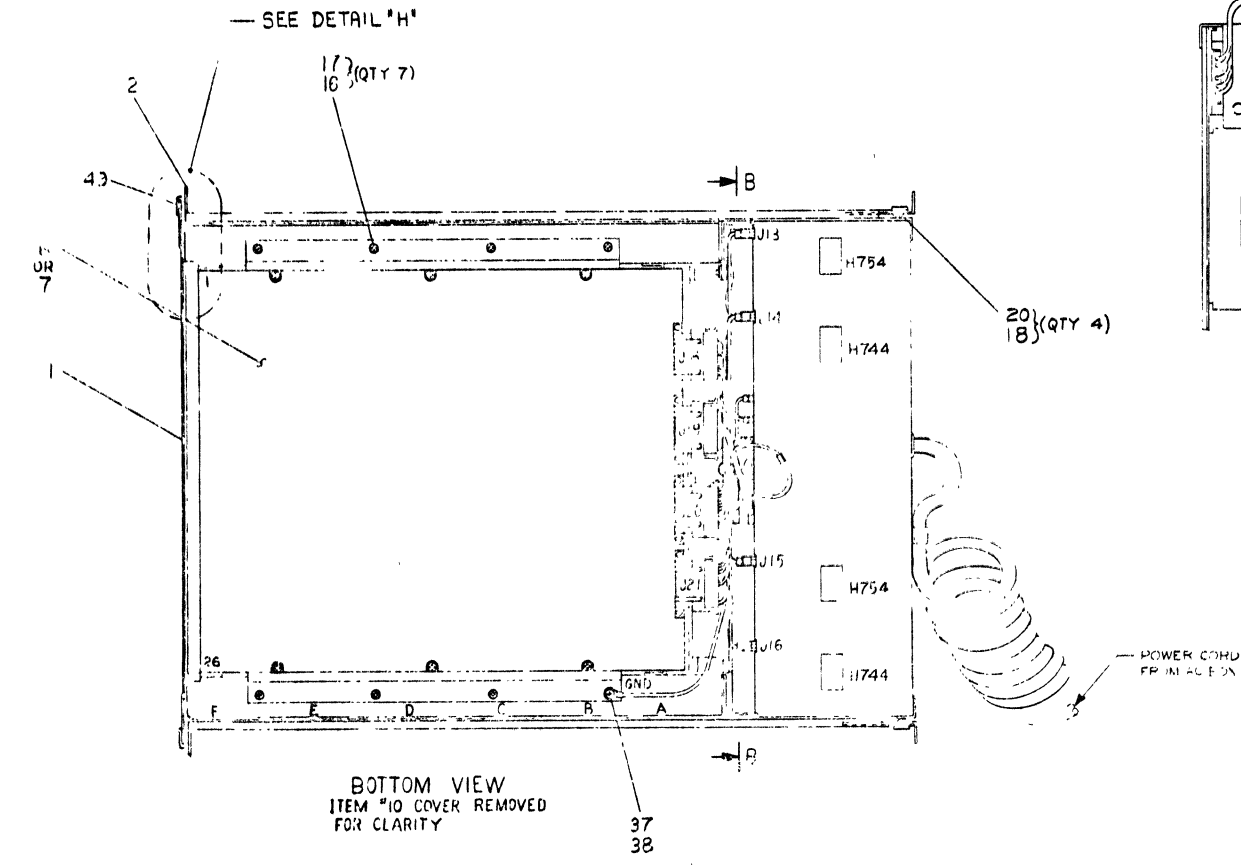
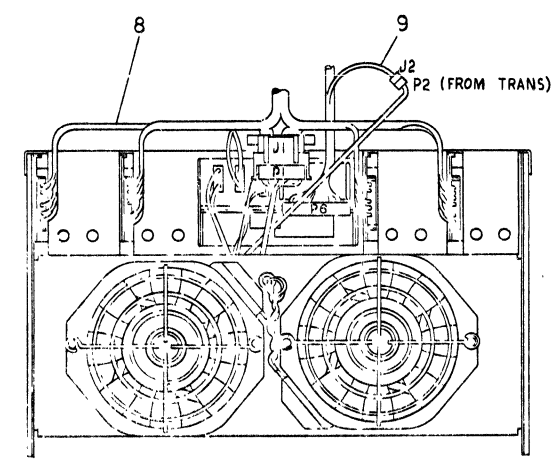
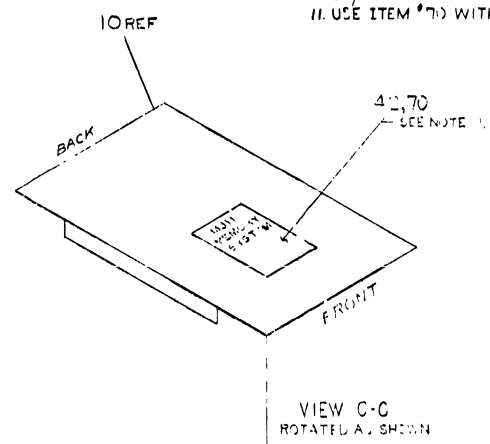
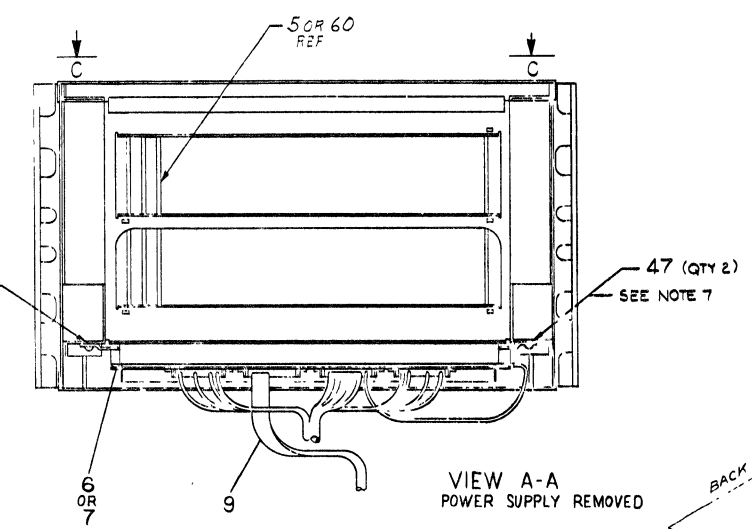
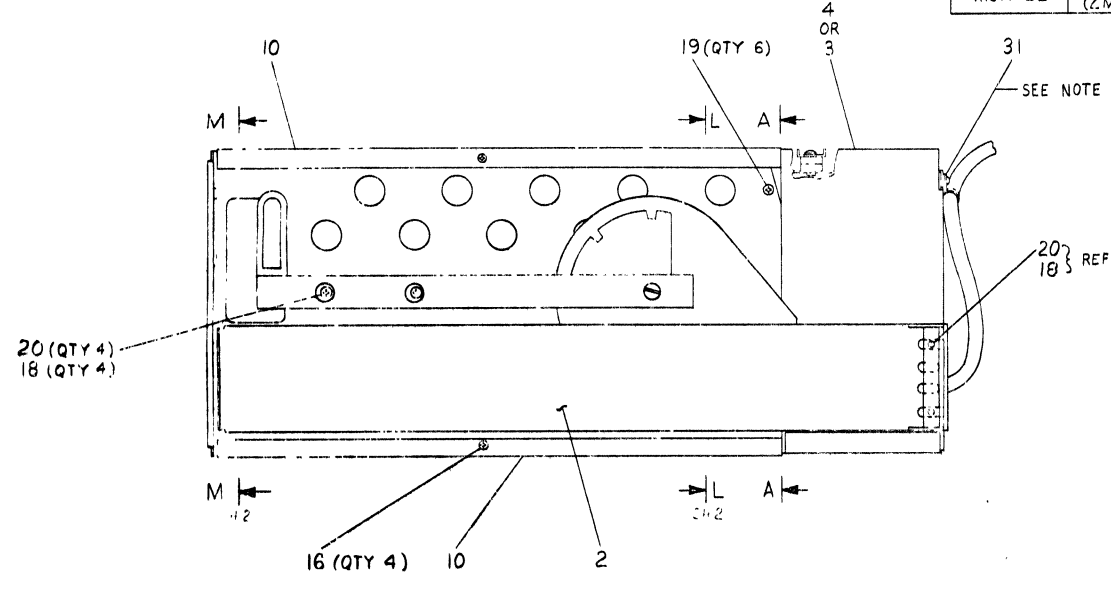
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285

REVISIONS: 1. 11/70
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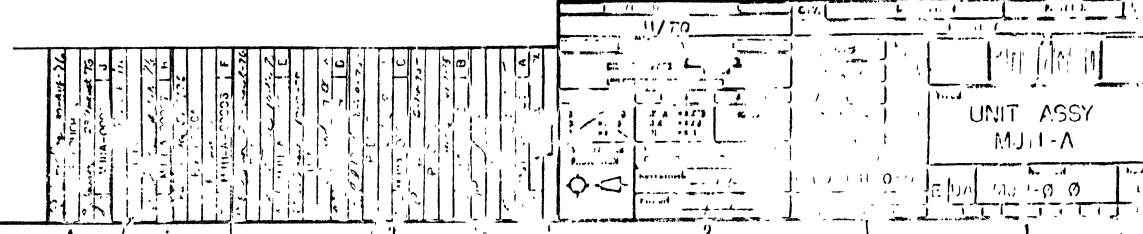
LEGEND							
NUMBER	VARIATION	NUMBER	VARIATION	NUMBER	VARIATION	NUMBER	VARIATION
MJ11-BA	64K 18 BIT MEM. 115V	MJ11-BG	MJ11-BA(5)MJ11-BE 115V	MJ11-AA	32K 18 BIT MEM. 115V	MJ11-AG	MJ11-AA(5)MJ11-AE 115V
MJ11-BB	64K 18 BIT MEM. 230V	MJ11-BH	MJ11-BB(5)MJ11-BE 230V	MJ11-AB	32K 18 BIT MEM. 230V	MJ11-AH	MJ11-AB(5)MJ11-AE 230V
MJ11-BC	MJ11-BA WITH CAB 115V	MJ11-BM	32K 18 BIT MEM. MODULE SET	MJ11-AC	MJ11-AA WITH CAB 115V	MJ11-AM	16K 18 BIT MEMORY MODULE SET
MJ11-BD	MJ11-BB WITH CAB 230V	MJ11-BY	MJ11-BA-NO CABLES 115V	MJ11-AD	MJ11-AB WITH CAB 230V	MJ11-AY	MJ11-AB-NO CABLES 115V
MJ11-BE	64K 18 BIT EXPAN. (2MJ11-BM)	MJ11-BZ	MJ11-BB-NO CABLES 230V	MJ11-AE	32K 18 BIT EXPANSION (2-MJ11-AM)	MJ11-AZ	MJ11-AD-NO CABLES 230V

- NOTES:
- USE EXISTING HARDWARE TO MOUNT ITEM # 31.
 - FOR MJ11-AA/AB/AG/AH EXPANSION UNIT INSTALLATION WITHIN 11/70 CABINET 1 USE DATA EXPANSION CABLE ASSY (70108-4 0) AND ADDRESS EXPANSION CABLE ASSY (10032-1 1) AS RECEIVED. FOR EXPANSION UNIT INSTALLATION WITHIN MJ11-AC/AD REFER TO 70108-4 0 0 FOR MODIFICATION TO BE MADE TO CABLES BEFORE INSTALLATION.
 - PIN FOR DOOR MOUNTING TO BE REMOVED REAR OF CAB (E07T01A).
 - FOR 11/70 SYSTEM EXPANSION SEE I. AR-11/70 0-1
 - ADDITIONAL ITEM #40 WITH (4) 3 PIECES OF HARDWARE ITEM #18 7016 30 TO BE SUPPLIED WITH EACH MJ11-AA/AB/AD. IT IS TO BE KITTED IN PLASTIC BAG.
 - ITEM #44 (861-D TO 861-D HARN) TO BE SUPPLIED WITH EACH MJ11-AC/AM IN PLASTIC BAG.
 - INSTALL ITEM #47 BETWEEN ITEM #1 AND ITEM #6. DO NOT USE IF ITEM #1 (EL-PAB) BACKPLANE IS USED.
 - INSTALL AND GROUND ITEM #42 USING TOL. NO. 94 10-2
 - LOCATE ITEM #42 AS SHOWN IN VIEW C-C.
 - NOTE #2 ALSO APPLYS TO MJ11-BA/BG/BH AND MJ11-B/BD.
 - USE ITEM #10 WITH MJ11-B



VIEW B-B
REVOLVED 90° CCW
WIRING SIDE OF POWER SUPPLY
ITEM # 3 OR 4

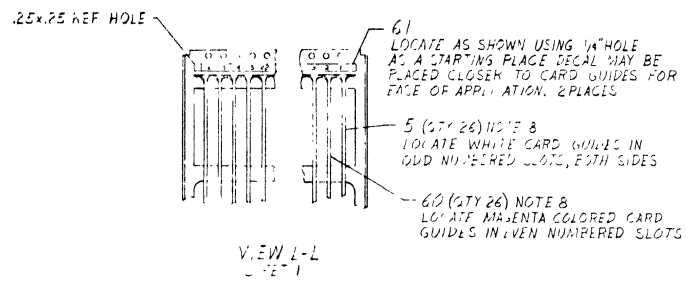
OFF SHEET PARTS LIST EXISTS SEE A PL. 11/70 0-1



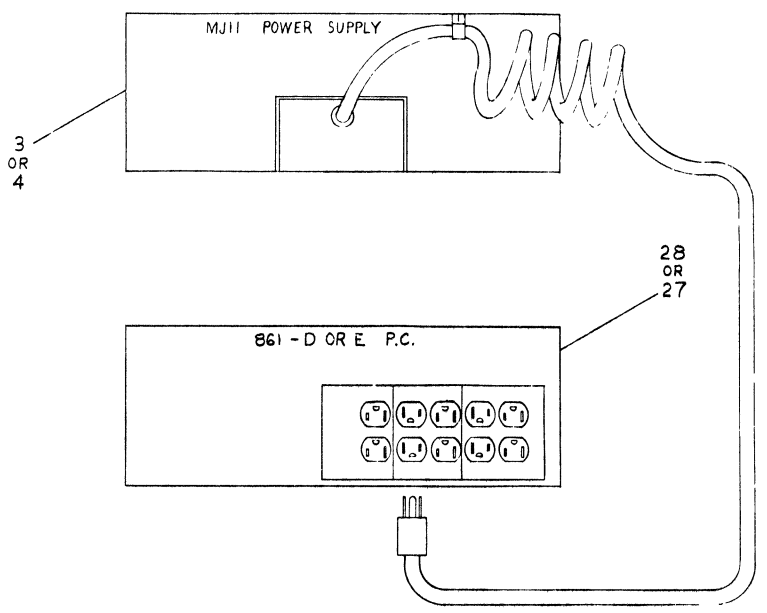
UNIT ASSY
MJ11-A

THIS DRAWING AND SPECIFICATIONS, WHETHER THE REQUIRED QUALITY OF WORKMANSHIP SHALL BE MAINTAINED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WORKMANSHIP AND EQUIPMENT ON THE SITE.

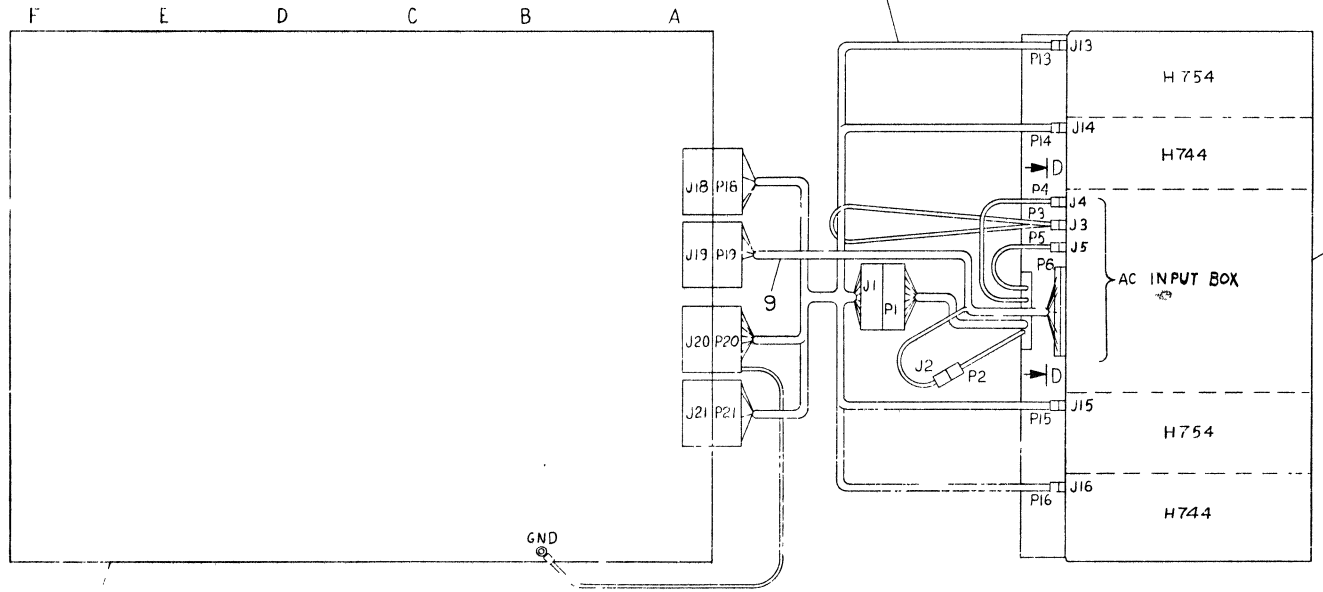
WIRE TABLE				
ITEM NO	CONN	ITEM NO	CONN	REMARKS
8	J1	3 OR 4	P.S. - P1	
	P13		P.S. - J13	
	P14		P.S. - J14	
	P15		P.S. - J15	
	P16		P.S. - J16	
	P3	3 OR 4	P.S. - J3	
	P18	6	B.P. - J18	
	P20	6	B.P. - J20	
8	P21	6	B.P. - J21	
9	P6	3 OR 4	PWR. BD	
9	P19	6	B.P. - J19	
4	J2	3 OR 4	P.S. - P2	
8	GND LUG	6	B.P.	
3 OR 4	INPUT BOX	27 OR 29		



VIEW L-L
(SEE 1)



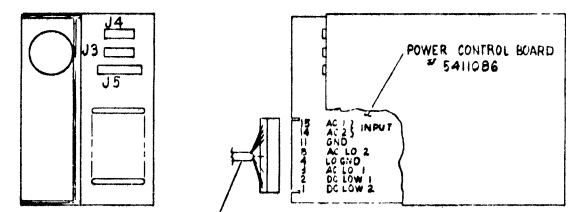
REAR VIEW
MJ11 P.S. & 861-D OR E
POWER CONTROL
REFER TO E-AR-11/70-0-1
FOR CONNECTION TO 861



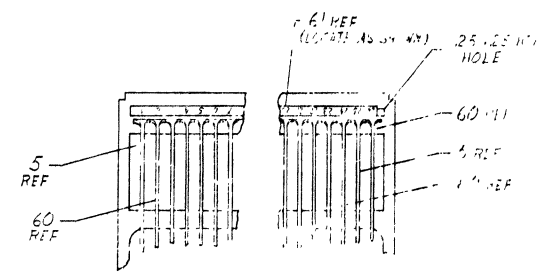
BACK PLANE (PIN SIDE)
7010497-0
OR 7010497-1 (OPTIONAL)

MJ11 POWER SUPPLY
7010694-0 (115 V)
7010694-1 (230 V)

WIRING DIAGRAM
BACK PLANE TO MJ11
POWER SUPPLY



VIEW D-D
AC INPUT BOX

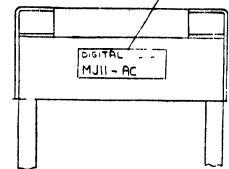


VIEW M-M
SHEET 1

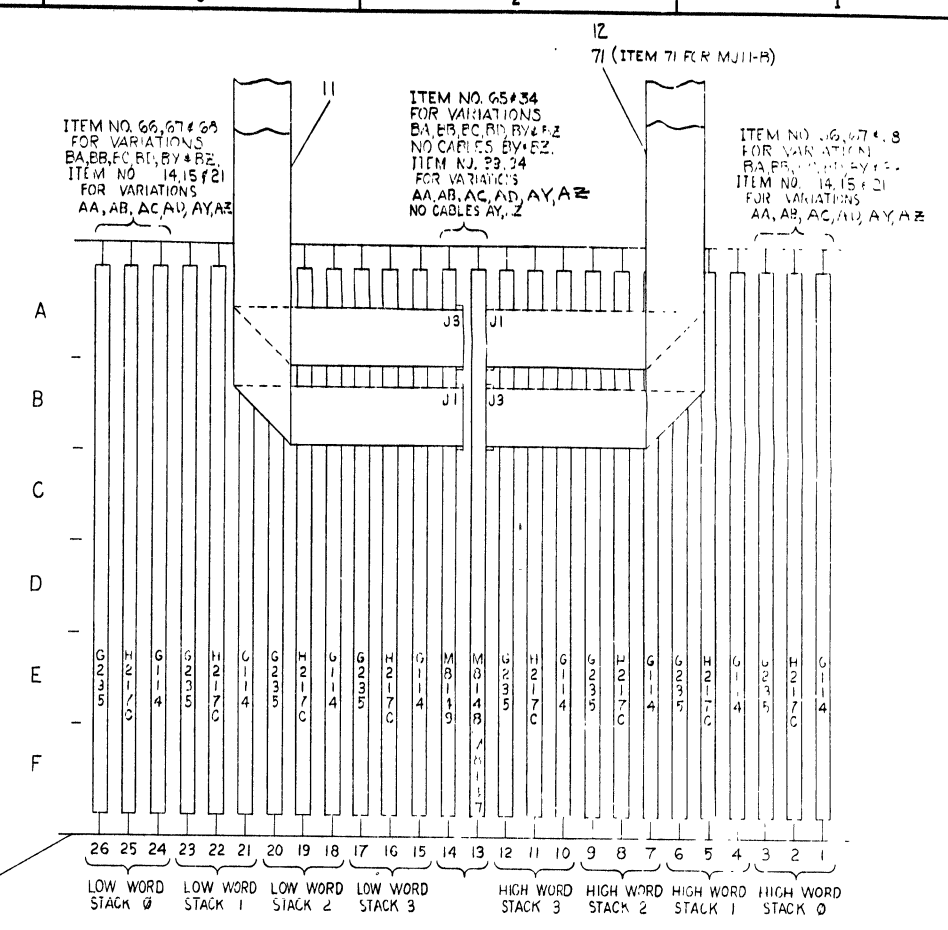
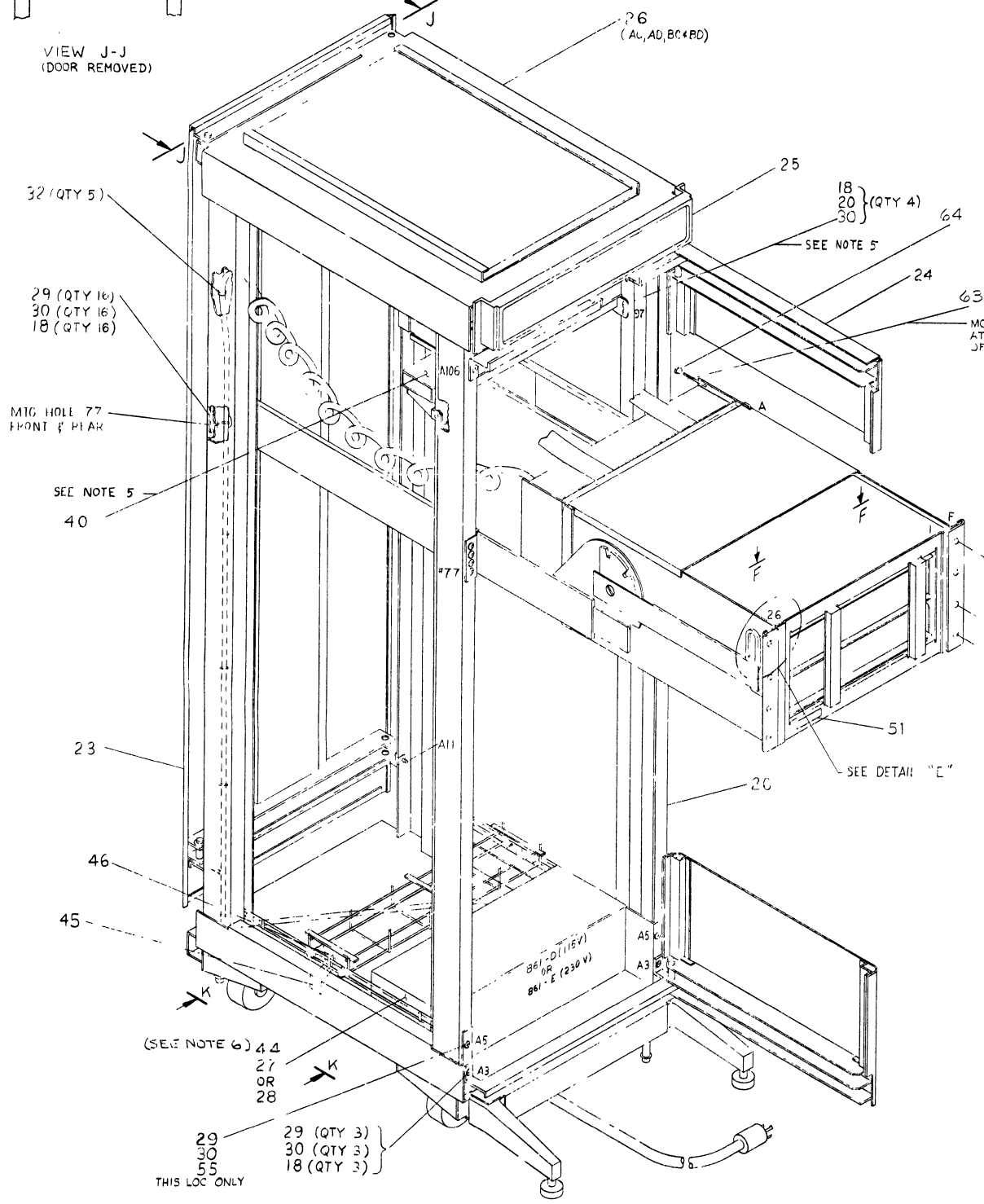
REVISIONS		
CHK	CHANGE NO.	REV.

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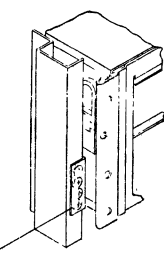
41 FOR A VARIATIONS
65 FOR B VARIATIONS



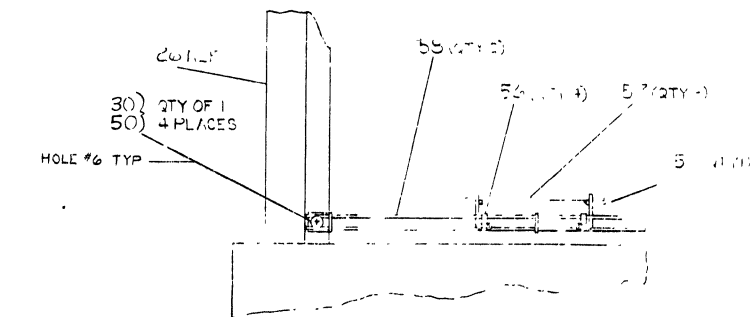
VIEW J-J
(DOOR REMOVED)



VIEW F-F
FULL SLOTS 1...26. FOR VARIATIONS
AG & AH, ITEM NO. 33, 34, 14, 15 & 21
BG & BH, ITEM NO. 65, 34, 6, 17 & 63



DETAIL 'E'
(BOTH SIDES)
TYP FOR MJ11-AC,
AD, BC & BD.

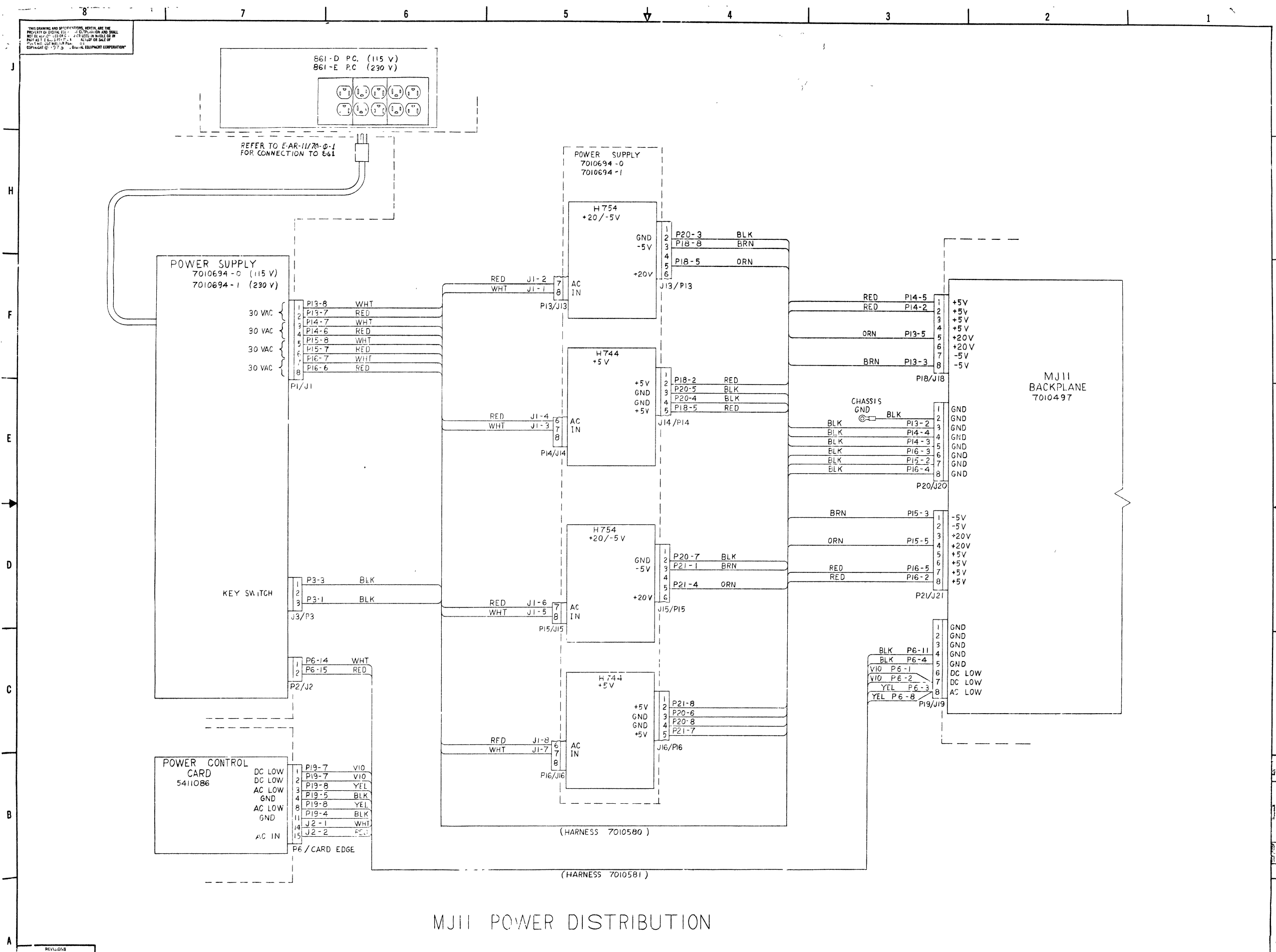


VIEW K-K

REVISIONS		
CHK	CHANGE NO	REV

TITLE	UNIT ASSY MJ11-0	REV	1 J
SCALE	1:1	DATE	11/77
DESIGNER	EUA	CHECKED	
DRAWN		APPROVED	

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MJ11 POWER DISTRIBUTION

REVISIONS		
CHK	CHANGE NO.	REV

UNIT ASSY MJ11-0 E U A MJ11-0-0

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

SEQUENCE

SEQUENCE

- | | |
|-------------------------------|------------------|
| DRAWING DIRECTORY (P.S. MJ11) | B-DD-7010694-0 |
| POWER SUPPLY MJ11 | E-AD-7010694-0-0 |
| AC INPUT BOX ASSY | D-AD-7009811-0-0 |
| AC PWR CONTROL BOARD | D-CS-5410993-0-1 |
| TRANSFORMER ASSY | E-AD-7011486-0-0 |
| DRAWING DIRECTORY H744 | B-DD-H744-Ø |
| DRAWING DIRECTORY H754 | B-DD-H754-Ø |
| PWR LINE MONITOR/ 15V REG | D-CS-5411086-0-1 |

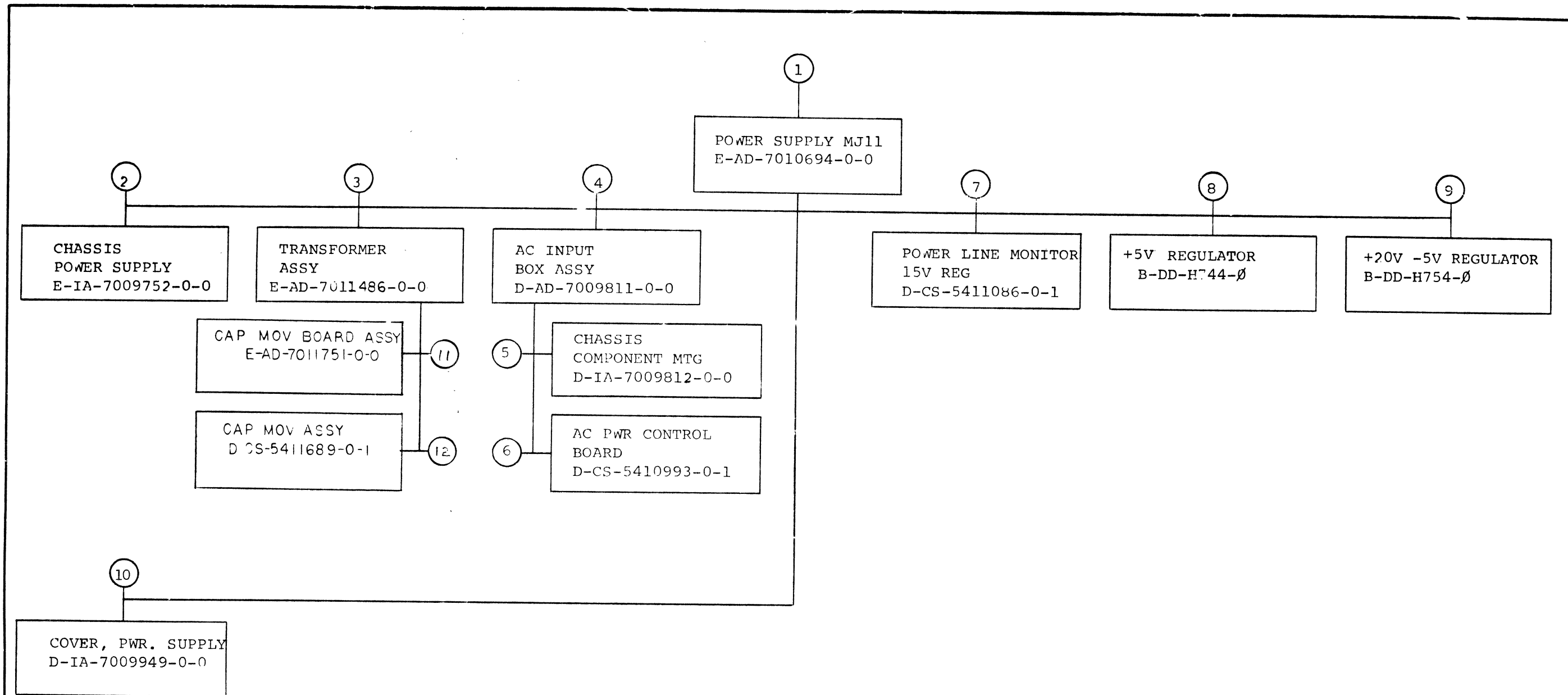
THIS IS PRINT SET

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UNIT VARIATIONS		PRINT SET			
VAR	TITLE	1			
7010694-0	120V 50/60 HZ	X			
7010694-1	240V 50/60 HZ	X			

REVISIONS	
DATE	CHG. NO.
5-X-76	7010694-3
6-76	7010694-4
	A
	B

USED ON OPTION/MODEL	DRN.	DATE	TITLE			
MJ11-A	G. MARIMI	1/28/75	DRAWING DIRECTORY POWER SUPPLY (MJ11)			
	CHK'D. D. HEALY	2/6/75				
	PROJ ENG. <i>[Signature]</i>	3/28/75				
	PRCD. R. Schmitt	3/24/75				
	FIELD SERV. <i>[Signature]</i>	3/24/75	SIZE	CODE	NUMBER	REV
SHEET 1 OF 4			B	DD	7010694-0	B
			DIST			



TITLE	DRAWING DIRECTORY POWER SUPPLY MJ11	SHEET 2 OF 4	SIZE B	CODE DD	NUMBER 7010694-0	REV B
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CUSTOMER PRINT SET		ELECTRICAL					CUSTOMER PRINT SET		ELECTRICAL											
		MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE			MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE			
X			1	E-AD-7010694-0-0	#	2	POWER SUPPLY MJ11													
X			3	E-AD-7011486-0-0	#	2	TRANSFORMER ASSY													
				A-SP-7011486-0-9			ASSEMBLY PROCEDURE													
				A-CS-7010014-TA-1			TESTER CS													
				A-SP-7010014-0-8			TEST PROCEDURE													
X			4	D-AD-7009811-0-0	#	2	AC INPUT BOX ASSY													
X			6	D-CS-5410993-0-1	#	1	AC POWER CONTROL BD.													
X			7	D-CS-5411086-0-1	#	4	PWR. LINE MONITOR/ 15V REG													
C			8	B-DD-H744-0	#	2	DRAWING DIRECTORY H744													
C			9	B-DD-H754-0	#	3	DRAWING DIRECTORY H754													
			11	D-IA-7011751-0-0		1	CAP MOV BOARD ASSEMBLY													
			12	D-CS-5411689-0-1		1	CAP MOV ASSEMBLY													
CUSTOMER PRINT SET CODES		X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED							TITLE		DRAWING DIRECTORY POWER SUPPLY MJ11		SHEET 3 OF 4		SIZE CODE		NUMBER		REV	
													B DD		7010694-0		B			

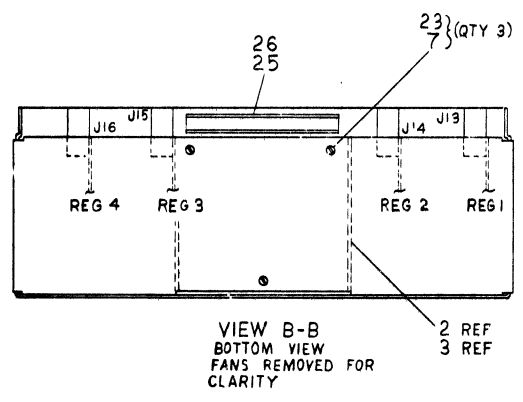
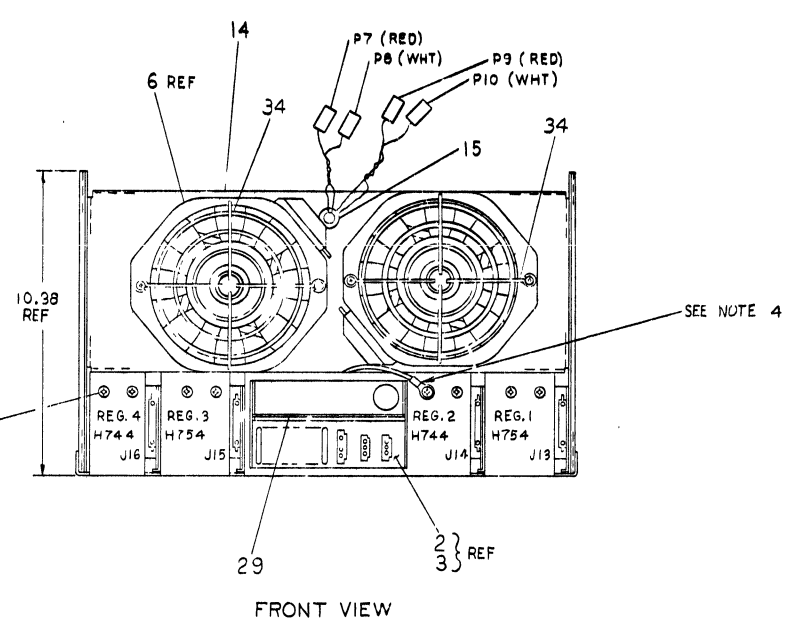
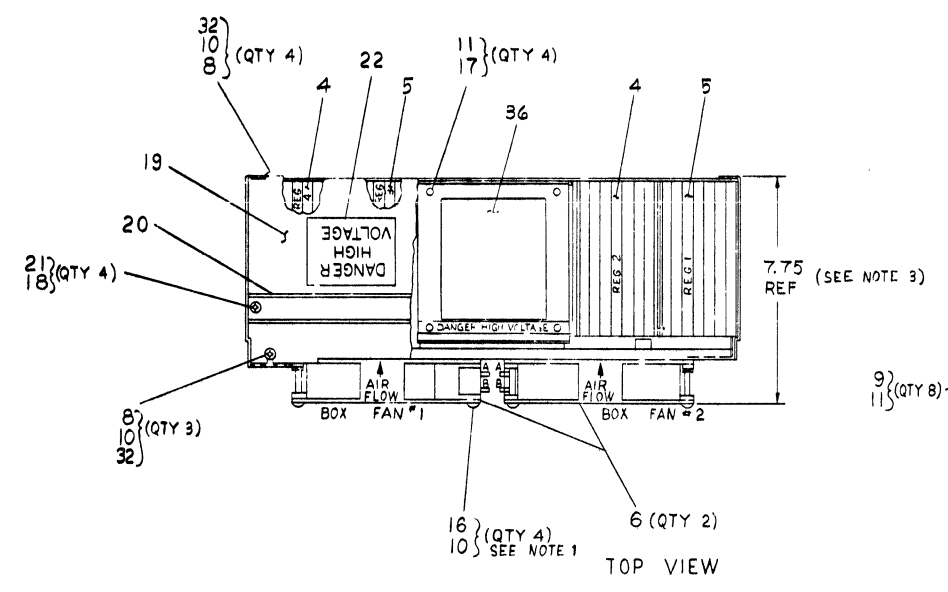
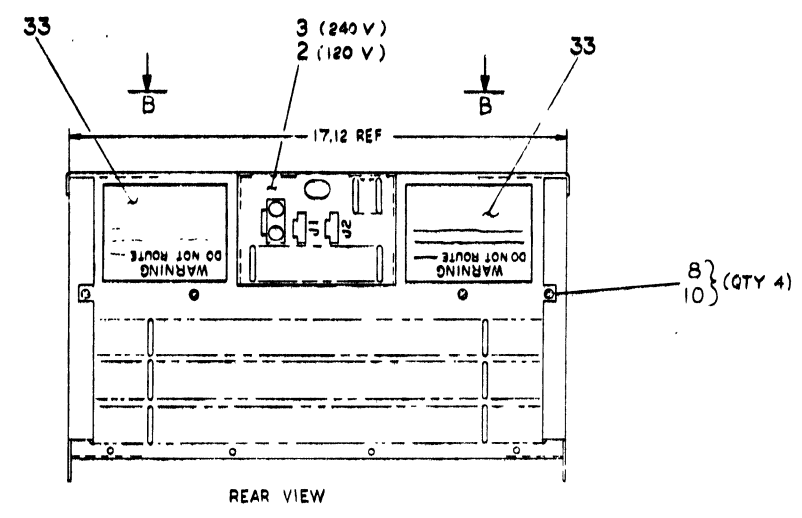
292

CUSTOMER PRINT SET		MECHANICAL					CUSTOMER PRINT SET		MECHANICAL							
1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE	1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE	
		1	E-AD-7010694-0-0		2	POWER SUPPLY MJ11				6	D-CS-5410993-0-1		1	AC PWR CONTROL BD.		
			D-IA-7009949-0-0		1	COVER, POWER SUPPLY					K-CO-5410993-0-4		1	X-Y COORDINATE HOLE LOC.		
			D-IA-7009950-0-0		1	THROUGH WIRE					D-AH-5410993-0-5		1	ASSY/DRILLING HOLE LAYOUT		
											B-MH-5410993-0-6		1	MODULE ECO HISTORY		
											5010992		REF	ETCH CIRCUIT BOARD		
		2	E-IA-7009752-0-0		1	CHASSIS, POWER SUPPLY				7	D-CS-5411086-0-1		4	PWR. LINE MONITOR/ 15V REG		
			E-IA-7411682-0-0		1	CHASSIS, POWER SUPPLY					K-CO-5411086-0-4		-	X-Y COORDINATE HOLE LOC.		
			D-MD-7411685-0-0		1	SIDE, POWER SUPPLY					D-AH-5411086-0-5		1	ASSY/DRILLING HOLE LAYOUT		
			D-MD-7411684-0-0		1	HOUSING COMP. CHASSIS					B-MH-5411086-0-6		1	MODULE ECO HISTORY		
											5011085		REF	ETCH CIRCUIT BOARD		
		3	E-AD-7011486-0-0		2	TRANSFORMER ASSY				8	B-DD-H744-Ø		2	DRAWING DIRECTORY H744		
			A-DC-7409872-0-0		1	DECAL										
		4	D-AD-7009811-0-0		2	AC IMPUT BOX ASSY				9	B-DD-H754-Ø		3	DRAWING DIRECTORY H754		
			A-DC-7412303-0-0		1	DECAL 115V										
			D-AD-7012500-0-0		1	POWER CORD				10	D-IA-7009949-0-0		1	COVER, POWER SUPPLY		
			A-DC-7412380-0-0		1	DECAL 230V					C-MD-7412473-0-0		1	STRIP, CLAMP		
			D-IA-7010302-0-0		1	POWER CONTROL HARNESS										
			D-IA-7010301-0-0		1	POWER JUMPER										
			C-IA-7010300-0-0		1	VARISTOR ASSY				11	D-IA-7011751-0-0			CAP MOV BOARD ASSEMBLY		
			A-DC-7409873-0-0		1	DECAL (PLUG NUMBERS)										
		5	D-IA-7009812-0-0		1	CHASSIS COMPONENT MTG.				12	D-AH-5411689-0-5			CAP MOV ASSEMBLY		
			D-IA-7411765-0-0		1	PLATE SWITCH					D-MD-5011688-0-1			MODULE ECO HISTORY		
			D-IA-7411766-0-0		1	PLATE COMPONENT MTG.					D-MH-5411689-0-6					
CUSTOMER PRINT SET CODES	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED						TITLE	DRAWING DIRECTORY POWER SUPPLY MJ11		SIZE CODE	B DD	NUMBER	7010694-0		REV	B
								SHEET 4 OF 4								

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NUMBER	VARIATION
700341-0	100V 50/60 HZ
700341-1	120V 50/60 HZ

NOTES:
 1. TIGHTEN FAN SCREWS TO 10 IN-LBS WITH A TORQUE SCREW DRIVER.
 2. ~~USE 1/2" HIGH FAN IN THIS ASSY. DO NOT USE 2" HIGH FAN.~~
 3. FOR ITEM #6 (DEC SPEC #121174-001) USE ONLY 1-1/2" HIGH FAN IN THIS ASSY. DO NOT USE 2" HIGH FAN.
 4. ATTACH GROUND WIRE FROM TRANSFORMER (GRN/YEL WIRE) USING EXISTING HARDWARE.



1	TRANSFORMER ASSY	E-1A-7011484-0-0	36
4	WASHER, EDCR, EX TOOTH #10	9006633	35
2	FAN GUARD	1212561-0-0	14
2	DCR, MJ11 POWER SUPPLY	3612422-00	33
7	WASHER, FLAT #6	9006658	32
1	COVER, POWER SUPPLY	D-1A-7009949-0-0	19
1	TROUGH, WIRE	D-1A-7009950-0-0	20
1	COVER, POWER SUPPLY	D-1A-7009949-0-0	19
4	SCR, PHL. HD. TRUSS #8-32 X.62	9006040	3
4	SCR, PHL. HD. TRUSS #10-32 X.50	9006073-03	17
4	SCR, PHL. HD. TRUSS #6-32 X.75	9006031-3	16
1	GROMMET .50 I.D.	9007016	15
1	CHASSIS, POWER SUPPLY	E-1A-7009752-0-0	14
2	SCR, PHL. FLT. HD # 4-40 X.50	9006013-2	12
12	WASH, INT TOOTH #10	9006635	11
13	WASH, INT TOOTH #6	9006633	10
8	SCR, PHL. HD. TRUSS #10-32 X.25	9008007-1	9
11	SCR, PHL. HD. TRUSS #6-32 X.33	9006022-3	8
3	SCR, PHL. FLT. HD. #6-32 X.31	9008404-2	7
2	FAN, 115VAC 50/60 HZ (1-1/2")	121174-00	6
2	+20V REGULATOR (H754)	E-DD-H754-0	5
2	+5V REGULATOR (H744)	E-DD-H744-0	4
1	AC INPUT BOX ASSY 240V	D-AL-7009911-2-0	3
1	DC INTJ BOX ASSY 120V	D-AL-7009911-1-0	2
1	TRANSFORMER	E-1A-7011484-0-0	36

(SEE NOTE 3)

1	TRANSFORMER	E-1A-7011484-0-0	36
2	DCR, MJ11 POWER SUPPLY	3612422-00	33
3	SCR, PHL. FLT. HD. #6-32 X.31	9008404-2	7
4	SCR, PHL. HD. TRUSS #10-32 X.50	9006073-03	17
5	SCR, PHL. HD. TRUSS #6-32 X.75	9006031-3	16
6	FAN, 115VAC 50/60 HZ (1-1/2")	121174-00	6
7	SCR, PHL. FLT. HD. #6-32 X.31	9008404-2	7
8	SCR, PHL. HD. TRUSS #10-32 X.25	9008007-1	9
9	SCR, PHL. HD. TRUSS #6-32 X.33	9006022-3	8
10	WASH, INT TOOTH #6	9006633	10
11	WASH, INT TOOTH #10	9006635	11
12	SCR, PHL. FLT. HD. #4-40 X.50	9006013-2	12
13	SCR, PHL. HD. TRUSS #8-32 X.62	9006040	3
14	CHASSIS, POWER SUPPLY	E-1A-7009752-0-0	14
15	GROMMET .50 I.D.	9007016	15
16	SCR, PHL. HD. TRUSS #6-32 X.75	9006031-3	16
17	SCR, PHL. HD. TRUSS #10-32 X.50	9006073-03	17
18	SCR, PHL. HD. TRUSS #8-32 X.62	9006040	3
19	COVER, POWER SUPPLY	D-1A-7009949-0-0	19
20	TROUGH, WIRE	D-1A-7009950-0-0	20
21	COVER, POWER SUPPLY	D-1A-7009949-0-0	19
22	DCR, MJ11 POWER SUPPLY	3612422-00	33
23	WASHER, FLAT #6	9006658	32
24	WASHER, EDCR, EX TOOTH #10	9006633	35
25	TRANSFORMER	E-1A-7011484-0-0	36

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

ANGLE: 30° 32°

QUALITY: 100%

QUANTITY & VARIATION: 100%

THIRD ANGLE PROJECTION

REMOVED DIMENSIONS INDICATED BY DASHED LINES

DATE: 11/15/73

BY: [Signature]

CHECKED: [Signature]

APPROVED: [Signature]

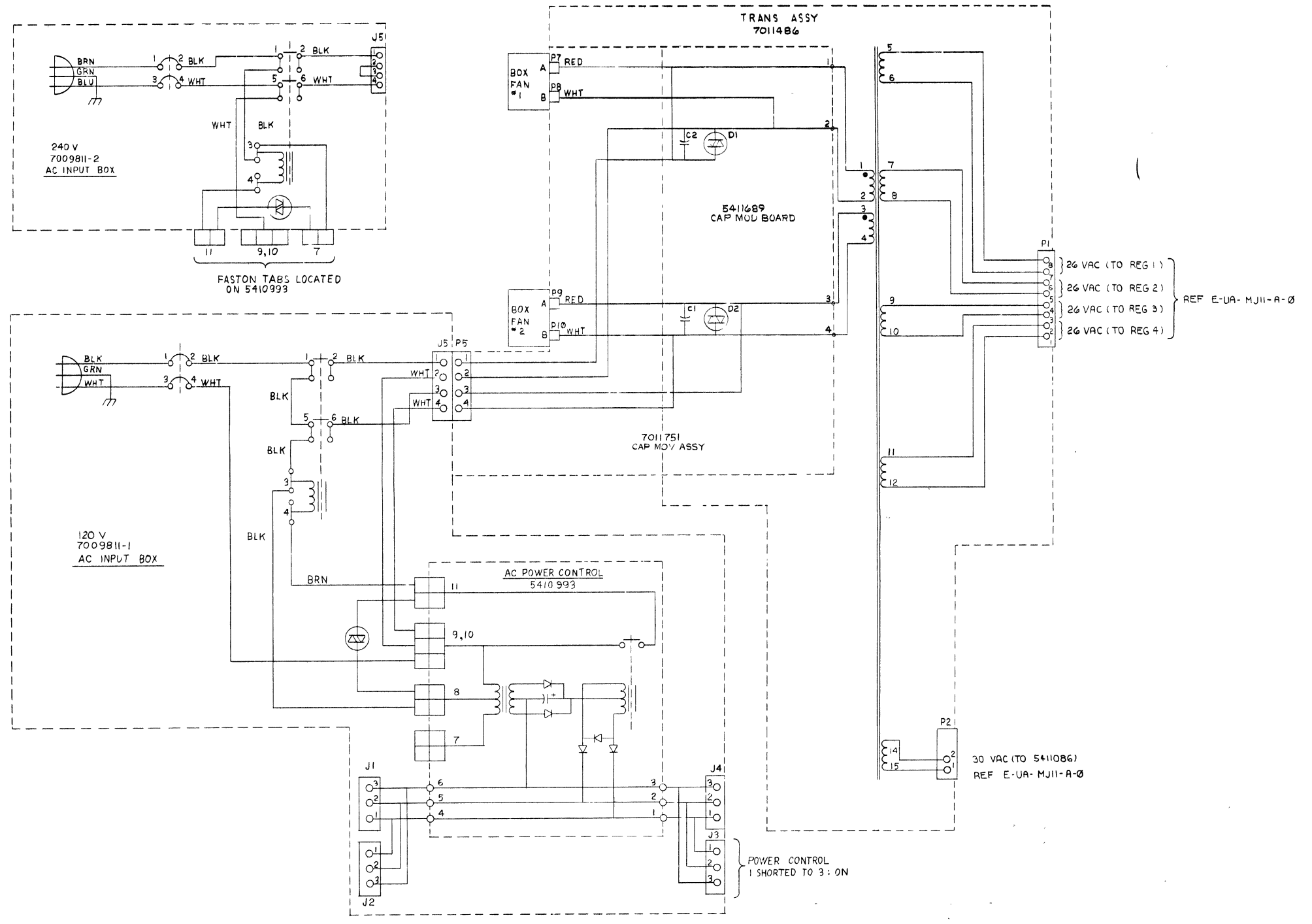
TITLE: POWER SUPPLY MJ11

REV: 7

DOC NO: E-1A-7009949-0-0

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CONNECTION TABLE		
FROM	TO	SIGNALS
P5 FROM TRANS. ASSY	J5 LOCATED ON AC INPUT BOX	120/140 VAC
P7 (RED)	FAN #1-A	120 VAC- HOT
P8 (WHT)	FAN #1-B	120 VAC- NEUTRAL
P9 (RED)	FAN #2-A	120 VAC- HOT
P10 (WHT)	FAN #2-B	120 VAC- NEUTRAL



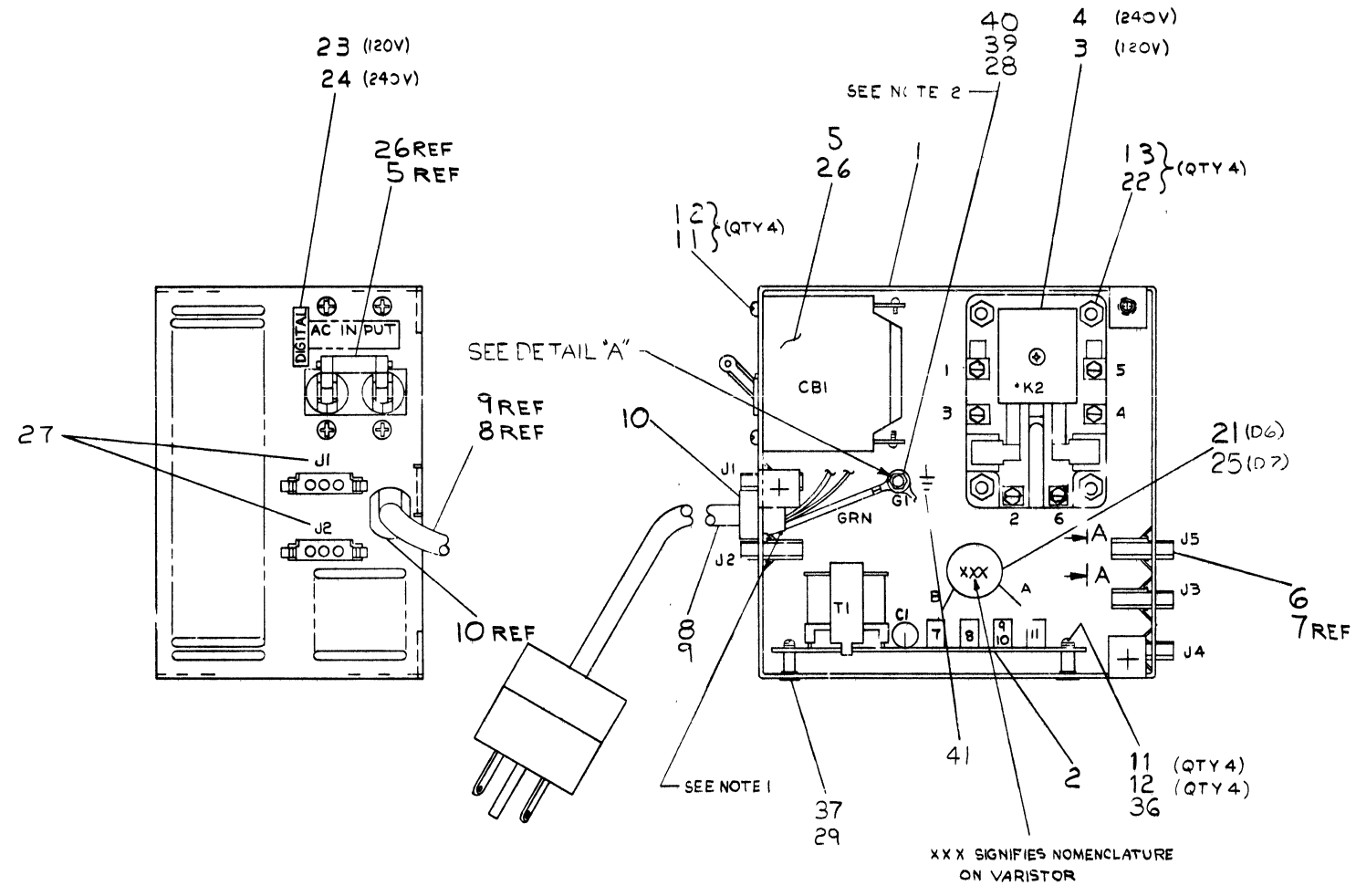
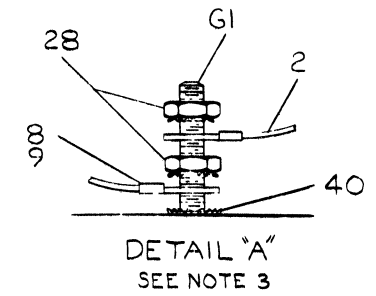
REVISIONS		
CHK	CHANGE NO	REV.

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NOTES:

1. LEAVE .5 IN ±.2 IN OF OUTER INSULATION OF LINE CORD INSIDE BOX.
2. REMOVE PAINT MASK FROM G1 ONLY AND APPLY CONDUCTIVE GREASE TO AREA AROUND STUD G1 BEFORE INSTALLING ITEMS 40 (LOCKWASHER), LUG ON GRN/YEL WIRE, AND 28 (KEPNUT).
3. ENSURE THAT LUG CONNECTED TO GRN/YEL WIRE FROM LINE CORD, WASHER ITEM 40, AND KEF NUT ITEM 28 ARE THE FIRST ITEMS INSTALLED ON G1. SEE DETAIL A.

LEGEND	
NUMBER	VARIATION
7009811-1	120V 47-63HZ 12A
7009811-2	240V 47-63HZ 6A



XXX SIGNIFIES NOMENCLATURE ON VARISTOR

QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	DECAL, SAFETY GROUND	A-DC-3612460-01	41
1	WASHER, EXT TOOTH #8	9006072	40
A/R	A/R GREASE, CONDUCTIVE	4901173-01	39
1	JUMPER, POWER (WHT)	7010301-8	38
4	SCR PH. FL HD. 6-32X1/4	9006020-02	37
4	WASHER, FLAT	9006653	36
REF	REF A.C. INPUT BOX ASSEMBLY PROCEDURE	A-SP-7009811-0-9	35
REF	REF TESTER PARTS LIST	A-PL-7009811-7A-0	34
REF	REF TESTER TEST PROCEDURE	A-SP-7009811-0-8	33
REF	REF TESTER U.A.	A-UA-7009811-0-8	32
REF	REF TESTER C.S.	A-CS-7009811-0-8	31
4	SPACER 6-32X 3/8"	9006844	29
3	NUT, KEPS #8-32	9006563	28
1	DECAL	A-DC-7409873-0-0	27
1	CIRCUIT BRK 10 A	12124-03	26
1	VARIATOR (D7) ASSY	C-IA-7010300-2-0	25
1	DECAL 230V 47-63 HZ 6A	A-DC-7412330-0-0	24
1	DECAL 115V 47-63 HZ 12A	A-DC-7412303-0-0	23
4	SCR PH FL HD #6-32 X 5/8	9006024-2	22
1	VARIATOR (D6) ASSY	C-IA-7010300-1-0	21
2	POWER JUMPER (BLK)	D-IA-7010301-2-0	20
1	POWER JUMPER (BLK)	D-IA-7010301-3-0	19
2	POWER JUMPER (BLK)	D-IA-7010301-4-0	18
1	POWER JUMPER (WHT)	D-IA-7010301-5-0	17
2	POWER JUMPER (WHT)	D-IA-7010301-6-0	16
1	POWER JUMPER (BRN)	D-IA-7010301-7-0	15
1	POWER JUMPER (BLK)	D-IA-7010301-1-0	14
4	NUT KEPS #6-32	9008186	13
8	WASHER, INT TOOTH #6	9006633	12
8	SCR PHL PAN HD #6-32X25	9006020-1	11
1	STRAIN RELIEF	9008509	10
1	POWER CORD 240V	D-AD-7012500-1	9
1	POWER CORD 120V	D-AD-7012500-0	8
1	PWR CONTROL HARN 240V	D-IA-700302-2-0	7
1	PWR CONTROL HARN 120V	D-IA-7010302-1-0	6
1	CIRCUIT BREAK 20A	12124-05	5
1	RELAY 240V	1211222-02	4
1	RELAY 120V	1211222-01	3
1	AC PWR CONTR BOARD	D-CS-5410993-0-1	2
1	CHASSIS, COMP. MTG	D-IA-7009812-0-0	1

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
B-11-K					
DIMENSIONAL TOLERANCE		DATE 6-76			
DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED		DRAWN BY [Signature]			
MILLIMETERS	INCHES	ANGLES	DATE 6-27-76		
XXX ±0.10	JXX ±0.02	90°	DATE 7-11-76		
XX ±0.08	JX ±0.02		DATE 9-11-76		
X ±0.05	X ±0.1		DATE 7/11/76		
THIRD ANGLE PROJECTION	MATERIAL SEE PARTS LIST		TITLE AC INPUT BOX ASSY		
FINISH		E-UA-H 765-0-0		J2L CODE NUMBER REV.	
		SALE NONI		D AD 7009811-0-0 J	
		1 OF 3		DIT.	

REV.	CHG	NO.	BY	DATE
A		0003	H765	1-10-75
B		0001	R WOLF	1-10-75
C		0002	R WOLF	2-10-75
D		0003	R WOLF	2-10-75
E		0010	H765	12-Feb-76
F		0017	P. PORRECA	6/1/76
G		0004	R WOLF	8-10-76
H		0005	R WOLF	8-10-76
I		0006	R WOLF	8-10-76
J		0006	P. LORUSSO	8-10-76
K		0006	P. LORUSSO	8-10-76

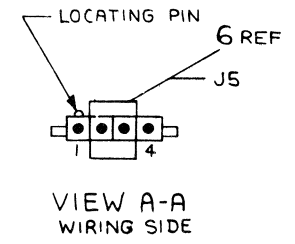
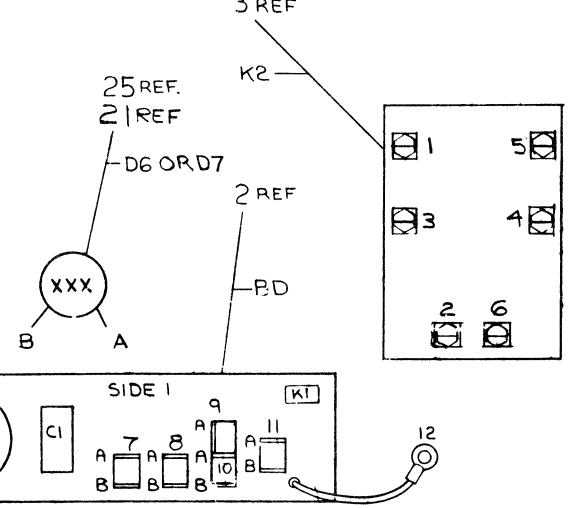
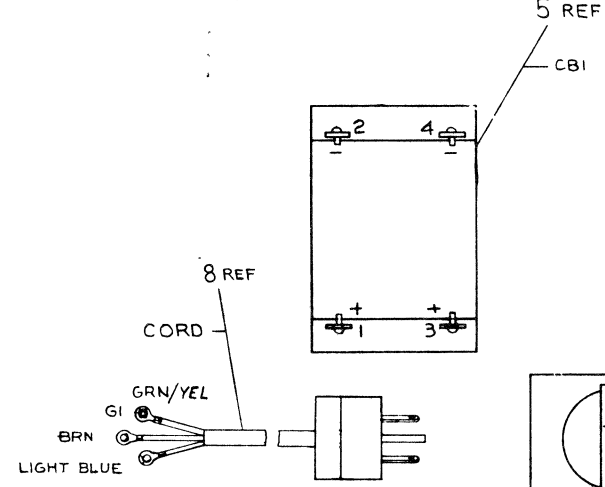
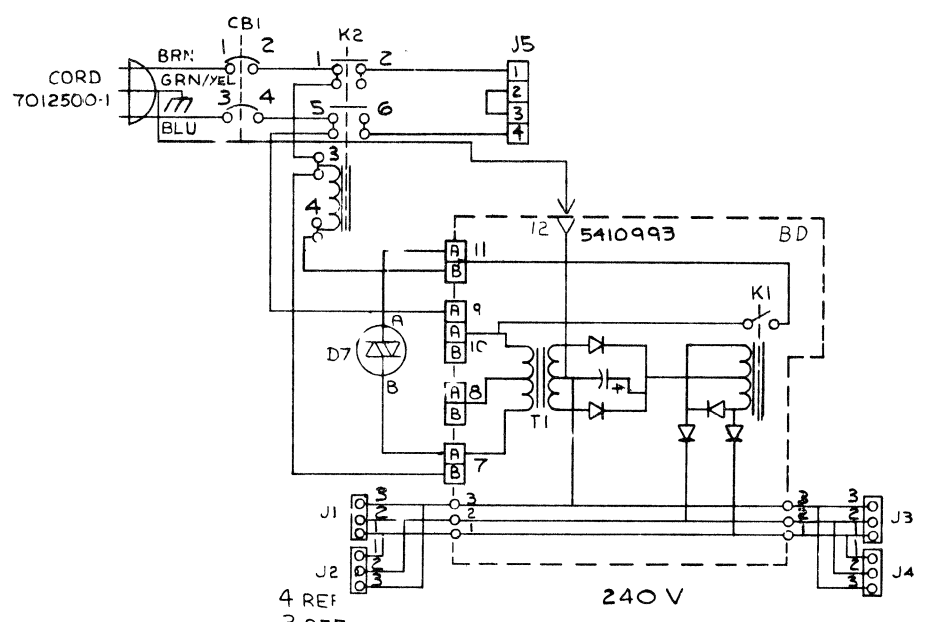
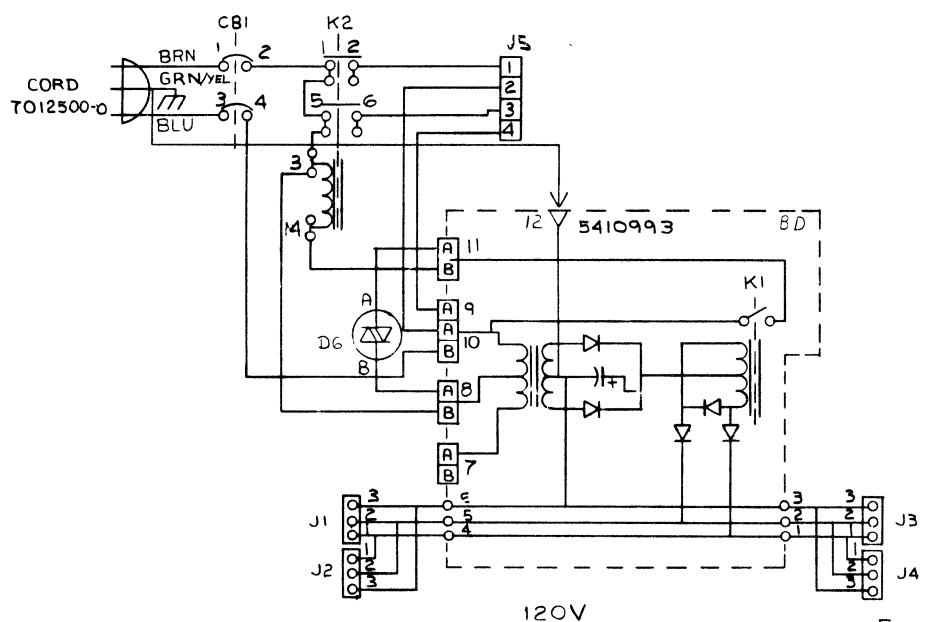
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0-0-118600Z DVA 2

D
C
B
A

D
C
B
A



REVISIONS		
CHK	CHANGE NO	REV

TITLE AC INPUT BOX ASS'Y. SIZE CODE D AD NUMBER 7009811-0-C SHEET 2 OF 3

8
7
6
5
4
3
2
1

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WIRE TABLE (120V)

ITEM NO.	DESCRIPTION		CONNECTION		CONNECTION		REMARKS
	AWG	COLOR	FROM	WITH	TO	WITH	
8	14	BRN	CORD	---	CBI-1(+)	---	
8		BLU	CORD	---	CBI-3(+)	---	
14		BLK	CBI-2(-)	---		---	
18		BLK	K2-5	---	K2-1	---	
18		BLK		---			
19		FLK	BD-5B	---	K2-3	---	
17		WHT	CBI-4(-)	---	BI-13E	---	
6		WHT	BD-10A	---	J5-1(REF)	---	
6		WHT	BD-9A	---	J5-4(REF)	---	
15		PKI	K2-4	---	BD-11B	---	
6		BLK	K2-6	---	J5-3(REF)	---	
6	14	BLK	K2-2	---	J5-1(REF)	---	
21	22	RED	D6-A	---	BD-11A	---	
21	22	RED	D6-B	---	BD-9A	---	
8	14	GRN/YEL	CORD	---	G1	---	SEE NOTE 2
2	14	GRN/YEL	BD-12	---	G1	---	SEE NOTE 2 SEE DETAIL A AND NOTE 249

WIRE TABLE (240V)

ITEM NO.	DESCRIPTION		CONNECTION		CONNECTION		REMARKS
	AWG	COLOR	FROM	WITH	TO	WITH	
8	14	BRN	CORD	---	CBI-1(+)	---	
8		BLU	CORD	---	CBI-3(+)	---	
14		BLK	CBI-2	---		---	
20		BLK	K2-3	---	K2-1	---	
19		FLK		---			
18		WHT	K2-5	---	BD-7B	---	
16		WHT		---		CBI-4(-)	---
15		BRN	K2-4	---	BD-9A	---	
7		BLK	K2-2	---	BD-11B	---	
7		FLK	J5-3(REF)	---	J5-1(REF)	---	
7	14	WHT	K2-6	---	J5-3(REF)	---	
25	22	RED	D7-A	---	J5-4(REF)	---	
25	22	RED	D7-B	---	BD-11A	---	
8	14	GRN/YEL	CORD	---	G1	---	SEE NOTE 2
2	4	GRN/YEL	BD-12	---	G1	---	SEE NOTE 2 SEE DETAIL A AND NOTE 249

0-0 1186-02 M D 2

REVISIONS

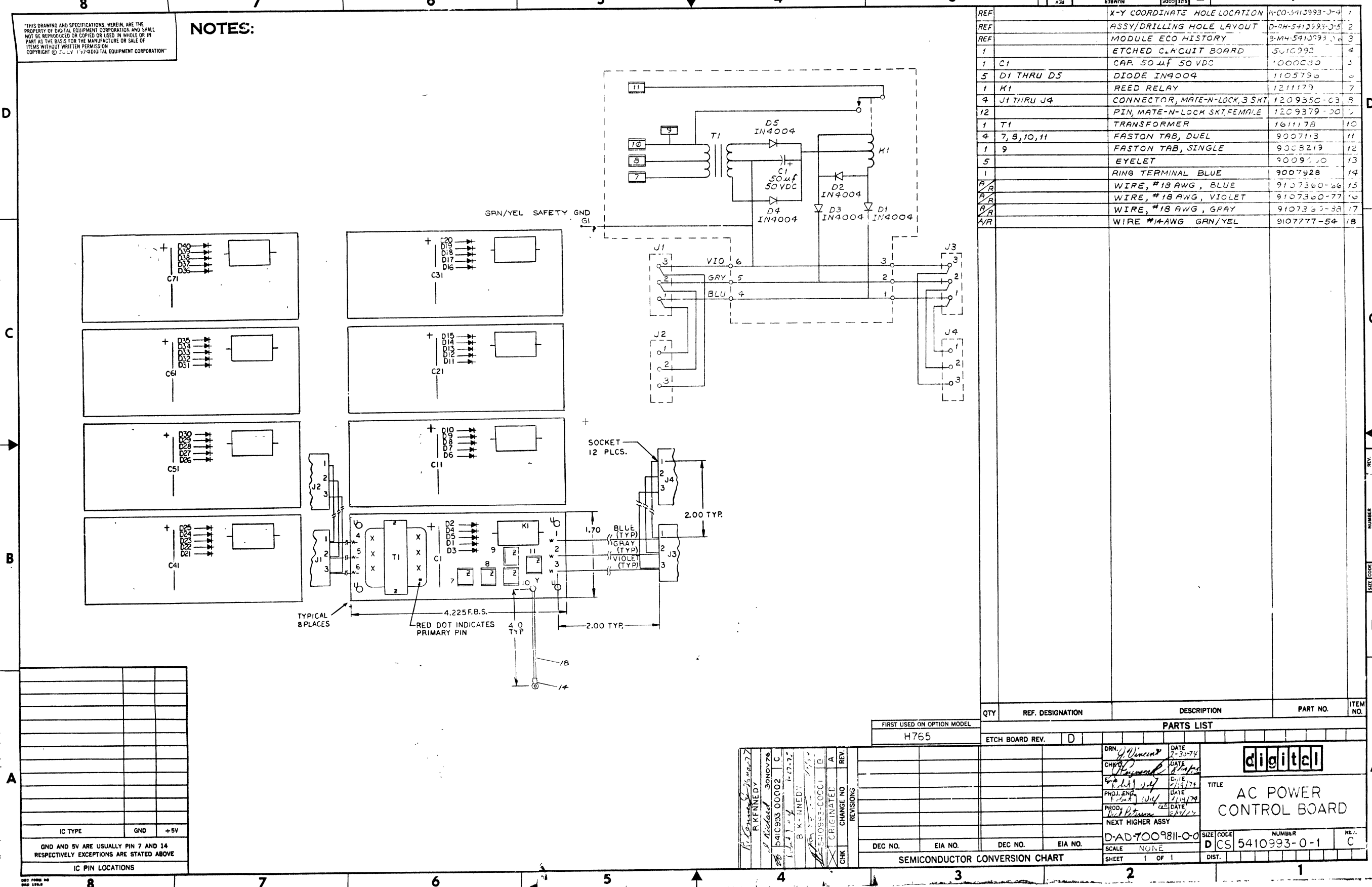
CHK	CHANGE NO.	REV.

TITLE: AC INPUT BOX ASSY
 SIZE CODE: D AD
 NUMBER: 7009311 0 0
 SCALE: NONE SHEET 3 OF 3 DIST.:

298

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NOTES:



REF	X-Y COORDINATE HOLE LOCATION	QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF	ASSY/DRILLING HOLE LAYOUT	1	H765	H765		
REF	MODULE ECO HISTORY					
1	ETCHED CLACUIT BOARD	1				
1	C1 CAP. 50µf 50VDC	1				
5	D1 THRU D5 DIODE IN4004	5				
1	K1 REED RELAY	1				
4	J1 THRU J4 CONNECTOR, MATE-N-LOCK, 3 SKT PIN, MATE-N-LOCK SKT, FEMALE	4				
1	T1 TRANSFORMER	1				
4	7, 8, 10, 11 FASTON TAB, DUEL	4				
1	9 FASTON TAB, SINGLE	1				
5	EYELET	5				
1	RING TERMINAL BLUE	1				
R	WIRE, #18 AWG, BLUE	9				
R	WIRE, #18 AWG, VIOLET	9				
R	WIRE, #18 AWG, GRAY	9				
AVR	WIRE #14-AWG GRN/YEL	1				

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL H765

ETCH BOARD REV. D

DRN. *D. Vincent* DATE 7-30-74

CHKD. *Raymond* DATE 8/13/74

PROJ. ENG. *Richard* DATE 7/19/74

PROD. *Richard* DATE 7/27/74

NEXT HIGHER ASSY

D-AD-7009811-0-0

SCALE NONE

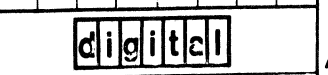
SHEET 1 OF 1

DEC. NO.	EIA NO.	DEC. NO.	EIA NO.

SIZE	CODE	NUMBER	REV.
D	CS	5410993-0-1	C

5410993-0-002 C
1-27-74
R. K. NEDY
5410993-0001 B
ORIGINATED A

CHK	CHANGE NO.	REV.	REVISIONS



TITLE AC POWER CONTROL BOARD

"THE MATERIAL HEREIN IS FOR INFORMATION PURPOSES ONLY AND IS SUBJECT TO CHANGE WITHOUT NOTICE. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS WHICH MAY APPEAR HEREIN."

DRAWING DIRECTORY

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CUSTOMER PRINT SET

DRAWING DIRECTORY B-DD-H744-0
 CIRCUIT SCHEMATIC D-CS-H744-0-1
 UNIT ASSY E-UA-H744-0-0

MFG SET

TEST PROCEDURE A-SP-H744-0-3
 MFG SPEC A-SP-H744-0-8
 PACKAGING INST A-PI-3700074-0-0

UNIT VARIATIONS

VAR	TITLE
H744	+5V REGULATOR

REVISIONS	CHK	CHANGE NO.	REV
			R
		00019	


USED ON OPTION/MODEL	DRN.	DATE	TITLE				
11/45	D. FONTAINE	2-4-72	digital				
	CHK'D.	DATE	+5V REGULATOR				
	D. FONTAINE	2-4-72	SIZE	CODE	NUMBER	REV	
	PROJ. ENG.	DATE	B	DD	H744-0	R	
	G. POTTER	2-24-72	DIST.				
	PROD.	DATE					
	A. HIRSCH	2-24-72					
SHEET	OF	4					

DRB 106A
300

DRAWING NO.	NO. OF SHTS	PART NO.	DESCRIPTION	REVISIONS															
				1	2	3	4	5	6	7	8	9	10	11	12	13			
D-AH-H744-Ø-5			ASSY DRILLING/HOLE LAYOUT	Y	Y														
E-UA-H744-Ø-Ø	1		UNIT ASSY	Y	Y														
D-CS-H744-Ø-1	1		CIRCUIT SCHEMATIC	Y	Y														
B-MH-H744-Ø-6	4		MODULE ECO HISTORY	AD	AE														
		5009725	ETCHED BOARD	H	H														
A-SP-H744-Ø-3			TEST PROCEDURE	REP															
A-SP-H744-Ø-8			REG. SPEC	REP															
D-PS-1210737-Ø-Ø	1		HEAT SINK	REP															
D-IA-5309756-Ø-Ø	1		REGULATOR BOARD	REP															
C-IA-5309760-Ø-Ø	1		COMPONENT CARTER	REP															
C-MD-5309759-Ø-Ø	1		CAPACITOR STRIP	REP															
A-PI-3700074-Ø-Ø	2		PACKAGING INSTRUCTIONS	REP															
A-PS-9905211-Ø-Ø	2		OUTER CARTON	REP															
A-PS-9905212-Ø-Ø	2		INNER PACKAGING	REP															
C-IA-7412388-Ø-Ø			2.5 CAP HOLDER	REP															

NOTES:

REVISIONS				DATE	CHG	NO	REV
18							

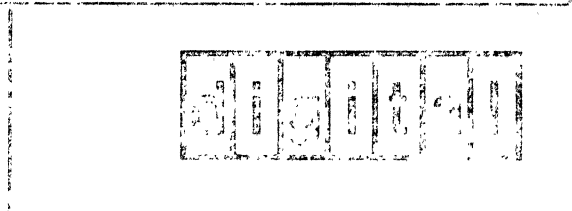
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		11 15		D. FONTAINE 2-4-72	+5V REGULATOR			
				CRK'D				
				D. FONTAINE 2-4-72				
				ENG.				
				G. POTTER 2-24-72				
				PROD.				
				A. HIRSCH 2-24-72				

DRAWING NO.	NO. OF SHTS	PART NO.	DESCRIPTION	REVISIONS															
				Y	Y														
D-AH-H744-Ø-5			ASSY DRILLING/HOLE LAYOUT	Y	Y														
E-UA-H744-Ø-Ø	1		UNIT ASSY	W	VI														
D-CS-H744-Ø-1	1		CONTROL SCHEMATIC	W	VI														
B-MH-H744-Ø-6	4		MODULE ECO HISTORY	AC	AD														
		5009725	ETCHED BOARD	H	H														
A-SP-H744-Ø-3			TEST PROCEDURE	P	P														
A-SP-H744-Ø-8			MFG SPEC	P	P														
D-PS-1210737-Ø-Ø	1		HEAT SINK	P	P														
D-IA-5309756-Ø-Ø	1		SWITCH BUILT	R	R														
C-IA-5309760-Ø-Ø	1		CONTROL CENTER	P	P														
C-MD-5309759-Ø-Ø	1		CONTROL CENTER	P	P														
A-PI-3700074-Ø-Ø	2		PACKAGING INSTRUCTIONS	P	P														
A-PS-9905211-Ø-Ø	2		OUTER BOX	P	P														
A-PS-9905212-Ø-Ø	2		INNER BOX	P	P														
C-IA-7412388-Ø-Ø			2.5 CAP HOLDER	R	R														

NOTES:

REVISIONS	DATE	CHG NO	REV													
-----------	------	--------	-----	--	--	--	--	--	--	--	--	--	--	--	--	--

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USED ON OPTION/MODEL	DRN.	D. FONTAINE	2-4-72	TITLE	+5V REGULATOR		
11/45	CHK'D	D. FONTAINE	2-4-72	SIZE CODE	BDD	NUMBER	H744-Ø
	ENG.	G. POTTER	2-24-72	REV.	R		
	PROD.	A. HIRSCH	2-24-72	SHEET	3	OF	4

REV. R
NUMBER H744-Ø
SIZE CODE BDD

DRAWING NO.	NC. OF SHTS	PART NO.	DESCRIPTION	REVISIONS																						
D-AH-H744-Ø-5			ASSY DRILLING/HOLE LAYOUT	Y	Y																					
E-UA-H744-Ø-Ø	1		UNIT ASSY	V	V1																					
D-CS-H744-Ø-1	1		CIRCUIT SCHEMATIC	W	W1																					
B-MH-H744-Ø-6	4		MODULE ECO HISTORY	AB	AB																					
		5009725	ETCHED BOARD	H	H1																					
A-SP-H744-Ø-3			TEST PROCEDURE	P	P1																					
A-SP-H744-Ø-8			MFG SPEC	P	P1																					
D-PS-1210737-Ø-Ø	1		HEAT SINK	P	P1																					
D-IA-5309756-Ø-Ø	1		REGULATOR BRKT	P	P1																					
C-IA-5309760-Ø-Ø	1		COMPONENT COVER	P	P1																					
C-MD-5309759-Ø-Ø	1		CAPACITOR STRAP	P	P1																					
A-PI-3700074-Ø-Ø	2		PACKAGING INSTRUCTION	P	P1																					
A-PS-9905211-Ø-Ø	2		OUTER CARTON	P	P1																					
A-PS-9905212-Ø-Ø	2		INNER PACKAGING	P	P1																					
C-IA-7412388-Ø-Ø			2.5 CAP HOLDER	P	P1																					

NOTES:

REVISIONS
DATE CHG NO. REV

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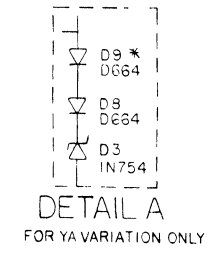
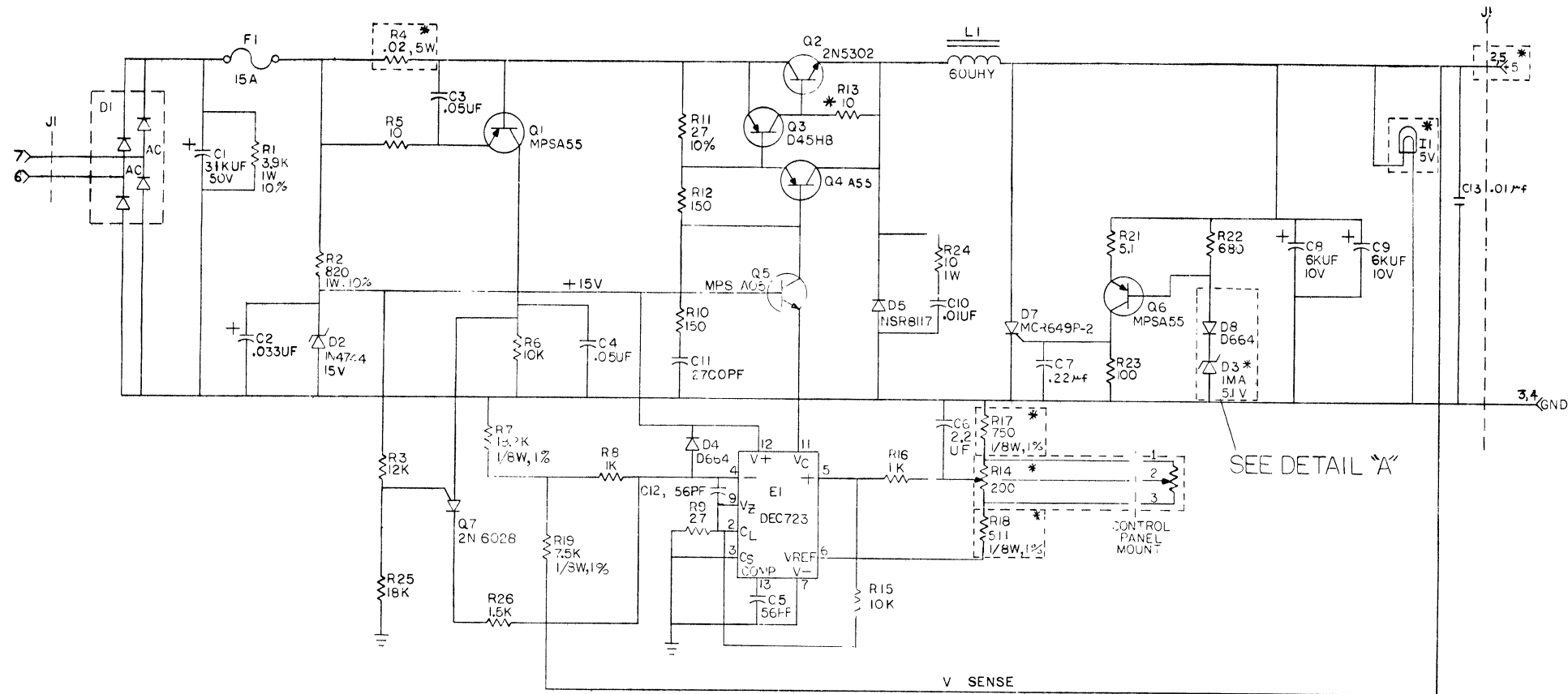


USED ON OPTION MODEL	DRN.	DATE
11745	D. FONTAINE	2-4-72
	CHK'D D. FONTAINE	2-4-72
	ENG. G. POTTER	2-24-72
	PROD. A. HIRSCH	2-24-72

TITLE		REV.	
+5V REGULATOR		R	
SIZE CODE	NUMBER		
BDD	H744-Ø		
SHEET 4 OF 4			

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1-0-72H 50 2



*FUSIBLE RESISTOR

FOR YA VARIATION COMPONENT VALUES ARE AS FOLLOWS:
 R4 - 0.6 5W
 R7 - 1K 10 TURN
 R7 - 300 1/8W 1%
 R19 - 150 1/4W 5%
 D3 - IN754
 I1 - 15 /
 J1-2,3 - 20-80V

* D9 - D664 ADDED FOR YA VARIATION ONLY

UNLESS OTHERWISE INDICATED:
 RESISTORS ARE 1/4W, 5%

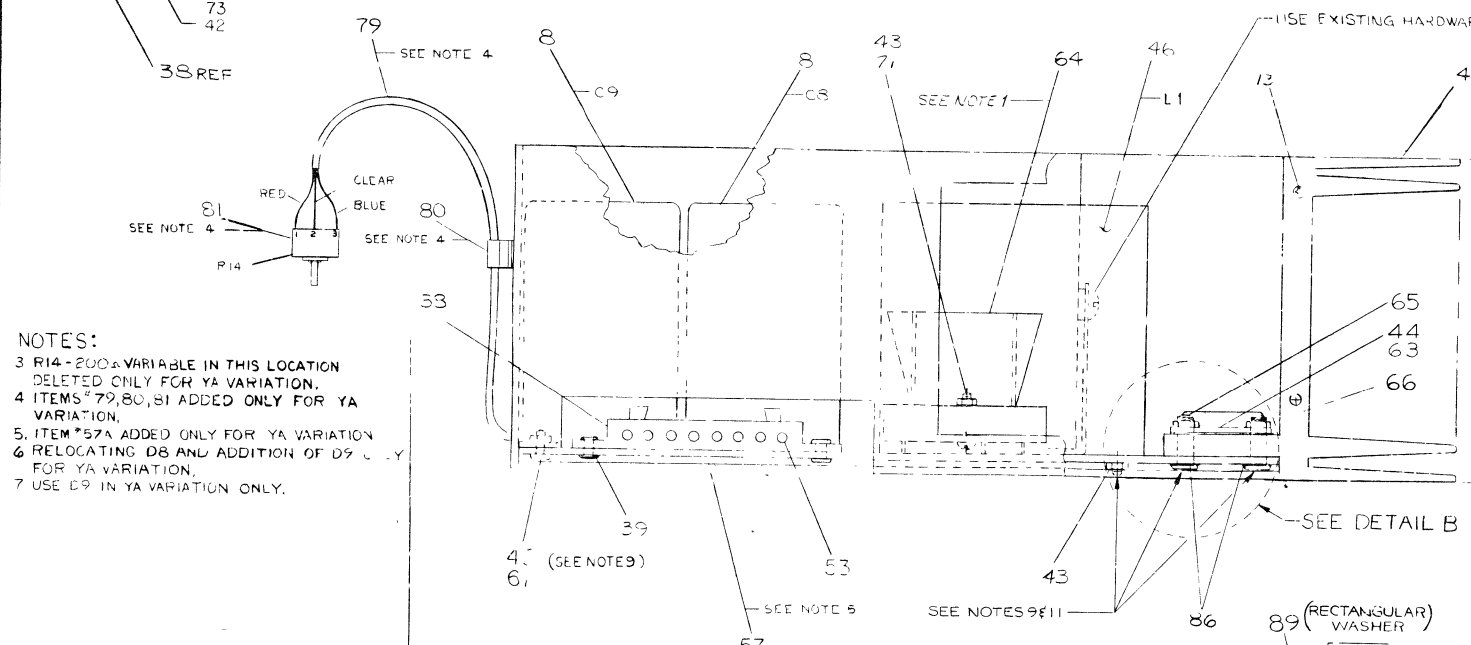
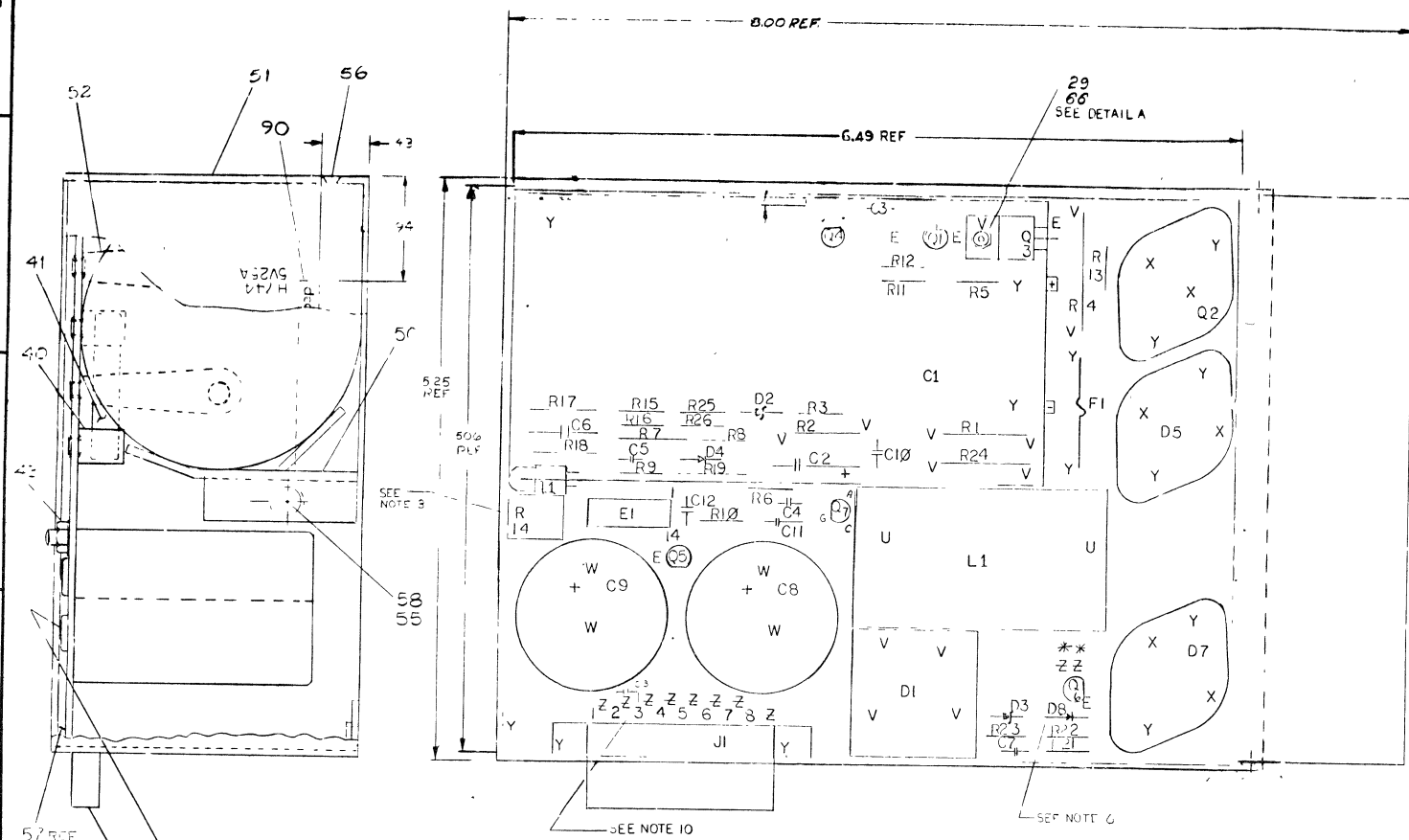
REV	DESCRIPTION	DATE
1	INITIAL DESIGN	11-2-71
2	REVISED	1-3-72
3	REVISED	1-17-72
4	REVISED	1-17-72
5	REVISED	1-17-72
6	REVISED	1-17-72
7	REVISED	1-17-72
8	REVISED	1-17-72

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
		PARTS LIST		
		ETCH BOARD REV F H		
		EQUIPMENT CORPORATION		
		5V REGULATOR		
		SIZE CODE DCS NUMBER H744-0-1 REV 7		
		SCALE SHEET 1 OF 1 DIST.		

SEMICONDUCTOR CONVERSION CHART

304

8
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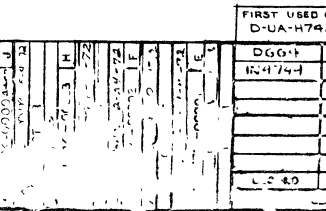
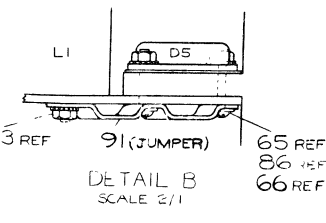
NOTES:
3 R14-200Ω VARIABLE IN THIS LOCATION DELETED ONLY FOR YA VARIATION.
4 ITEMS #79,80,81 ADDED ONLY FOR YA VARIATION.
5. ITEM #57A ADDED ONLY FOR YA VARIATION
6 RELOCATING D8 AND ADDITION OF D9 ONLY FOR YA VARIATION.
7 USE D9 IN YA VARIATION ONLY.

QTY	REF	DESIGNATION	DESCRIPTION	PART NO.
1	R22	RES 680 1/4W 5%		1301424
1		PACKING INSTRUCTIONS		API 3700074 007
1		SCR, PHL PAN HD #4 32x5/8 LG		9006632
1	Q1	15 VOLT LAMP		1209169
4	4	LOCKWASHER #10 INT		9006635
1		DIODE ZENER 1N754		1109991
1	Q2	DIODE PWR NSK B117		1110715
1		DIODE PWR D669		1100114
1		DIODE ZENER 1N4744		1105648
1		DIODE BRIDGE		1110714
2		CAP 6K4F 10V		100704
1		CAP 31K4F 50V		101058
2		CAP .051F 25V		1001774
1		CAP .033UF 100V 10%		1000050
1		CAP 2700PF 100V 5% DM		1001637
2		CAP .01MF 100V 20% DISC		1001610
1		CAP 2.2UF, 20V, CR		1002627
1		ETCHED CIRCUIT BOARD		5009125
1		ASSY/DRILLING HOLE LAYOUT		DAN H744-8-5
1		X-Y COORDINATE HOLE LOCATION		KCO H744-8-4
1		MODULE ECO HISTORY		DM-H744-04-2
1		CIRCUIT SCHEMATIC		SCM-H744-8-1

NOTES:
1. APPLY ITEM #63 (COMPOUND) BETWEEN TRANSISTOR (Q2), DIODE (D3, D7) AND ITEM #44 (WASHER) ALSO BETWEEN ITEM #44 (WASHER) AND HEAT SINK (ITEM #9). ALSO APPLY ITEM #63 (COMPOUND) BETWEEN ITEM #9 (DIODE BRIDGE) AND ITEM #64 (HEAT SINK BRIDGE).

NOTES CONT

- NOTE 8
(1) Q3 SCREW HEAD SHOULD BE ON TOP OF FLAT RECTANGULAR WASHER AS SHOWN. APPLY 6 INCH LBS. OF TORQUE WHEN SECURING Q3 TO CKT. BOARD BEFORE SOLDERING.
- NOTE 9 TORQUE APPLICATION
(1) APPLY 12 INCH LBS OF TORQUE TO THE SCREWHEAD OF #4 HARDWARE EXCEPT Q3.
(2) APPLY 12 INCH LBS OF TORQUE TO #6 HARDWARE ON L1
(3) APPLY 16 INCH LBS OF TORQUE TO ALL #6 AND #10 HARDWARE EXCEPT ON L1
(4) ALL HARDWARE TO BE TORQUED BEFORE SOLDERING
- NOTE 10
INSERT C13 INTO ETCH PAD HOLES CONNECTED TO J1 TERMINALS, 2-3.
- NOTE 11
MIN TORQUE REQUIRED FOR QC INSPECTION:
8 INCH LBS FOR #4 HARDWARE
12 INCH LBS FOR #6 AND #10 HARDWARE



IC TYPE	QTY	REF	DESCRIPTION	PART NO.
74181	1	Q1	15 VOLT LAMP	1209169
74181	1	Q2	DIODE PWR NSK B117	1110715
74181	1	Q3	DIODE PWR D669	1100114
74181	1	Q4	DIODE ZENER 1N4744	1105648
74181	1	Q5	DIODE BRIDGE	1110714
74181	2	C8, C9	CAP 6K4F 10V	100704
74181	1	C1	CAP 31K4F 50V	101058
74181	2	C4, C3	CAP .051F 25V	1001774
74181	1	C2	CAP .033UF 100V 10%	1000050
74181	1	C11	CAP 2700PF 100V 5% DM	1001637
74181	2	C10, C13	CAP .01MF 100V 20% DISC	1001610
74181	1	C6	CAP 2.2UF, 20V, CR	1002627
74181	1		ETCHED CIRCUIT BOARD	5009125
74181	1		ASSY/DRILLING HOLE LAYOUT	DAN H744-8-5
74181	1		X-Y COORDINATE HOLE LOCATION	KCO H744-8-4
74181	1		MODULE ECO HISTORY	DM-H744-04-2
74181	1		CIRCUIT SCHEMATIC	SCM-H744-8-1

QTY	REF	DESIGNATION	DESCRIPTION	PART NO.
1	D5	DIODE PWR NSK B117		1110715
3	D4, D8, D9*	DIODE PWR D669		1100114
1	D2	DIODE ZENER 1N4744		1105648
1	D1	DIODE BRIDGE		1110714
2	C8, C9	CAP 6K4F 10V		100704
1	C1	CAP 31K4F 50V		101058
2	C4, C3	CAP .051F 25V		1001774
1	C2	CAP .033UF 100V 10%		1000050
1	C11	CAP 2700PF 100V 5% DM		1001637
2	C10, C13	CAP .01MF 100V 20% DISC		1001610
1	C6	CAP 2.2UF, 20V, CR		1002627
1		ETCHED CIRCUIT BOARD		5009125
1		ASSY/DRILLING HOLE LAYOUT		DAN H744-8-5
1		X-Y COORDINATE HOLE LOCATION		KCO H744-8-4
1		MODULE ECO HISTORY		DM-H744-04-2
1		CIRCUIT SCHEMATIC		SCM-H744-8-1

CUSTOMER PRINT SET INDEX

SEQUENCE

SEQUENCE

THIS IS PRINT SET

1	0	0	0	0
---	---	---	---	---

DRAWING DIRECTORY
+20 VOLT REGULATOR

B-DD-H754-0
1-CR-H754-0-1

UNIT VARIATIONS

VAR	TITLE	PRINT SET
H754-0	+20 VOLT REGULATOR	X

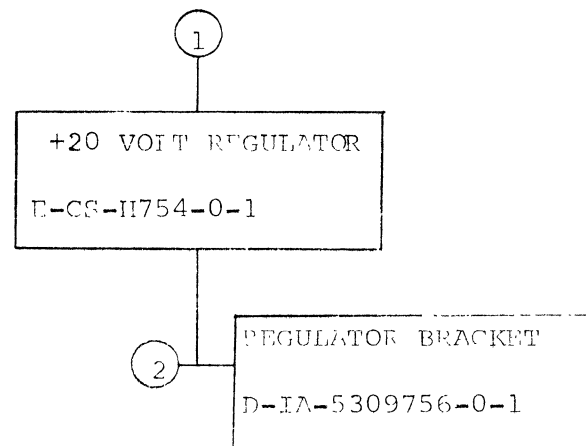
DEC 16 (0251) 1062 1A-R 972

REVISIONS		CHG. NO.	REV
DATE	11-3	H754-1C	B

USED ON OPTION/MODEL	DRM.	DATE	TITLE	SIZE	CODE	NUMBER	REV
	CHK'D.	DATE		B	DD	H754-0	B
	PROJ ENG.	DATE		DIST			
	PROD.	DATE					
	FIELD SERV.	DATE					
SHEET		OF					

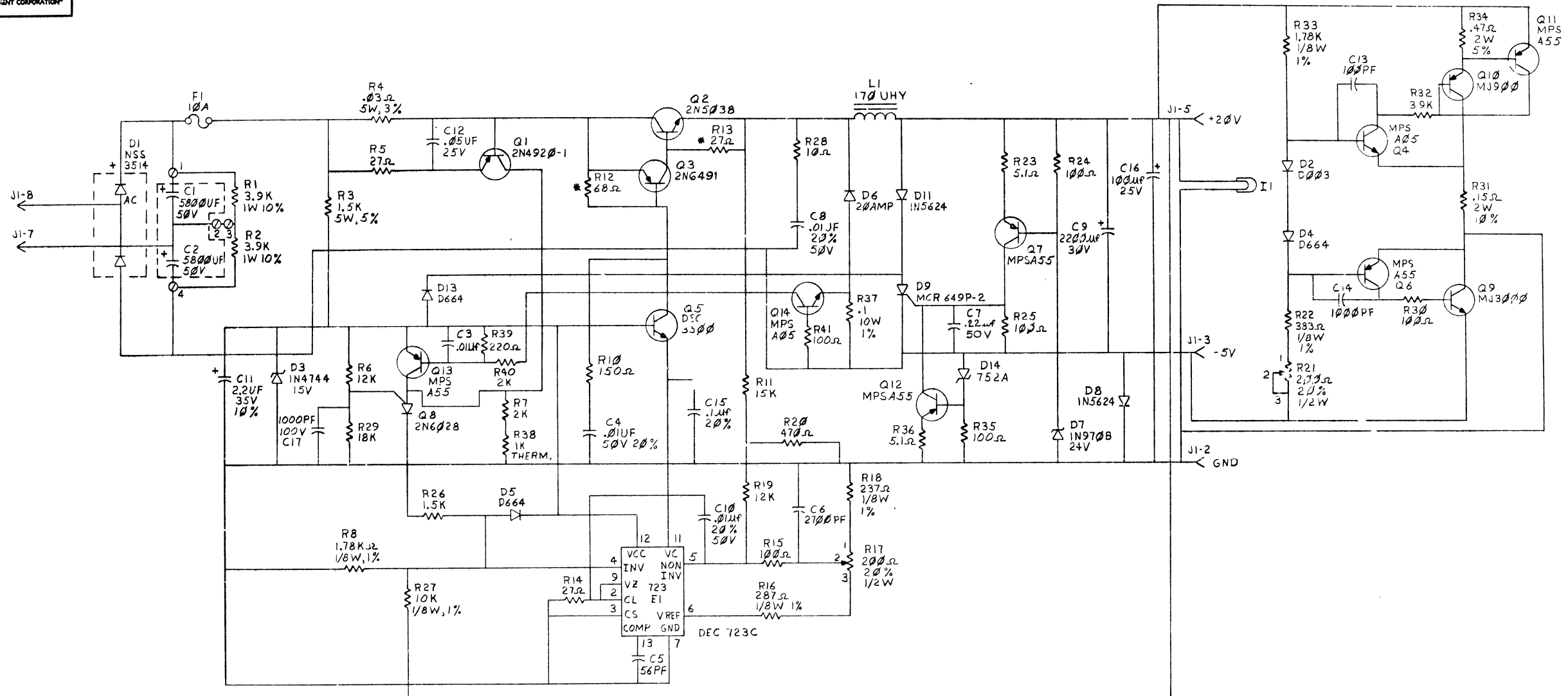
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1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE	1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
X		1	B-DD-H754-0	#	3	DRAWING DIRECTORY		X		1	E-CS-H754-0-1	#	2	+20 VOLT REGULATOR	
X			E-CS-H754-0-1	#	2	+20 VOLT REGULATOR					D-PS-1210737-0-0		1	HEAT SINK REGULATOR	
			K-CO-H754-0-4	-	-	X-Y COORDINATE HOLE LOCATION					C-TA-5309758-0-0		1	CAPACITOR BRACKET	
			D-AH-H754-0-5		1	ASSY/DRILLING HOLE LAYOUT									
			B-MH-H754-0-6		1	MODULE ECO HISTORY									
			5010531	-	-	ETCHED CIRCUIT BOARD									
			A-SP-H754-0-8		3	MANUFACTURING SPEC									
										2	D-TA-5409756-0-0		1	BRACKET REGULATOR	
											A-SS-5309756-0-1		1	SILK SCREEN	
											A-SS-5309756-0-2		1	SILK SCREEN	
											A-SS-5309756-0-3		1	SILK SCREEN	

CUSTOMER PRINT SET CODES	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED	TITLE	SIZE	CODE	NUMBER	REV
		+20 VOLT REGULATOR	B	DD	H754-0	B
			SHEET 2	OF 3		



TITLE	SHEET OF	SIZE CODE	NUMBER	REV
+20 VOLT REGULATOR	3 OF 3	D CD	H754-Ø	B

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* FUSIBLE RESISTOR

DATE	DESIGNED BY	3-25-72	FILE NO.	H754
CHKD BY	DATE	3-27-72	TITLE	+20 VOLT REGULATOR
APP'D BY	DATE	3-27-72	SIZE	D.C.S.
REV. DATE	BY	3-27-72	NUMBER	H754-0-1
NON-FUNCTIONAL			REV	T
SHEET 2 OF 2				

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NOTES:

D
C
B
A

IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

DCS 5411086-0-1 2

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
1	R29	RESISTOR 3.4K 1/4W 1%	1305114	55
1	R28	RESISTOR 5.82K 1/4W 1%	1305128	56
1	R27	RESISTOR 4.93K 1/4W 1%	1305324	57
0	R35	RESISTOR 24.6K 1/4W 1%	1305405	58
0	R24	RESISTOR 200 20 02PR	1309150-10	59
1	R32	RESISTOR 18 2K 1/4W 1%	1309412	60
0	R5, R6	RESISTOR 2.5W 5% WW	1309884	61
0	Q7	TRANSISTOR U1E3055	1510555	62
4	Q2, Q3, Q5, Q6, Q10, Q19	TRANSISTOR MPS405	1510705	63
0	Q4, Q9	TRANSISTOR MPS A55	1510706	64
0	Q8	TRANSISTOR 2N 4441	1505867	65
4	Q1, Q11, Q12, Q13, Q16	TRANSISTOR 2N 4258	1509142	66
4	Q14, Q15, Q17, Q18	TRANSISTOR 2N 5433	1511888	67
0	L1	INDUCTOR 500 uH	1811849	68
1	T1	TRANSFORMER	1812026	69
0	E1	I.C DEC 723	1910415	70
0		SCREW, PHM #4-40 X 7/16 LG.	9008012-1	71
0		SCREW, PHM #8-32 X 1/4 LG.	9008020-1	72
0		SCREW, PHM #8-32 X 7/8 LG.	9006502	73
0		KEP NUT #4-40	9006557	74
0		KEP NUT #10-32	9006565	75
2		WASHER, ITTLKWR #10	9006635	76
0		WASHER, FLAT	9006668	77
0	(WI)	SPLIT LUG	9006859	78
0		SPACER, 1/4AF X 1/2	9006844	79
4		CABLE TIE	9007880	80
2		TERMINAL	9007950	81
2		SCREW, PHM #10-32 X 1/4 LG.	9008007-1	82
0		TERMINAL	9008150	83
0		KEP NUT #6-32	9008185	84
0	A/R	COMPOUND, THERMAL JOINT	9008268	85
0		WASHER, MICA	9008424	86
0		WASHER, RING	9008440	87
0		FUSE HOLDER	9009141	88
1	R22	RESISTOR, 390, 2W 10%	1301880	89
0	W1	JUMPER	9009185	90
2	W2	WIRE #18 STRANDED BLK	9107360-0-0	91
REF	REF	MODULE TEST PROCEDURE	A-SP-1145-TA-2	92
1	1	WASHER, RING	9006713	93
1	1	.010 INCH SHIM	7413721-0-0	94
REF	REF	ENG. SPEC. AND TEST PROC.	A-SP-5411086 0-3	95

FIRST USED ON OPTION MODEL **PARTS LIST**

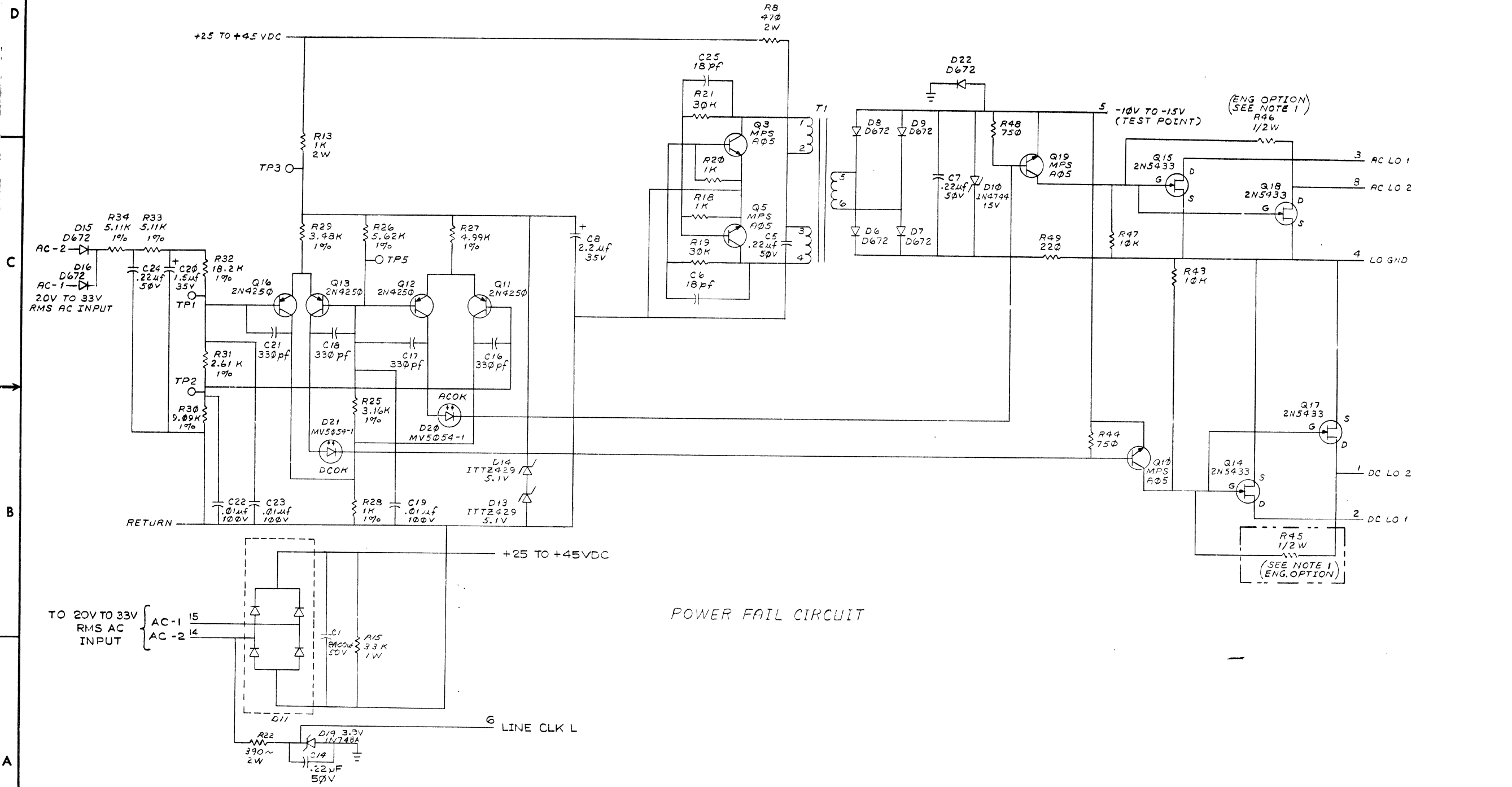
CHK	CHANGE NO	REV	ETCH BOARD REV	D	DRN	9/9/77	DATE	10-7-77	
					CHK'D		DATE	10-7-77	
					BY	<i>M. Brown</i>	DATE	10-7-77	TITLE PWR. LINE MONITOR / 15V REG.
					PROJ	<i>M. Brown</i>	DATE	10-7-77	
									SIZE CODE DIST DCS 5411086-0-1 NUMBER REV. J

SEMICONDUCTOR CONVERSION CHART

DCS 5411086-0-1 1

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DCS 5411086-0-1

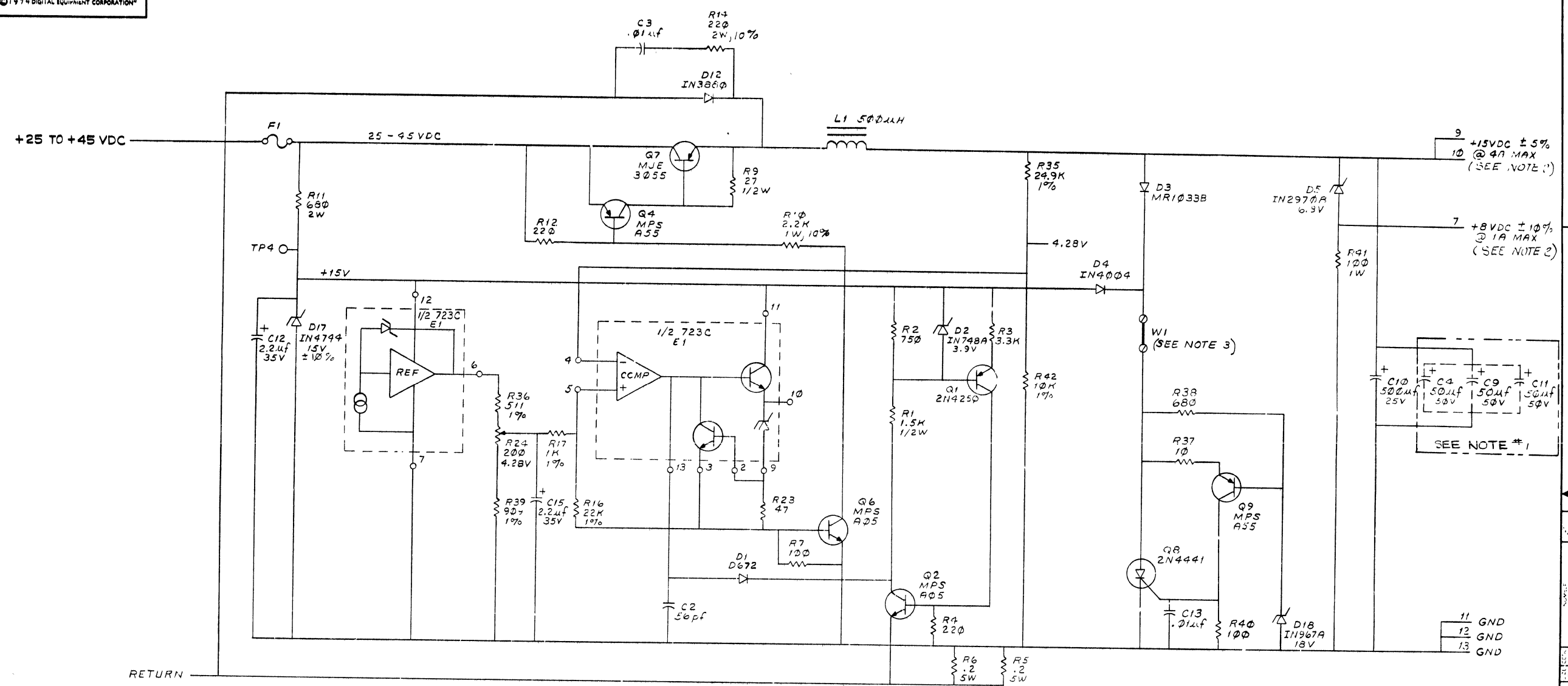


REVISIONS		
CHK	CHANGE NO	REV.

8	7	6	5	4	3	2	1	
TITLE: PWR. LINE MONITOR/15V REG.						SIZE CODE: DCS 5411086-0-1	NUMBER: 4	REV.:
SCALE: ---						SHEET: 3 OF 4	DIST:	

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DCS 5411086-0-1



15V REGULATOR
(SEE NOTE #4)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	PWR. LINE MONITOR/15V REG.	SIZE CODE	DCS 5411086-0-1	NUMB. R	1	REV.	1
SCALE	1/1	SHEET	4 OF 4	DIST			

314

4

3

2

1

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QUANTITY/VARIATION

Table with columns: TITLE NO., DWG NO./PART NO., DESCRIPTION, and 20 columns for quantity/variation (MJ11-PA through MJ11-PG). Rows 1-43 list various components like chassis, power supply, card guide, and cables.

D

C

B

D

C

B

REVISIONS table with columns: REV. NO., REV., DATE, and description of changes.

FIRST USED IN (PART NUMBER) MODEL MJ11-A

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ±.005 FRACTIONS ± 1/64 ANGLES ± 0°30'

MATERIAL FINISH

UNLESS OTHERWISE SPECIFIED DWN. B BLOUGGET CRO'D. D HEALY ENG. P DUDE PROJ. ENG. P DUDE PROD. D. WEAVER

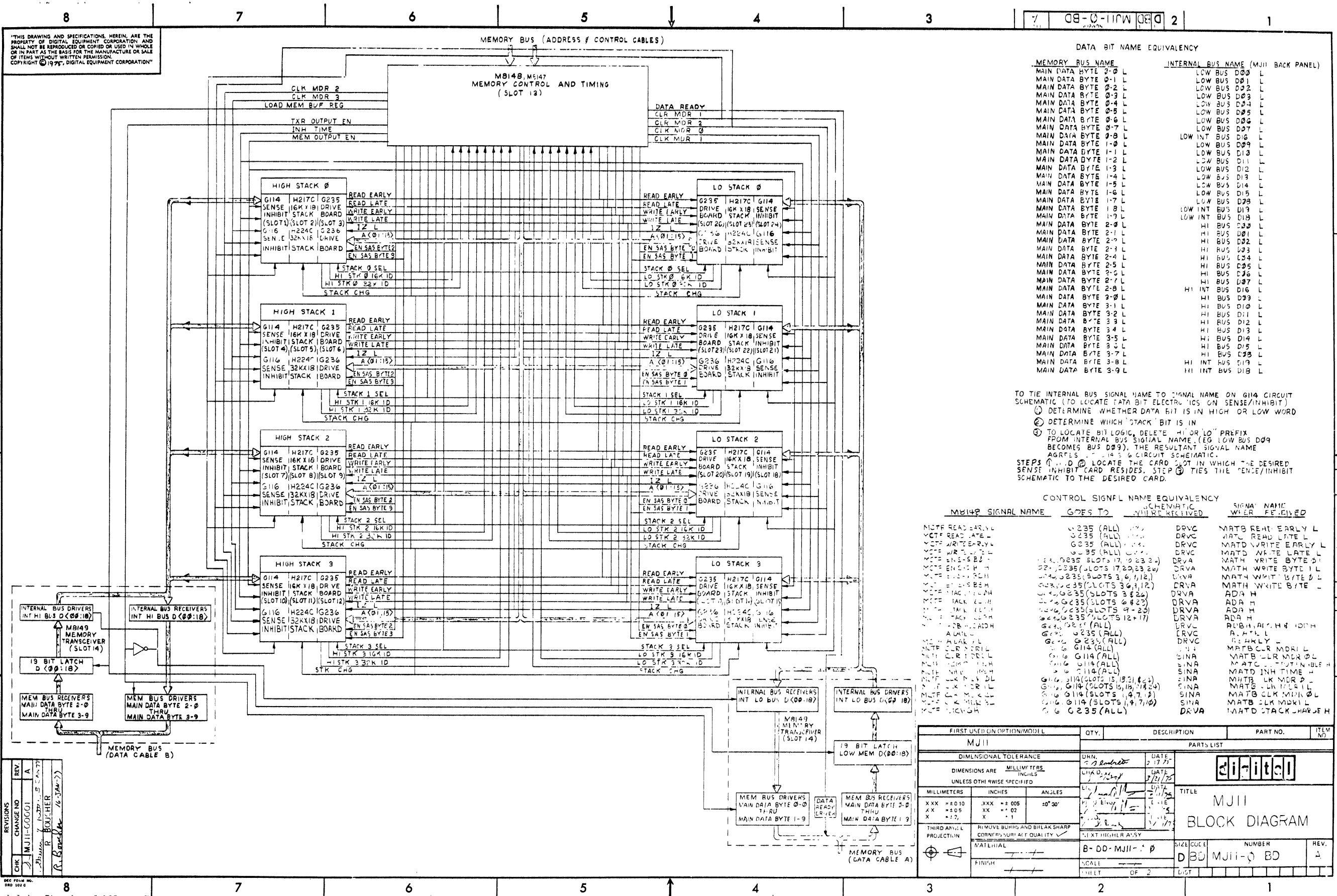
EQUIPMENT CORPORATION logo and UNIT ASSY MJ11 information.

REV. J
PART NO. MJ11-0-0
SCOPE C

A

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION																					
			MJ11-AA	MJ11-AB	MJ11-AC	MJ11-AD	MJ11-AE	MJ11-AG	MJ11-AH	MJ11-AM	MJ11-AY	MJ11-AZ	MJ11-BA	MJ11-BB	MJ11-BC	MJ11-BD	MJ11-BE	MJ11-BG	MJ11-BH	MJ11-BN	MJ11-BY	MJ11-BZ		
44	C-IA-7010695-0-0	861-D to 861-D HARNESS	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
45	9006568	NUT, KEPS 5/16-18	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
46	9008887	JUMPER ASSY	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
47	C-MD-7413975-0-0	SPACER, SHIM	2	2	2	2	-	2	2	-	2	2	2	2	2	2	-	2	2	-	2	2		
48	C-MD-7414018-0-0	PROTECTOR, RIGHT METAL EDGE	1	1	1	1	-	1	1	-	1	1	1	1	1	1	-	1	1	-	1	1		
49	C-MD-7414016-0-0	PROTECTOR, LEFT METAL EDGE	1	1	1	1	-	1	1	-	1	1	1	1	1	1	-	1	1	-	1	1		
50	9006074-03	SCR, PHL TRUSS HD #10-32x.62	2	2	4	4	-	2	2	-	2	2	2	2	4	4	-	2	2	-	2	2		
51	3612493-0-0	DECAL WARNING	1	1	1	1	-	1	1	-	1	1	1	1	1	1	-	1	1	-	1	1		
52	9009715	SCR, PHL TRUSS HD#10-32x.25LG BLACK OXIDE	4	4	6	6	-	4	4	-	4	4	4	4	6	6	-	4	4	-	4	4		
53	A-SP-3700194-0-0	PACKAGING INSTRUCTION (INTERPLANT)	1	1	-	-	-	1	1	-	1	1	1	1	-	-	-	1	1	-	1	1		
54	A-SP-3700195-0-0	PACKAGING INSTRUCTION (CUSTOMER)	1	1	-	-	-	1	1	-	1	1	1	1	-	-	-	1	1	-	1	1		
55	9006565	NUT KEPS #10-32	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
56	9009760	CLIP	-	-	4	4	-	-	-	-	-	-	-	-	4	4	-	-	-	-	-	-		
57	C-MD-7413983-0-0	CLAMP, WIRE BASKETS	-	-	3	3	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-		
58	C-IA-7011222-0-0	BAR ASSY, BASKET	-	-	2	2	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-		
59	D-IA-7011223-2-0	BASKET, WIRE, CABLE	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
60	D-PS-1212405-1	CARD GUIDE, SINGLE	26	26	26	26	-	26	26	-	26	26	26	26	26	26	-	26	26	-	26	26		
61	A-PS-3613281-01	DECAL, ADHESIVE BACKED	2	2	2	2	-	2	2	-	2	2	2	2	2	2	-	2	2	-	2	2		
62	D-PS-1211825-01	SLIDE, 3 POS TILT	lpr	lpr	lpr	lpr	-	lpr	lpr	-	lpr	lpr	lpr	lpr	lpr	lpr	-	lpr	lpr	-	lpr	lpr		
63	C-MD-7413659-0-0	BRACKET, SHIPPING	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
64	9006564-00	NUT, HEX 10-32	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-		
65	D-CS-M8147-0-1	M8147 MEM. CONT & TIMING MODULE	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	1	1	1		
66	D-CS-H224-C-1	H224C 32K x 18 BIT STACK	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	3	8	1	2	2
67	D-CS-G236-0-1	G236 32K MEM DRIVE BOARD	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	8	8	1	2	2	
68	D-CS-G116-0-1	G116 32K SENSE/INHIBIT BOARD	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	8	8	1	2	2	
69	3612425-03	DECAL, CABINET DESIGNATION	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	
70	3612423-01	MJ11 MEMORY STICKER	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	1	1	-	1	1
71	7010824-02	CXP ADD. CABLE ASSY (BAYØ) 7 ft	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	

REV. CHG. NO.	REVISIONS	<p>* MAY BE USED AS A REPLACEMENT FOR ITEM #6 (MJ11-A ONLY)</p> <p>** MAY BE USED AS A REPLACEMENT FOR ITEM #2</p> <p>*** MAY BE USED AS A REPLACEMENT FOR ITEM #33</p>	FIRST USED ON OPTION/MODEL MJ11-A	UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ±.005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	DRN. B. BLODGETT CHK'D. D. HEALY ENG. P. DUDE PROJ. ENG. P. DUDE PROD. D. WEAVER NEXT HIGHER ASSY.	DATE 1-22-75 DATE 1-29-75 DATE 1-29-75 DATE 1-22-75 DATE 2-26-75	<p>EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS</p> <p>TITLE UNIT ASSY MJ11</p>
	MATERIAL		SCALE	SIZE CODE C/PL	NUMBER MJ11-0-0	REV. J	
	FINISH		SHEET 2 OF 2				



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08-0-110W 08 2

DATA BIT NAME EQUIVALENCY

MEMORY BUS NAME	INTERNAL BUS NAME (MUJI BACK PANEL)
MAIN DATA BYTE 0-0 L	LOW BUS D00 L
MAIN DATA BYTE 0-1 L	LOW BUS D01 L
MAIN DATA BYTE 0-2 L	LOW BUS D02 L
MAIN DATA BYTE 0-3 L	LOW BUS D03 L
MAIN DATA BYTE 0-4 L	LOW BUS D04 L
MAIN DATA BYTE 0-5 L	LOW BUS D05 L
MAIN DATA BYTE 0-6 L	LOW BUS D06 L
MAIN DATA BYTE 0-7 L	LOW BUS D07 L
MAIN DATA BYTE 0-8 L	LOW INT BUS D08 L
MAIN DATA BYTE 1-0 L	LOW BUS D09 L
MAIN DATA BYTE 1-1 L	LOW BUS D10 L
MAIN DATA BYTE 1-2 L	LOW BUS D11 L
MAIN DATA BYTE 1-3 L	LOW BUS D12 L
MAIN DATA BYTE 1-4 L	LOW BUS D13 L
MAIN DATA BYTE 1-5 L	LOW BUS D14 L
MAIN DATA BYTE 1-6 L	LOW BUS D15 L
MAIN DATA BYTE 1-7 L	LOW BUS D16 L
MAIN DATA BYTE 1-8 L	LOW INT BUS D17 L
MAIN DATA BYTE 1-9 L	LOW INT BUS D18 L
MAIN DATA BYTE 2-0 L	HI BUS D19 L
MAIN DATA BYTE 2-1 L	HI BUS D20 L
MAIN DATA BYTE 2-2 L	HI BUS D21 L
MAIN DATA BYTE 2-3 L	HI BUS D22 L
MAIN DATA BYTE 2-4 L	HI BUS D23 L
MAIN DATA BYTE 2-5 L	HI BUS D24 L
MAIN DATA BYTE 2-6 L	HI BUS D25 L
MAIN DATA BYTE 2-7 L	HI BUS D26 L
MAIN DATA BYTE 2-8 L	HI INT BUS D27 L
MAIN DATA BYTE 2-9 L	HI INT BUS D28 L
MAIN DATA BYTE 3-0 L	HI BUS D29 L
MAIN DATA BYTE 3-1 L	HI BUS D30 L
MAIN DATA BYTE 3-2 L	HI BUS D31 L
MAIN DATA BYTE 3-3 L	HI BUS D32 L
MAIN DATA BYTE 3-4 L	HI BUS D33 L
MAIN DATA BYTE 3-5 L	HI BUS D34 L
MAIN DATA BYTE 3-6 L	HI BUS D35 L
MAIN DATA BYTE 3-7 L	HI INT BUS D36 L
MAIN DATA BYTE 3-8 L	HI INT BUS D37 L
MAIN DATA BYTE 3-9 L	HI INT BUS D38 L

TO TIE THE INTERNAL BUS SIGNAL NAME TO SIGNAL NAME ON G114 CIRCUIT SCHEMATIC (TO LOCATE DATA BIT ELECTRICALS ON SENSE/INHIBIT):
 ① DETERMINE WHETHER DATA BIT IS IN HIGH OR LOW WORD
 ② DETERMINE WHICH STACK BIT IS IN
 ③ TO LOCATE BIT LOGIC, DELETE "HI" OR "LO" PREFIX FROM INTERNAL BUS SIGNAL NAME (EG LOW BUS D09 BECOMES BUS D09). THE RESULTANT SIGNAL NAME AGREES WITH G114 CIRCUIT SCHEMATIC.
 STEPS ①-③ LOCATE THE CARD SLOT IN WHICH THE DESIRED SENSE/INHIBIT CARD RESIDES. STEP ④ TIES THE SENSE/INHIBIT SCHEMATIC TO THE DESIRED CARD.

CONTROL SIGNAL NAME EQUIVALENCY

MUJI49 SIGNAL NAME	GOES TO	SCHEMATIC WHERE RECEIVED	SIGNAL NAME WHERE RECEIVED
MUJI49 READ EARLY	G235 (ALL)	DRVC	MATB READ EARLY L
MUJI49 READ LATE	G235 (ALL)	DRVC	MATC READ LATE L
MUJI49 WRITE EARLY	G235 (ALL)	DRVC	MATD WRITE EARLY L
MUJI49 WRITE LATE	G235 (ALL)	DRVC	MATD WRITE LATE L
MUJI49 EN SAS BYTE 0	G235 (SLOTS 17, 10, 23, 24)	DRVA	MATH WRITE BYTE 0 L
MUJI49 EN SAS BYTE 1	G235 (SLOTS 17, 20, 23, 24)	DRVA	MATH WRITE BYTE 1 L
MUJI49 EN SAS BYTE 2	G235 (SLOTS 3, 6, 11, 12)	DRVA	MATH WRITE BYTE 2 L
MUJI49 EN SAS BYTE 3	G235 (SLOTS 3, 6, 11, 12)	DRVA	MATH WRITE BYTE 3 L
MUJI49 EN SAS BYTE 4	G235 (SLOTS 6, 8, 24)	DRVA	ADA H
MUJI49 EN SAS BYTE 5	G235 (SLOTS 6, 8, 24)	DRVA	ADA H
MUJI49 EN SAS BYTE 6	G235 (SLOTS 9, 20)	DRVA	ADA H
MUJI49 EN SAS BYTE 7	G235 (SLOTS 12, 17)	DRVA	ADA H
MUJI49 EN SAS BYTE 8	G235 (ALL)	DRVC	ALBIA, ALI, H, 4, 10, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49
MUJI49 EN SAS BYTE 9	G235 (ALL)	DRVC	ALBIA, ALI, H, 4, 10, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49
MUJI49 CLK MDR 1	G114 (ALL)	SINA	MATB CLR MDR 1 L
MUJI49 CLK MDR 2	G114 (ALL)	SINA	MATC CLR MDR 2 L
MUJI49 CLK MDR 3	G114 (ALL)	SINA	MATD CLR MDR 3 L
MUJI49 INH TIME	G114 (ALL)	SINA	MATC INH TIME H
MUJI49 TXR OUTPUT EN	G114 (SLOTS 15, 18, 21, 24)	SINA	MATB CLK MDR 2 L
MUJI49 MEM OUTPUT EN	G114 (SLOTS 1, 4, 7, 8)	SINA	MATB CLK MDR 1 L
MUJI49 MEM BUS CHG	G114 (SLOTS 1, 4, 7, 8)	SINA	MATB CLK MDR 1 L
MUJI49 MEM BUS CHG	G235 (ALL)	DRVA	MATD STACK CHANGE H

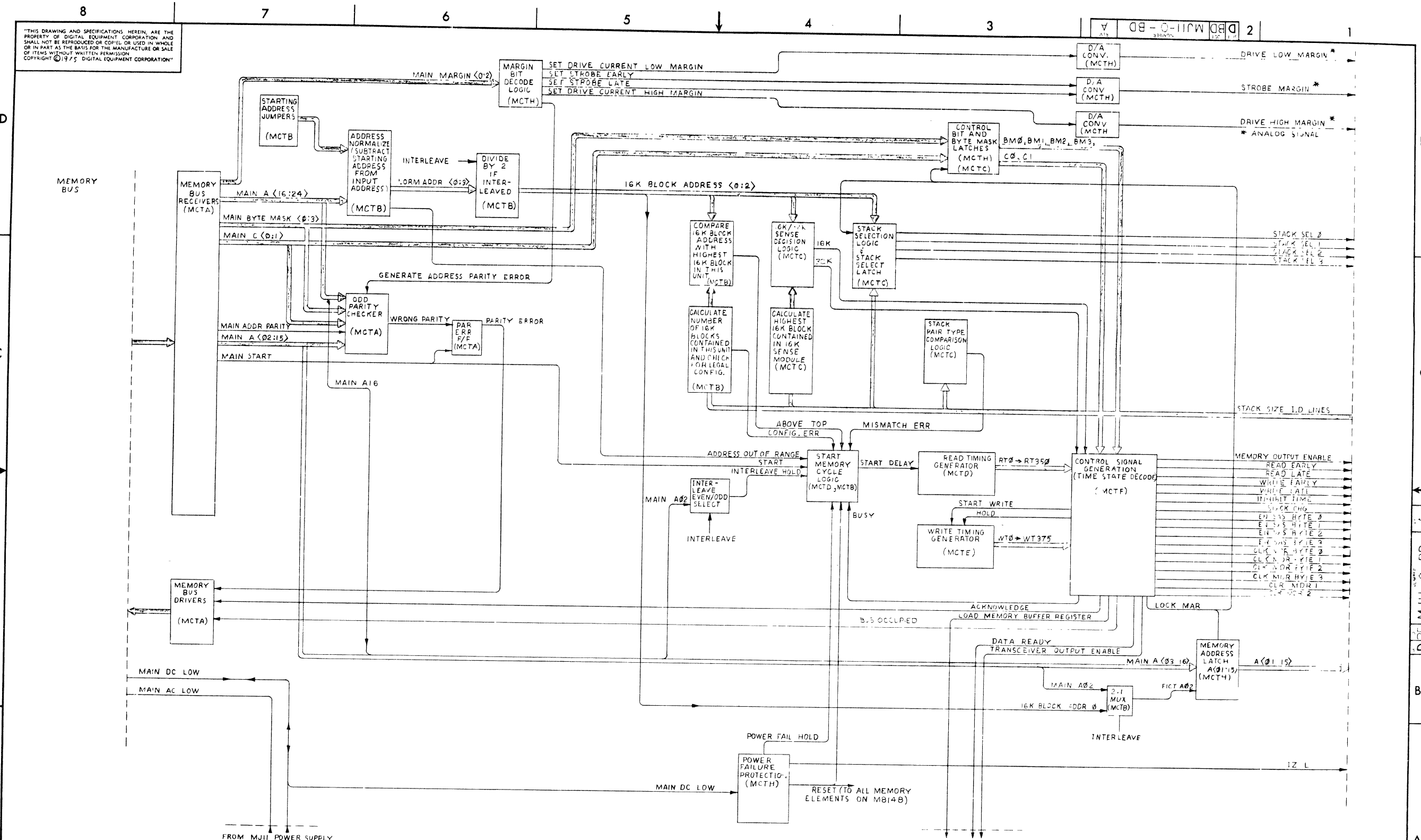
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
MUJI		PARTS LIST		
DIMENSIONAL TOLERANCE				
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED				
MILLIMETERS	INCHES	ANGLES		
XXX ±0.10	XXX ±0.005	±0°30'		
XX ±0.05	XX ±0.02			
X ±0.25	X ±0.1			
THIRD ANGLE PROJECTION	REMOVE BUNDS AND BREAK SHARP CORNERS UNLESS OTHERWISE SPECIFIED	NEXT HIGHER ASSY		
MATERIAL	FINISH	SCALE	SIZE	REV.
		OF 2	D3D MUJI-Q BD	A

REVISIONS

CHK	CHANGE NO	REV	DATE
		A	1/15/77
		B	2/1/77
		C	2/1/77
		D	2/1/77

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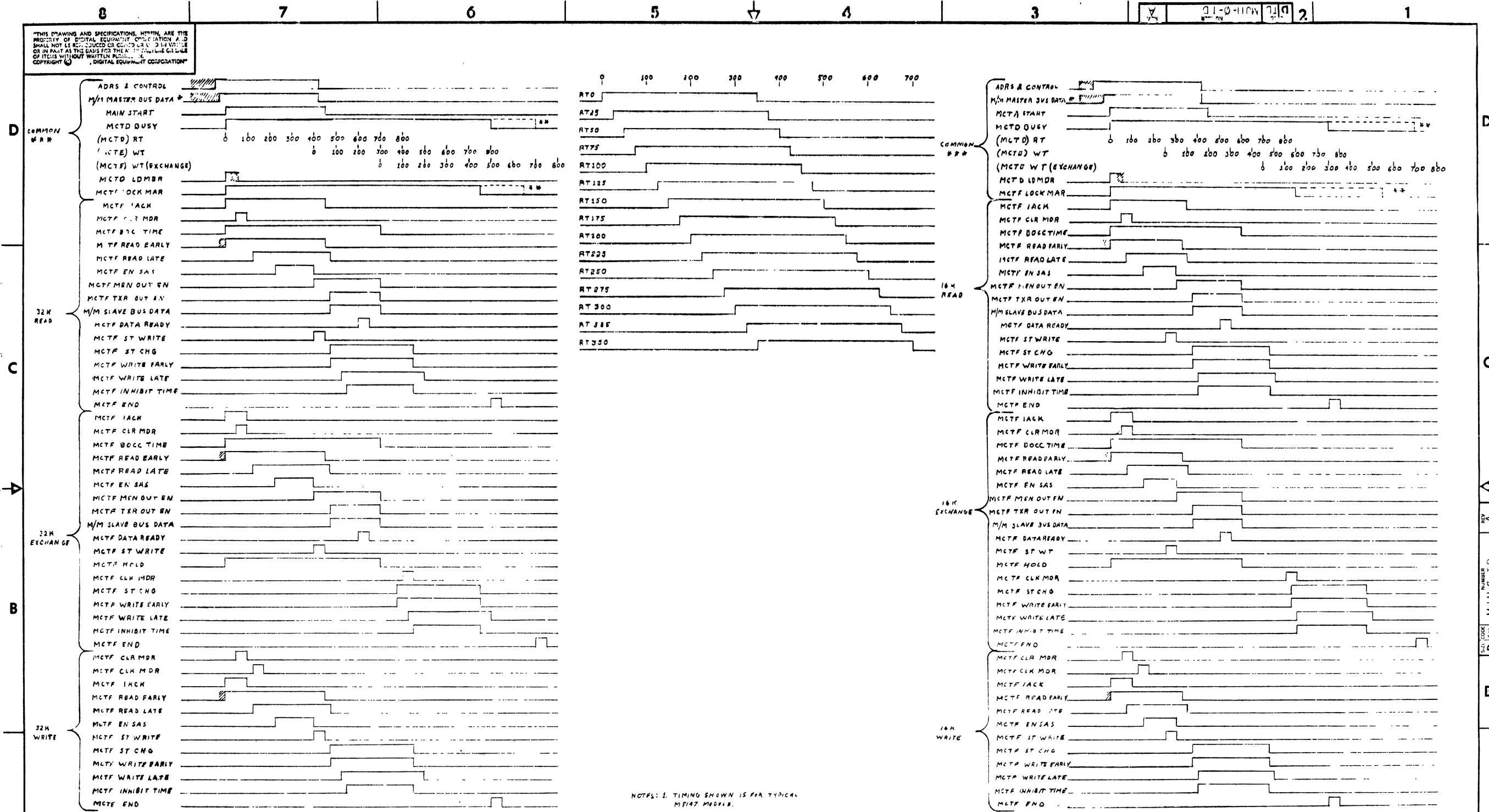
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REVISIONS		
CHK	CHANGE NO	RLV

DEC FORM NO. 000 138

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NOTES: 1. TIMING SHOWN IS FOR TYPICAL MEMORY MODULES.
 * EXCHANGE AND WRITE CYCLES.
 ** EXCHANGE ONLY.
 *** THESE SIGNALS ARE COMMON TO ALL MEMORY CYCLES EXCEPT AS NOTED.

REV. A	REV. A
CHG. NO. 1	CHG. NO. 1
DATE 10/10/70	DATE 10/10/70
BY R. BOYLER	BY R. BOYLER
CHECKED BY	CHECKED BY
DESIGNED BY	DESIGNED BY
REVISIONS AND REDRAWN	REVISIONS AND REDRAWN

MJ11-B

MJ11-A

DRN 8/24/68	10/10/70	FIRST USED ON MJ11
CHK'D	ENG'D	PROJ. ENG'D
TITLE MJ11 MEMORY TIMING		
NEW HIGHER ASSY.		
SCALE	SIZE D	CODE TD
SHEET	OF	DIST
		NUMBER MJ11-0-TD
		REV A

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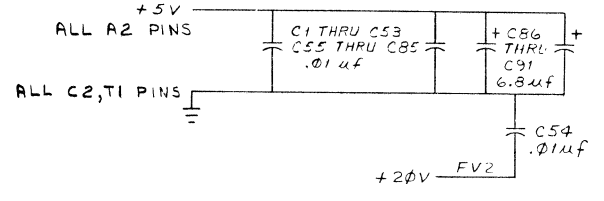
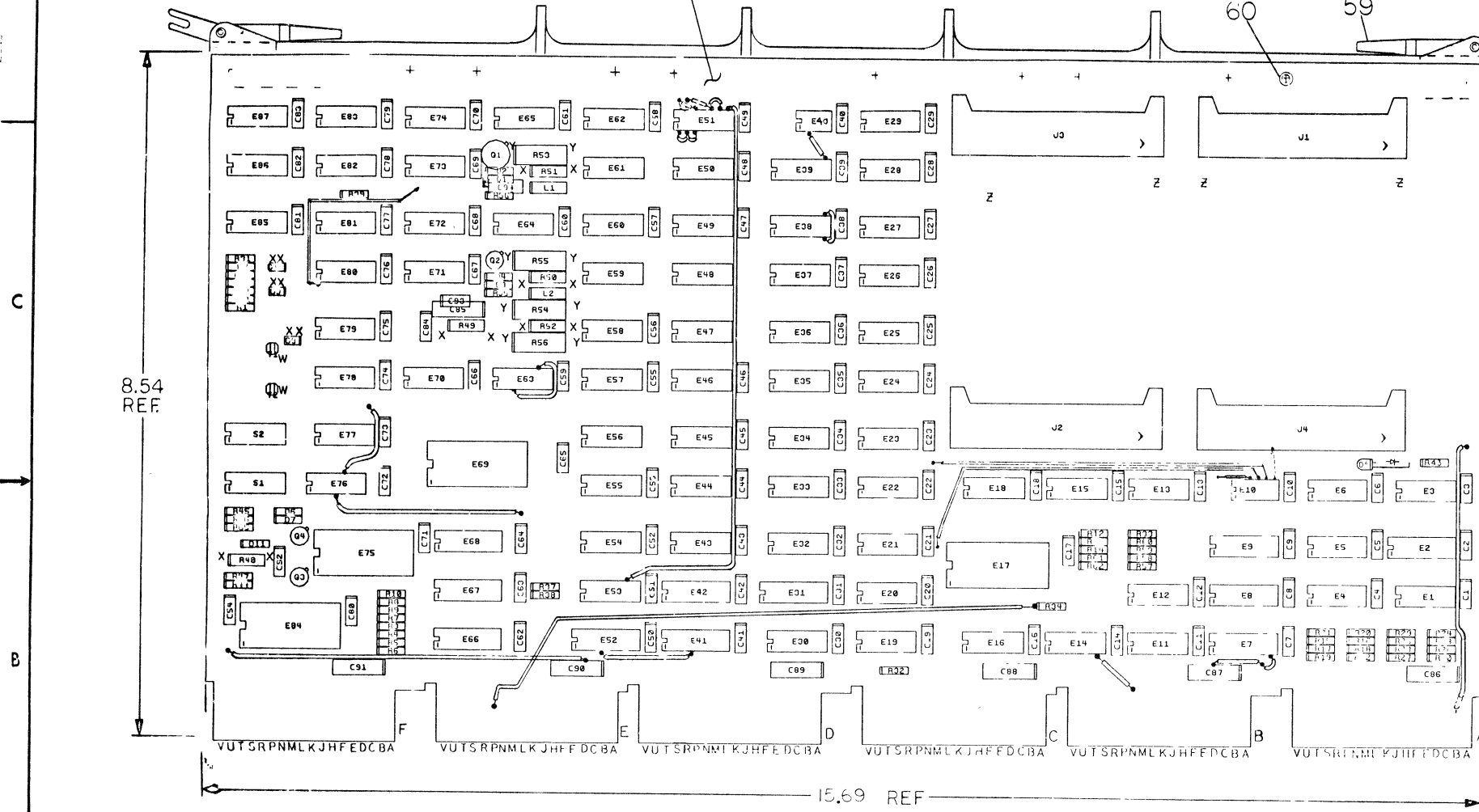
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NOTES:

2	E86, E51	IC DEC 74S40	1910541	54
1	E67	IC DEC 74S133	1911983	55
1	E14	IC DEC 74S140	1910548	56
1	E2	IC DEC 74187	23-C65A2-01	57
2	TP1, TP2	SPLIT LUGS	9006735	58
1		HANDLE ASSEMBLY	1210711-2	59
12		EYELET (HANDLE)	9006732	60
15		WIRE #30 AWG BUSS (RETROFIT)	9105740-55	61
1	E10	IC DEC 75453	1911036	62

0 1-0-8718W 02 2 1

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO
		X Y COORDINATE HOLE LOCATION	K CO M8148 0 4	1
		ASSY/DRILLING HOLE LAYOUT	D-AH M8148 0 5	2
		MODULE ECO HISTORY	B-MH M8148 0 6	3
		ETCHED CIRCUIT BOARD	5011289	4
	C1 THRU C84	CAPACITOR .01uf 100V 20%	1001610 01	5
	C85 THRU C91	CAPACITOR 6.8uf 35V 10%	1095306	6
		CAPACITOR 1000PF 100V 5%	1000042-00	7
	C93, C94	CAPACITOR 270PF 100V 5%	1000022	8
	D1, D2, U3, U4, D6, D7	DIODE DEC 777 SWITCHING DIODE	1103041	9
	D8 THRU D10, D5	DIODE LIGHT EMITTING MV5054-1	1110324	10
	D11	DIODE ZENER 1N 746A 3V	1104860	11
	J1, J2, J3, J4	CONNECTOR 3M #3432 40 PIN	120-541-01	12
	R1 THRU R34	RESISTOR 1/4W 1K 5%	1300365	13
	R35, R36, R37	RESISTOR 1/4W 330 OHM 5%	1300295	14
	R38	RESISTOR 1/4W 680 OHM 5%	1301424	15
	R39	RESISTOR 1/4W 470 OHM 5%	1300316	16
	R40 THRU R43	RESISTOR 1/4W 220 OHM 5%	1300271	17
	R44	RESISTOR 1/4W 560 OHM 5%	1301890	18
	R45, R46, R47	RESISTOR 1/4W 20K 5%	1302391	19
	R48	RESISTOR 1/2W 750 OHM 5%	1300354	20
	R49 THRU R52	RESISTOR 1/2W 470 OHM 5%	1300315	21
	R53 THRU R56	RESISTOR 1W 120 OHM 5%	1301838	22
	R57 THRU R62	RESISTOR 1/8W 1.1K OHM 1%	1302645	23
	R65	RESISTOR 1/4W 2K 5%	1302398	24
	Q1, Q2, Q3	TRANSISTOR DEC 3009B	1503100	25
	Q4	TRANSISTOR DEC 6534D	1503409	26
	L1, L2	INDUCTOR 100uh	1610582	27
	E47, E48, E59, E61	DELAY LINE	1611243	28
	S1, S2	SWITCH 7 POS	1211164-03	29
		SWITCH COVER	1211204 03	30
	E22 THRU E29, E36	IC DEC 8040	1911409	31
	E11	IC DEC 741104	1909931	32
	E3, E6	IC DEC 7400	1905575	33
	E12	IC DEC 741101-1	1939049	34
	E34, E35, E37, E38	IC DEC 82582	1911291	35
	E85, E87	IC DEC 74S74	1910544	36
	E78	IC DEC 741100	1922328	37
	E17, E69, E75, E84	IC DEC 74S181	1910531	38
	E68	IC DEC 74S158	1910549	39
	E13, E43, E45, E56, E57, E58, E80, E82, E65, E77, E49	IC DEC 74S04	1910534	40
	E32, E33, E39, E44, E46, E54, E55, E63, E72, E73, E74, E79	IC DEC 74S04	1910542	41
	E5	IC DEC 7404	1909908	42
	E50, E70	IC DEC 74S10	1910536	43
	E21	IC DEC 74S11	1910537	44
	E80, E81	IC DEC 74S22	1910540	45
	E41, E42, E52, E66, E31	IC DEC 7475	1909050	46
	E1, E4	IC DEC 8242	1907112	47
	E16, E30, E53, E71	IC DEC 74S00	1910532	48
	E40	IC DEC 75451	1910408	49
	E20, E82	IC DEC 7408	1910155	50
	E19, E64, E76	IC DEC 8885	1910049	51
	E15, E18	IC DEC 74H50	1909060	52
	E7, E8, E9	IC DEC 74S151	1910358	53



DEC TYPE	GND	+5V
DEC 75451	4	8
DEC 74187	8	16
DEC 74S181	12	29
DEC 74S158	8	16
DEC 74S151	9	16
DEC 74S133	8	16
DEC 8640	1	3
DEC 7475	12	5

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS

SEMICONDUCTOR CONVERSION CHART

DEC NO	EIA NO	DEC NO	EIA NO

MJ11

ETCH BOARD REV A

DHW R.K. DATE 10-23-75

CHKD M.S. DATE 12-1-75

ENG. DATE 12-1-75

NLXT HIGHER ASSY

REVISIONS

ORIGINATED

CHANGE NO. REV.

MS148-00001 A

Digital Equipment Corporation

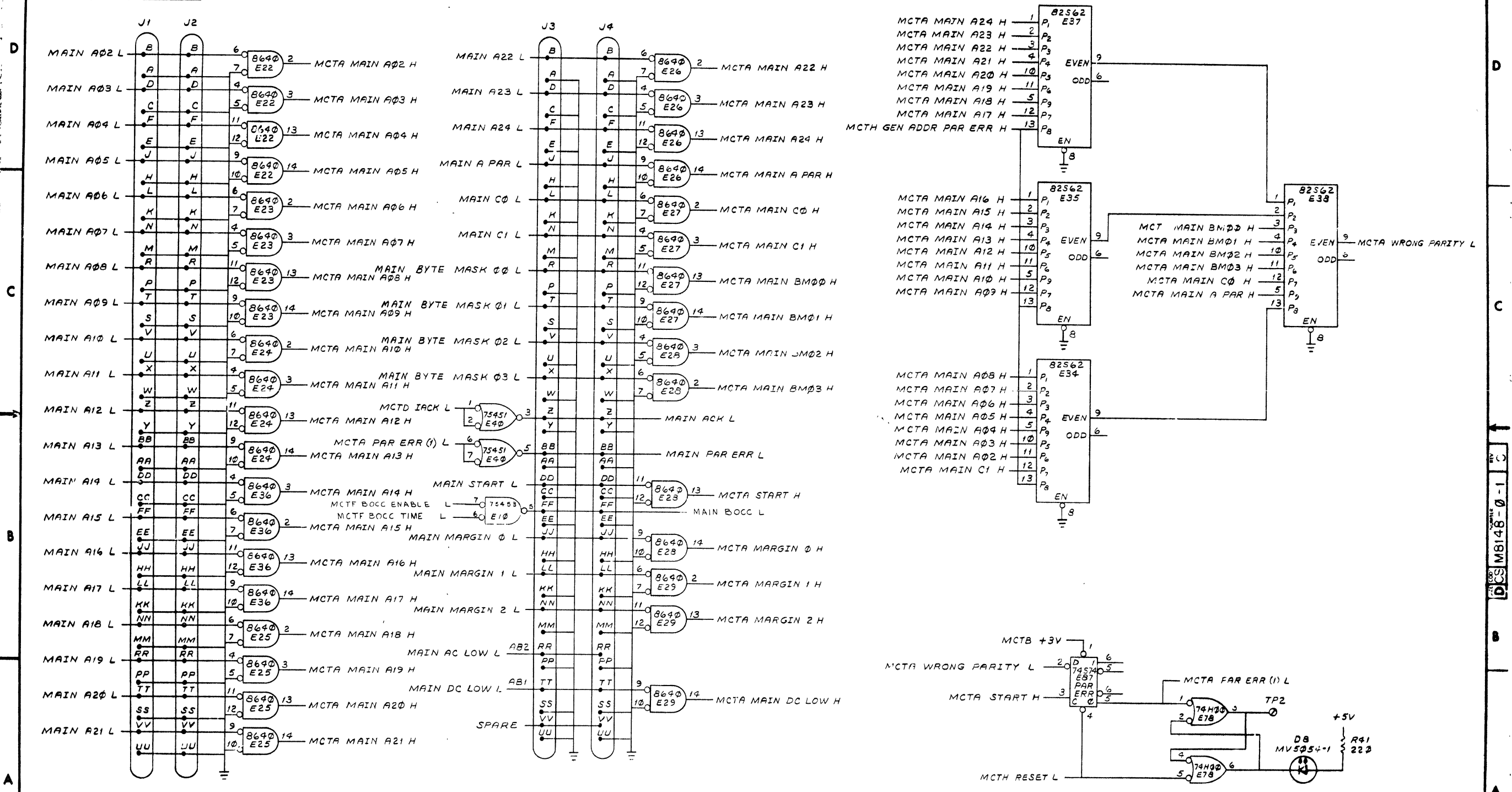
MEMORY CONTROL & TIMING (MCT)

SCALE 1 OF 9

SHEET

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1-0-8418W SCD 2



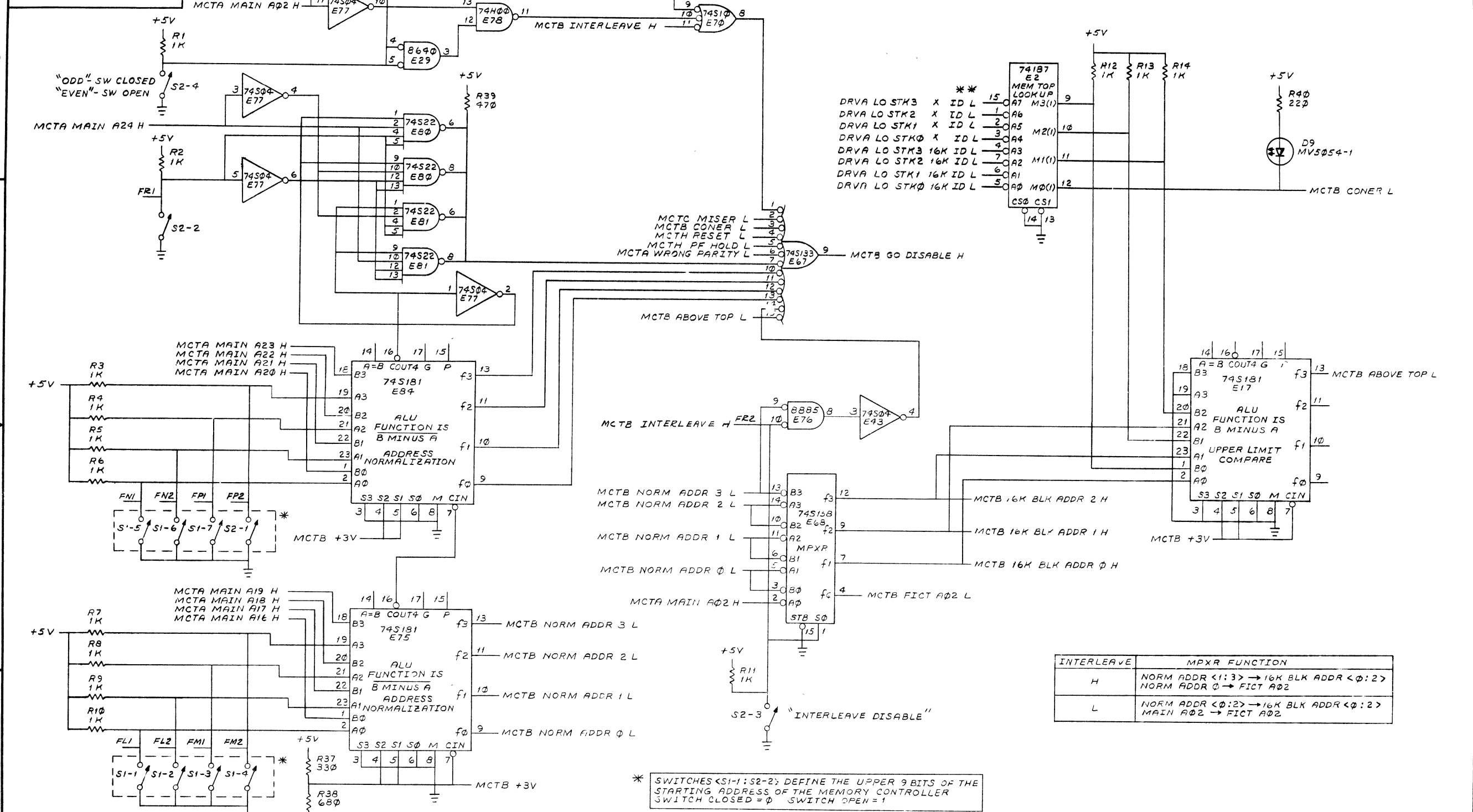
MEMORY BUS INTERFACE AND ADDRESS PARITY CHECKER

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MEMORY CONTROL AND TIMING (MCTA)	SIZE CODE	D CS	NUMBER	M8148-0-1	REV.	C
SCALE	1/1	SHEET	2 OF 9	DIST.			

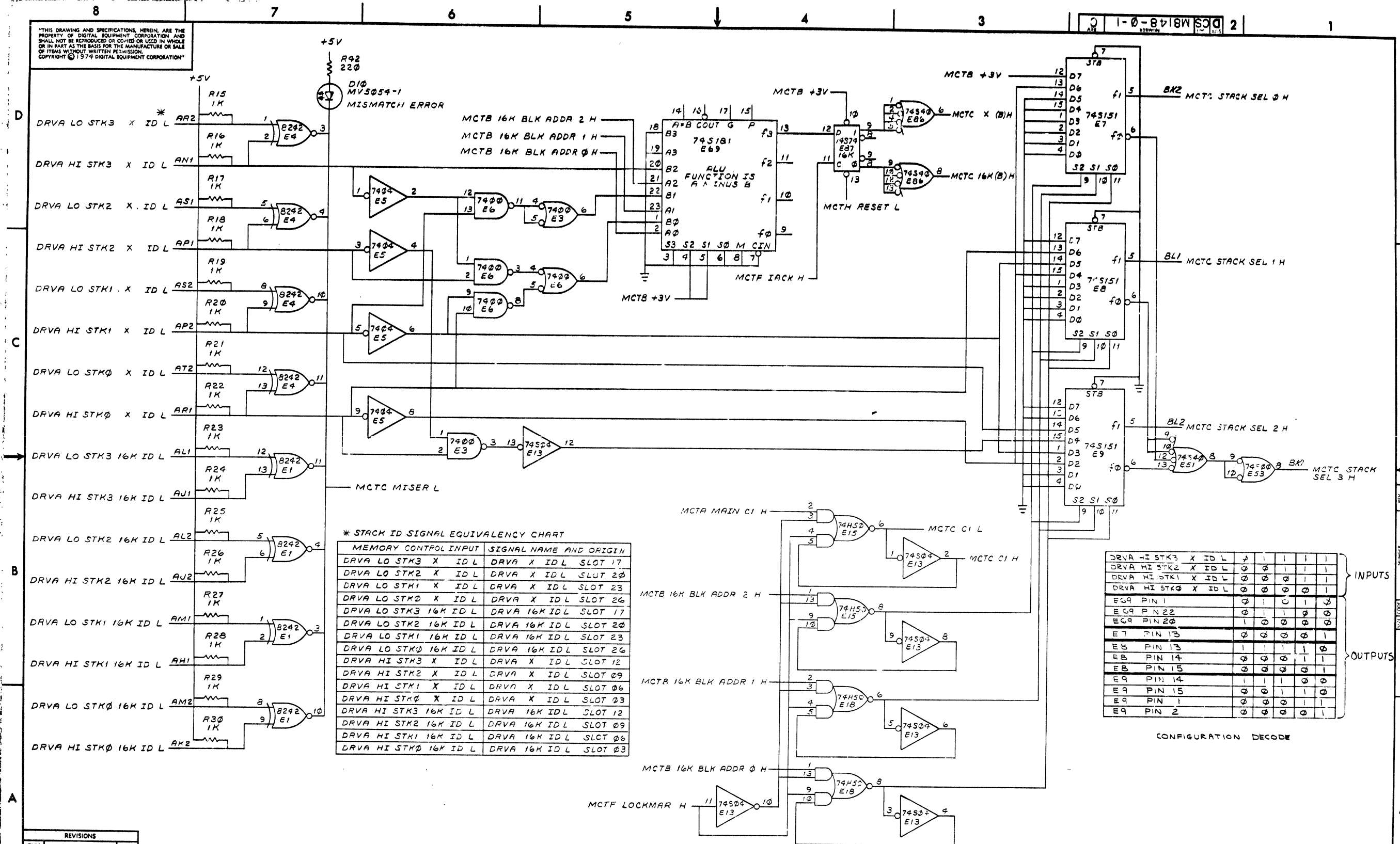
370

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REVISIONS		
CHK	CHANGE NO.	REV.

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* STACK ID SIGNAL EQUIVALENCY CHART

MEMORY CONTROL INPUT	SIGNAL NAME AND ORIGIN
DRVA LO STK3 X ID L	DRVA X ID L SLOT 17
DRVA LO STK2 X ID L	DRVA X ID L SLOT 20
DRVA LO STK1 X ID L	DRVA X ID L SLOT 23
DRVA LO STK0 X ID L	DRVA X ID L SLOT 26
DRVA LO STK3 16K ID L	DRVA 16K ID L SLOT 17
DRVA LO STK2 16K ID L	DRVA 16K ID L SLOT 20
DRVA LO STK1 16K ID L	DRVA 16K ID L SLOT 23
DRVA LO STK0 16K ID L	DRVA 16K ID L SLOT 26
DRVA HI STK3 X ID L	DRVA X ID L SLOT 12
DRVA HI STK2 X ID L	DRVA X ID L SLOT 09
DRVA HI STK1 X ID L	DRVA X ID L SLOT 06
DRVA HI STK0 X ID L	DRVA X ID L SLOT 03
DRVA LO STK0 16K ID L	DRVA 16K ID L SLOT 09
DRVA HI STK3 16K ID L	DRVA 16K ID L SLOT 12
DRVA HI STK2 16K ID L	DRVA 16K ID L SLOT 09
DRVA HI STK1 16K ID L	DRVA 16K ID L SLOT 06
DRVA HI STK0 16K ID L	DRVA 16K ID L SLOT 03

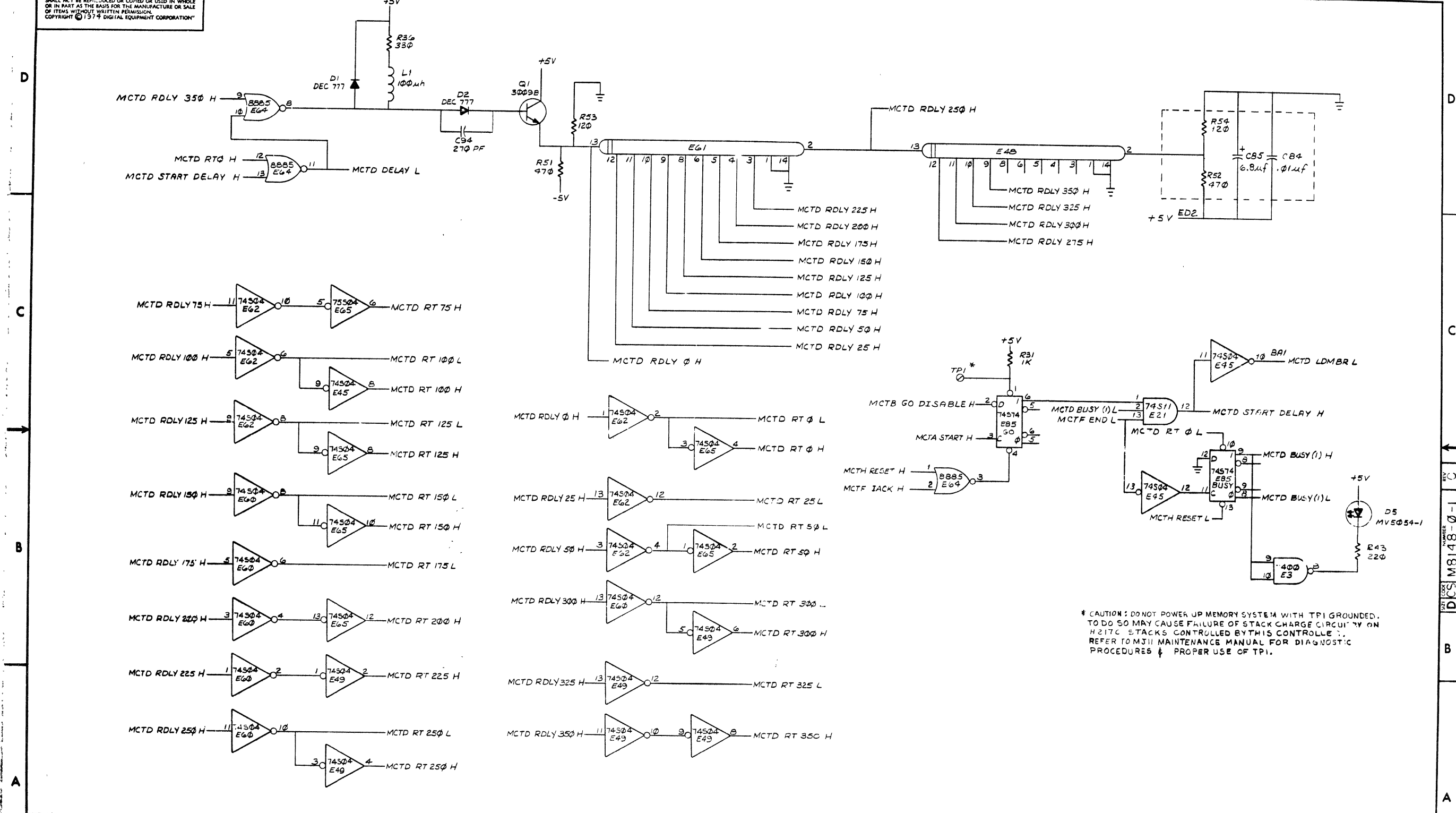
INPUTS	OUTPUTS
DRVA HI STK3 X ID L	1
DRVA HI STK2 X ID L	0
DRVA HI STK1 X ID L	0
DRVA HI STK0 X ID L	0
E09 PIN 1	0
E09 PIN 22	0
E09 PIN 20	1
E7 PIN 13	0
E8 PIN 13	1
E8 PIN 14	0
E8 PIN 15	0
E9 PIN 14	1
E9 PIN 15	0
E9 PIN 1	0
E9 PIN 2	0

CONFIGURATION DECODE

REVISIONS		
CHK	CHANGE NO.	REV.

322

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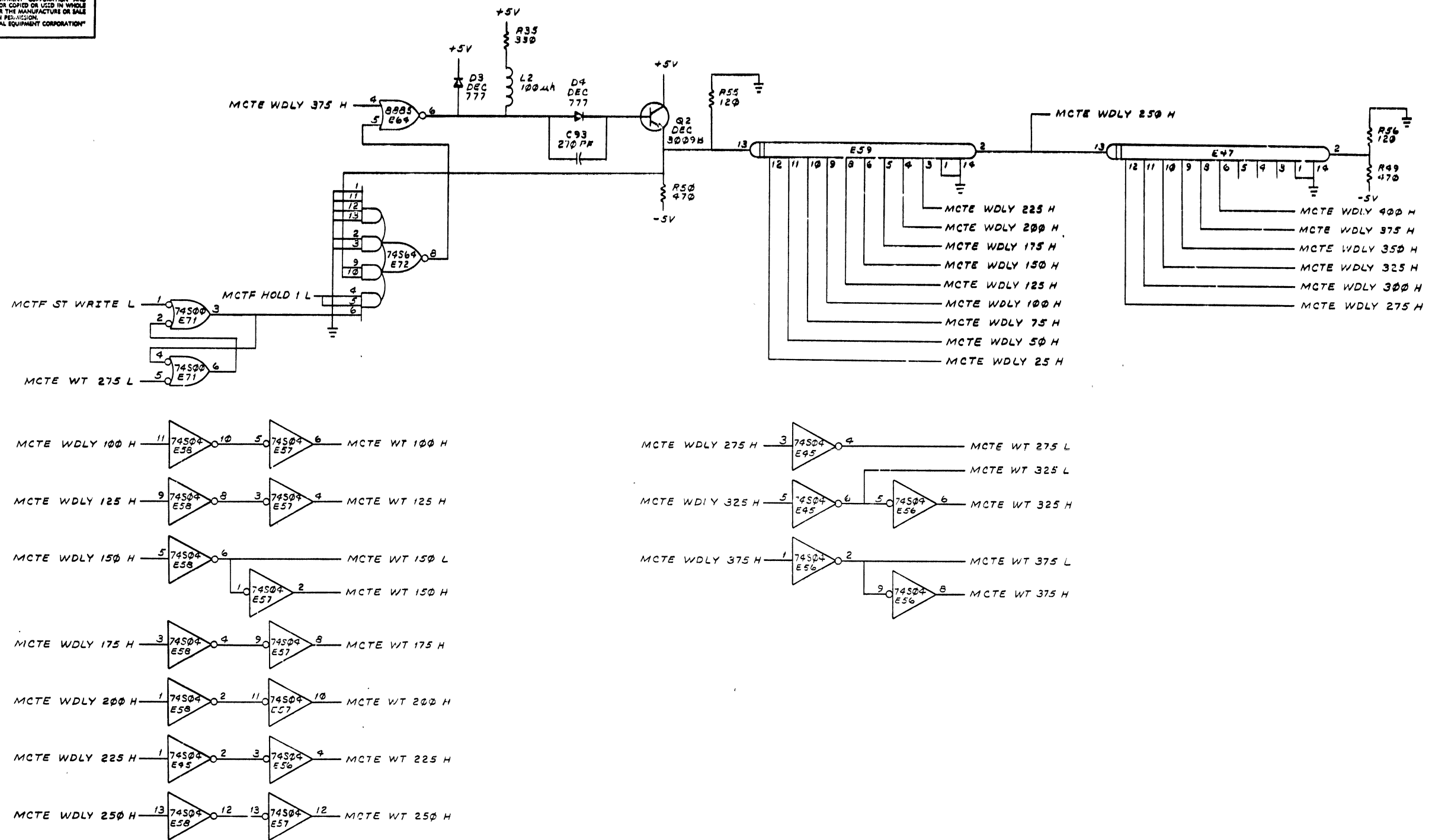


REVISIONS		
CHK	CHANGE NO	REV.

READ TIMING GENERATOR

TITLE	MEMORY CONTROL AND TIMING (MCTD)	SIZE CODE	D	NUMBER	M8148-0-1	REV.	C
SCALE	1/1	SHEET	5	OF 9	DIST.		

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REVISIONS		
CHK	CHANGE NO.	REV.

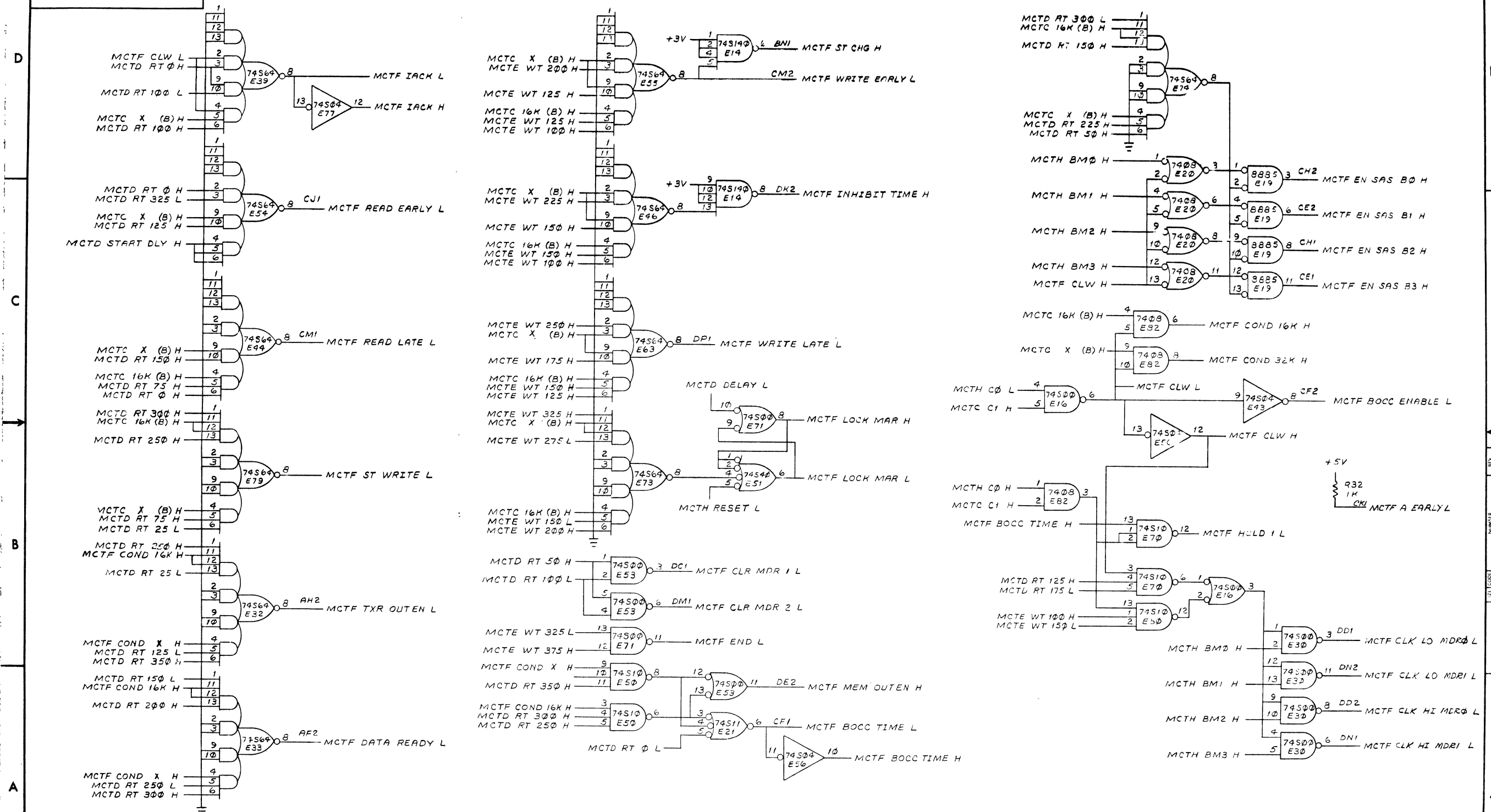
TITLE MEMORY CONTROL AND TIMING (MCTE) SIZE CODE DCS M8148-0-1 NUMBER 6 OF 9 REV. C

324

REV. C
M8148-0-1
DCS

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1-0-8718W SCD 2

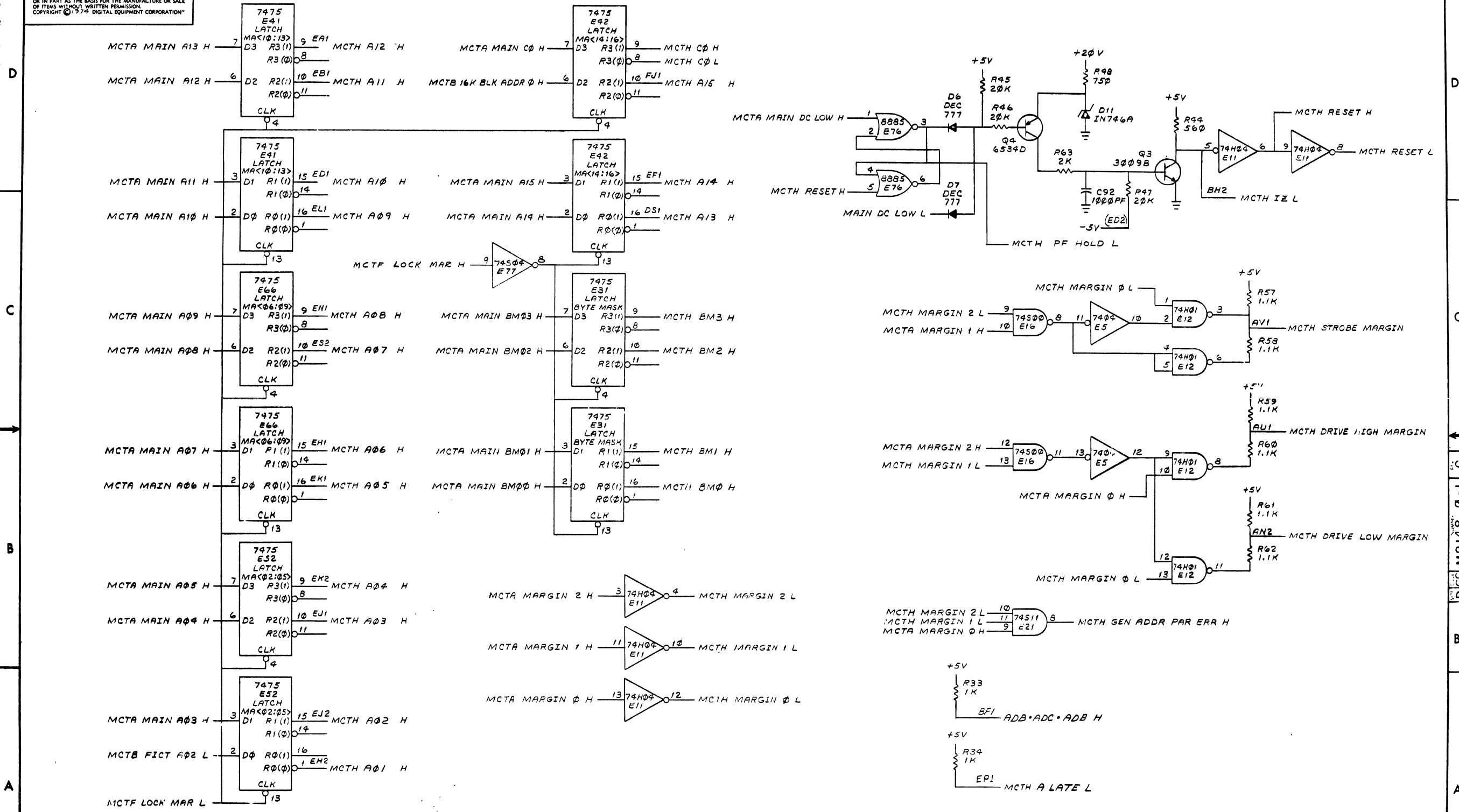


REVISIONS		
CHK	CHANGE NO	REV.

TITLE	MEMORY CONTROL AND TIMING (MCTF)	SIZE CODE	D CS	NUMBER	M8148-0-1	REV.	C
SCALE	1:1	SHEET	7 OF 9	DIST.			

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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MEMORY CONTROL AND TIMING (MCTH)	SIZE CODE	DCS	NUMBER	M8148-0-1	REV.	C
SCALE	1/1	SHEET	8	OF	9	DIST	

326

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DCSM8148-0-1 2

ROM INPUTS

ROM OUTPUTS

DRVA LO STK 3	X	ID	L	H	H	H	H	H	H	H	L	H	H	H	L	L	L
DRVA LO STK 2	X	ID	L	H	H	H	H	H	H	L	L	H	L	L	H	L	L
DRVA LO STK 1	X	ID	L	H	H	H	H	H	L	L	L	H	L	H	H	H	L
DRVA LO STK 0	X	ID	L	H	H	H	H	L	L	L	L	H	H	H	H	H	H
DRVA LO STK 3	16K	ID	L	H	H	L	H	H	H	L	H	H	H	L	L	L	L
DRVA LO STK 2	16K	ID	L	H	H	L	L	H	H	L	H	L	L	L	L	L	L
DRVA LO STK 1	16K	ID	L	H	L	L	L	H	L	L	L	L	L	L	L	L	L
DRVA LO STK 0	16K	ID	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
E3 PIN 9				L	H	L	H	H	H	L	H	L	L	H	L		
E3 PIN 10				L	L	H	H	L	L	H	H	L	L	L	L	H	
E3 PIN 11				L	L	L	L	L	L	H	L	L	H	H	H		
E3 PIN 12 (CON ER L)				H	H	H	H	H	H	H	H	H	H	H	H		

NOTE: ALL OTHER COMBINATIONS OF ROM INPUTS RESULT IN ALL OUTPUT PINS LOW

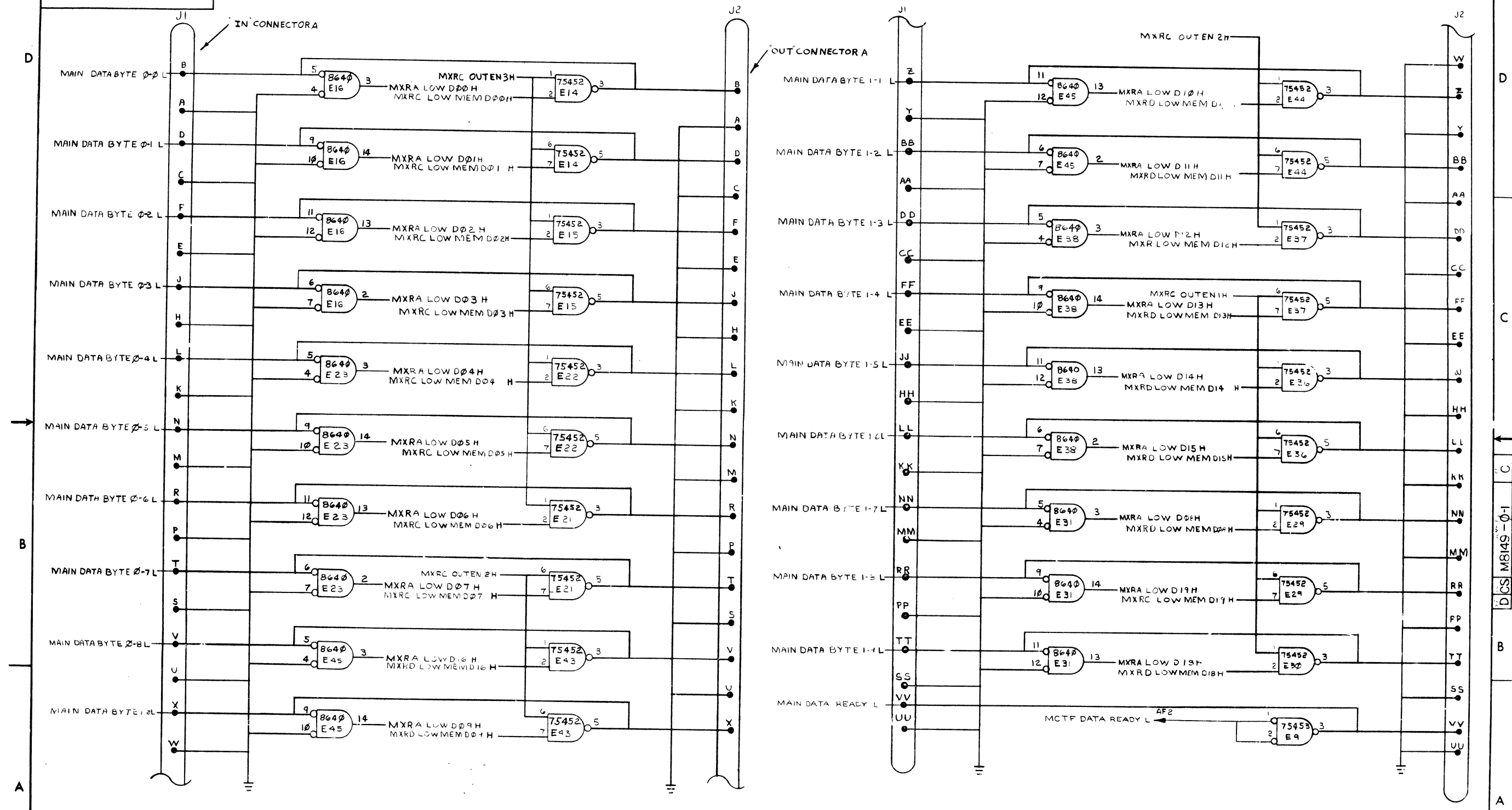
TRUTH TABLE FOR MEM TOP LOOKUP ROM [E3 - MCTB]

REVISIONS		
NO.	CHG. NO.	REV.

TITLE MEMORY CONTROL AND TIMING
 SCALE / / SHEET 9 OF 9
 NUMBER DCSM8148-0-1
 REV. C

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1-0-6419W DCS M8149-01 2

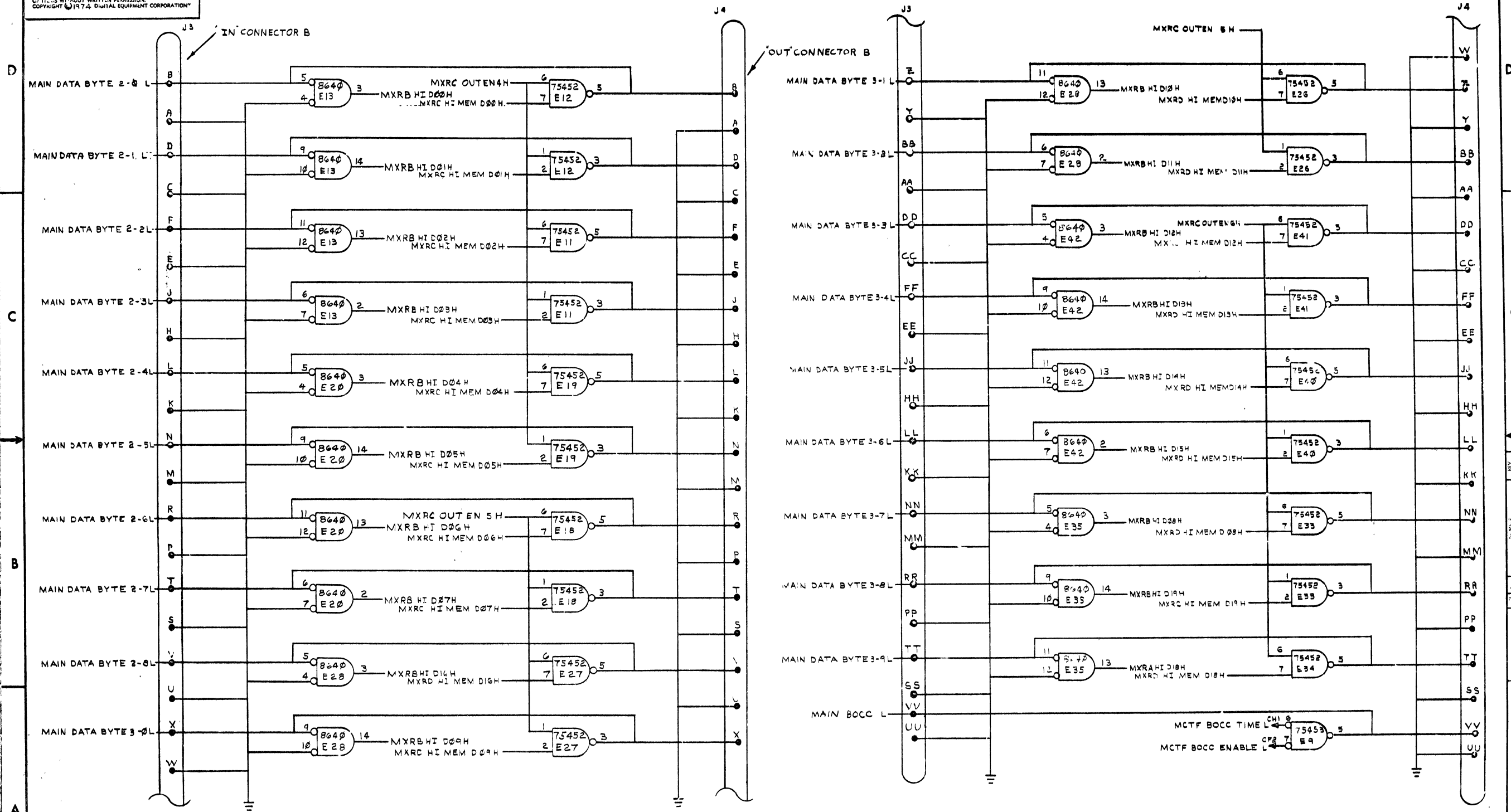


REVISIONS	
CHK	CHANGE NO

TITLE MEMORY (MXRA) TRANSCEIVER CARD SIZE CODE DCS NUMBER M8149-01 REV C
SCALE SHEET 2 OF 5 DIST

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1-0-6+18W DCS M8149-01 2

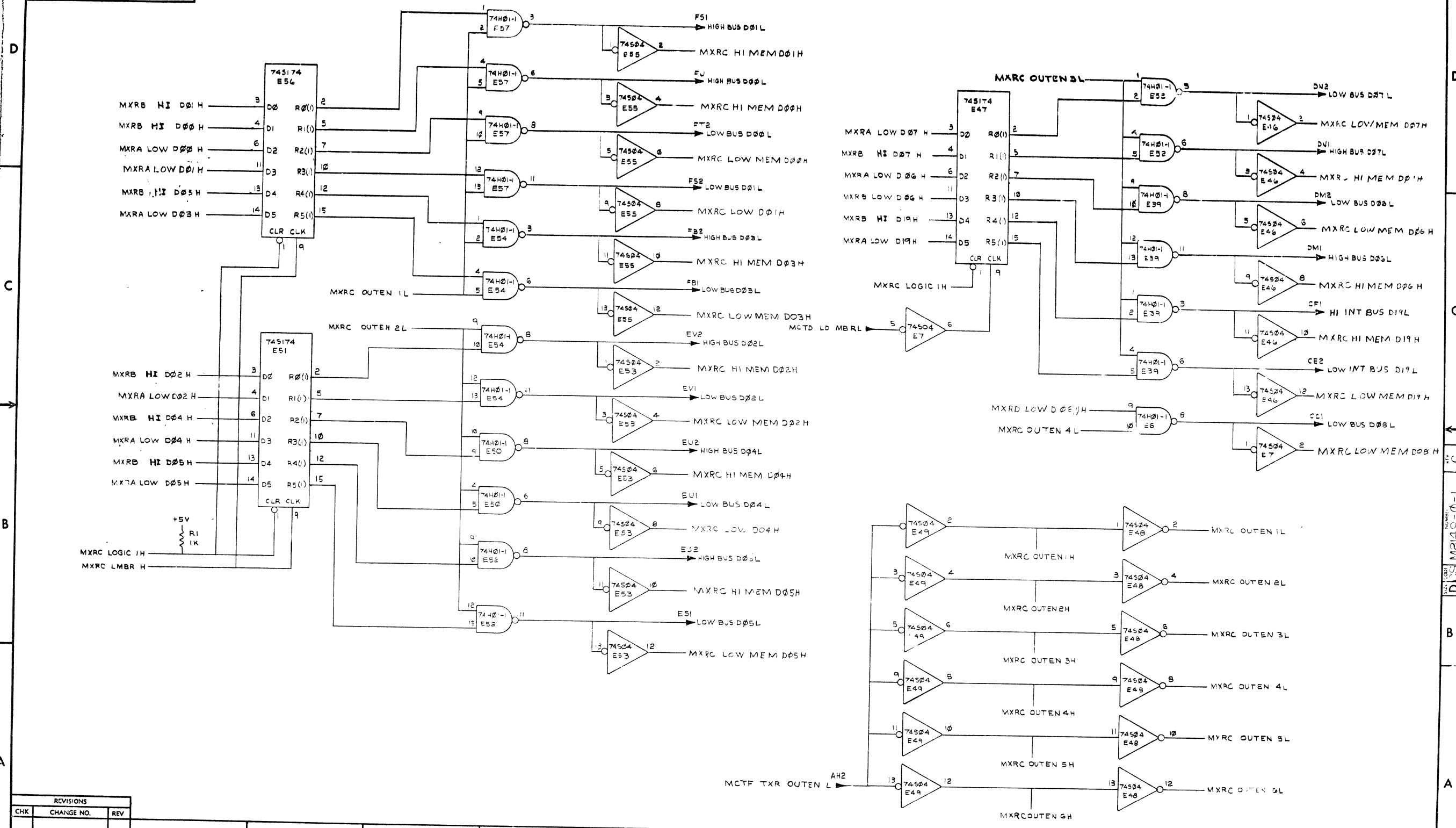


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MEMORY TRANSCEIVER CARD (MXRB) SIZE CODE DCS NUMBER M8149-01 REV. C
 SCALE SHEET 3 OF 5 DIST.

330

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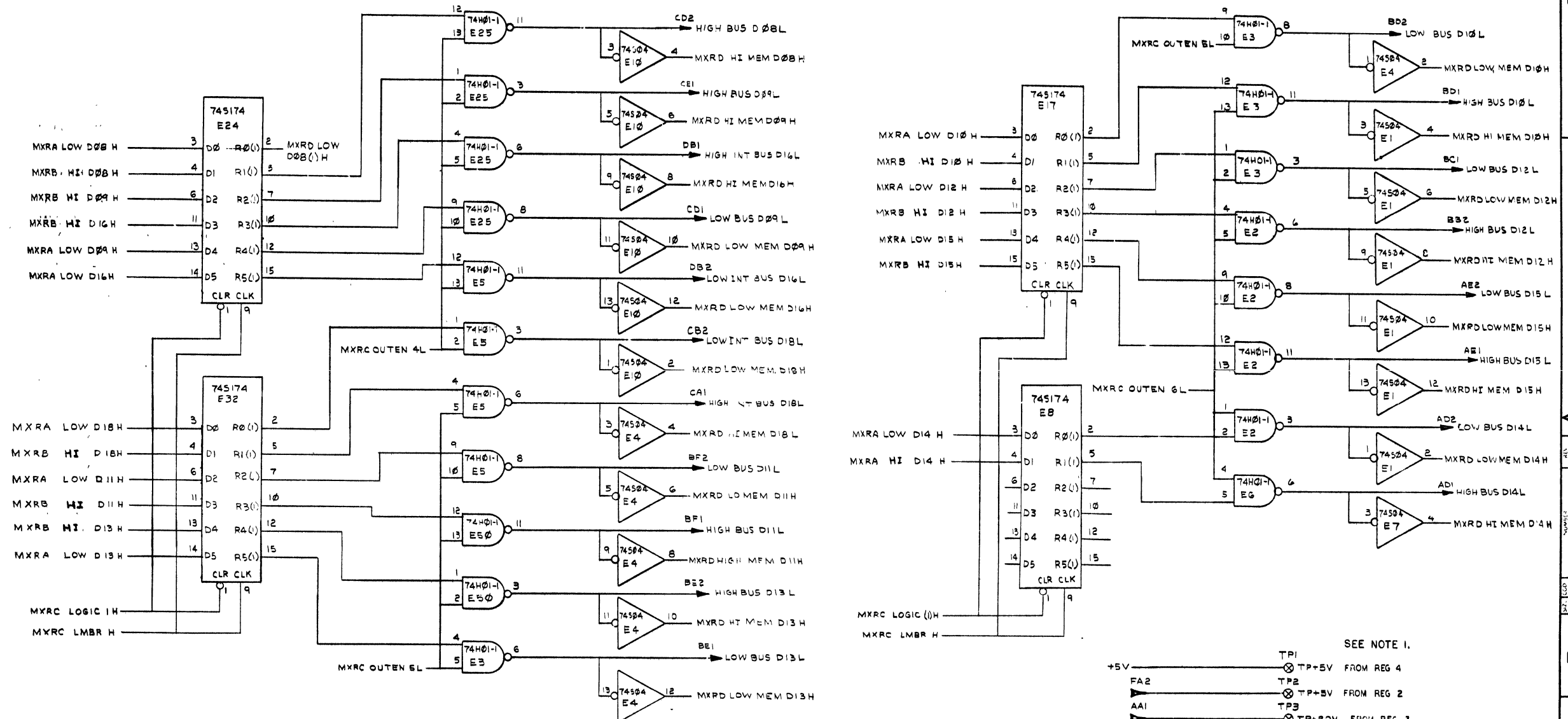


REVISIONS		
CHK	CHANGE NO.	REV

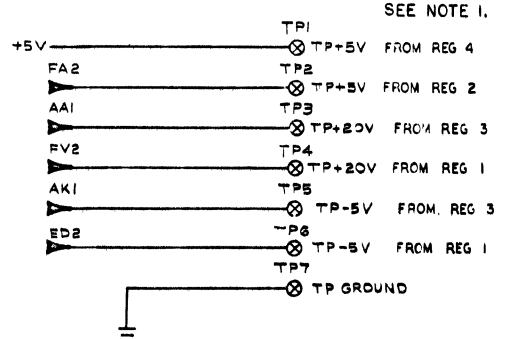
TITLE MEMORY (MXRC) TRANSCEIVER CARD
 SCALE 1/1 SHEET 4 OF 5
 SIZE CODE DCS NUMBER M8149-D-1 REV. C

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1-0-6181500 2



NOTE 1.
REGULATOR NUMBERS ARE SHOWN ON PRINT E-AD-7010694-0-0 (POWER SUPPLY MJ11).



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MEMORY TRANSCEIVER CARD (MXRD) SIZE CODE NUMBER REV. C
SCALE 1:1 SHEET 5 OF 5 DIST.

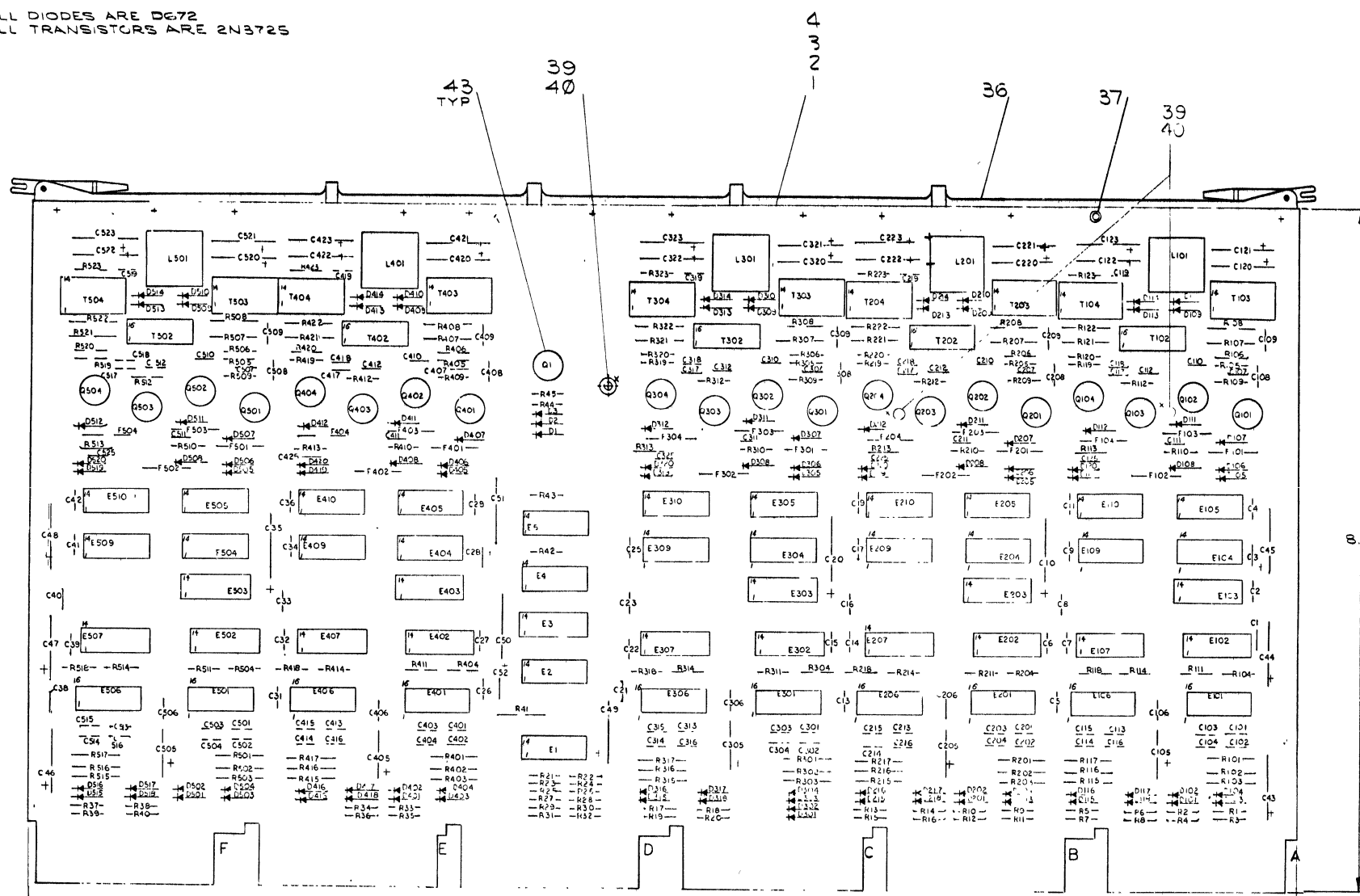
332

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS 1/4W
2. ALL CAPACITANCE IS IN MICROFARADS
3. DATA BITS 17 & 18 ARE NOT USED IN 18 BIT SYSTEMS
4. DATA BIT 18 IS NOT USED IN 19 BIT SYSTEMS
5. DATA BITS 16, 17, 18 & 19 ARE NOT USED IN 16 BIT SYSTEMS
6. ALL DIODES ARE DG72
7. ALL TRANSISTORS ARE 2N3725

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8.43 REF

15.69 REF

IC DEC 7380	1	8	-
IC DEC 8640	1	8	-
IC DEC 752B	9	16	8
IC TYPE	GND	+5V	-5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE			
IC PIN LOCATIONS			

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.											
FIRST USED ON OPTION MODEL															
MF 11-U MF 11-UP															
ETCH BOARD REV C															
PARTS LIST															
<table border="1"> <tr> <td>DRN</td> <td>DATE</td> <td rowspan="5"> EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS </td> </tr> <tr> <td>CHK'D</td> <td>DATE</td> </tr> <tr> <td>ENG</td> <td>DATE</td> </tr> <tr> <td>IND. ENG.</td> <td>DATE</td> </tr> <tr> <td>PROD.</td> <td>DATE</td> </tr> </table>					DRN	DATE	 EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	CHK'D	DATE	ENG	DATE	IND. ENG.	DATE	PROD.	DATE
DRN	DATE	 EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS													
CHK'D	DATE														
ENG	DATE														
IND. ENG.	DATE														
PROD.	DATE														
NEXT HIGHER ASSY			TITLE												
			16 K SENSE/INHIBIT												
DEC. NO.		EIA NO.	DEC NO.	EIA NO.											
SEMICONDUCTOR CONVERSION CHART															
SCALE		SIZE/CODE		REV.											
SHEET 2 OF 9		D CS		F											
		NUMBER													
		G114-0-1													
		DIST													

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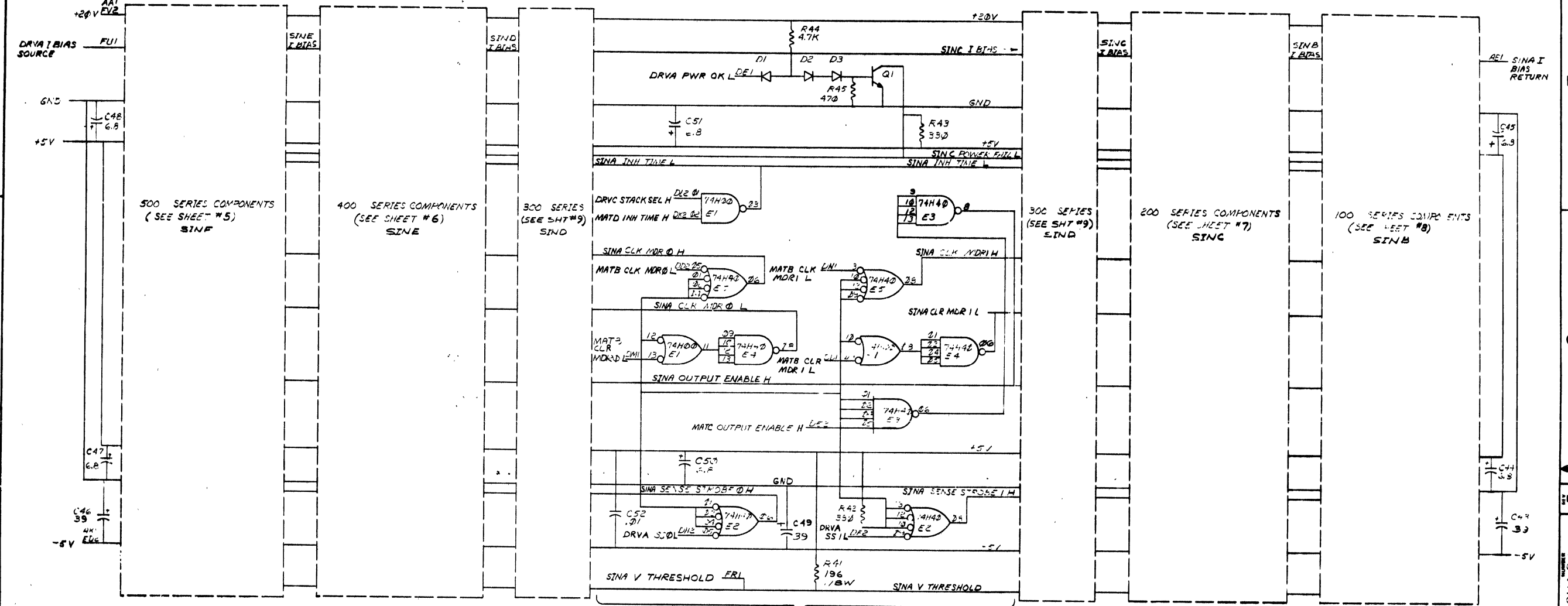
REV	QTY	REF	DESIGNATION	DESCRIPTION	PART NO	ITEM NO
1	1	REF		ETCHED CIRCUIT BOARD	5010473	1
1	1	REF		X-Y COORDINATE HOLE LOCATION	K-CO-6114-0-4	2
1	1	REF		ASSY/DRILLING HOLE LAYOUT	D-AH-6114-0-5	3
1	1	REF		MODULE ECO HISTORY	B-MH-6114-0-6	4
14	1	REF	E1	IC DEC 74H00	1909056	30
14	1	REF	E2 THRU E5, E105, E110, E205, E210, E305, E310, E405, E410, E505, E510	IC DEC 74H40	1905586	31
10	1	REF	E101, E106, E201, E206, E301, E306, E401, E406, E501, E506	IC DEC 7528 SENSE AMP	1910687	32
5	1	REF	E107, E207, E307, E407, E507	IC DEC 8881	1909705	33
10	1	REF	E104, E109, E204, E209, E304, E309, E404, E409, E504, E509	IC DEC 74H74	1909667	34
5	1	REF	L101, L201, L301, L401, L501	CHOKE 400 UH	1610963	35
1	1	REF		HANDLE ASSY	1210711-2	36
12	1	REF		EYELET GS-47	9006732	37
20	1	REF	F101 THRU F104, F201 THRU F204, F301 THRU F304, F401 THRU F404, F501 THRU F504	FUSE PICO FUSE 3/4A	1210929-3	38
3	1	REF		STANDOFF 1/4 X 3/8 T F 632 THRU	9008213	39
3	1	REF		SCREW, NYLON 6/32 X 1/4 LG	9007041-1	40
5	1	REF	E103, E203, E303, E103, E503	IC DEC 74H04	1909931	41
5	1	REF	E102, E202, E302, E402, E502	IC DEC 8640	1911469	42
21	1	REF		TRANSIPAD	9007201	43
A/R	1	REF		24 AWG WIRE	9107470	45
103	1	REF				103
20	1	REF	R1, R2, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39	RES. 180 1/4W, 5%	1301322	14
1	1	REF	R41	RES 196 1/8W, 1% MF	1302956	15
20	1	REF	R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40	RES 390 1/4W, 5%	1300309	16
2	1	REF	R42, R43	RES 330 1/4W, 5%	1300295	17
1	1	REF	R44	RES 47K 1/4W, 5%	1300447	18
20	1	REF	R101, R102, R16, R17, R20, R202, R216, R217, R301, R302, R3-6, R317, R401, R402, R416, R417, R501, R502, R5-6, R517	RES 196, 1/8W, 1% MF	1303110	19
10	1	REF	R103, R1-5, R203, R215, R303, R315, R403, R415, R503, R515	RES 1K 1/8W, 1% MF	1303114	20
20	1	REF	R104, R111, R114, R118, R204, R211, R214, R218, R304, R311, R314, R318, R404, R411, R414, R418, R504, R511, R514, R518	RES 1K, 1/4W, 5%	1300365	21
20	1	REF	R109, R110, R112, R113, R209, R210, R212, R213, R309, R310, R312, R313, R409, R410, R412, R413, R509, R510, R512, R513	RES 100 1/4W, 5%	1300229	22
20	1	REF	R105, R106, R119, R120, R205, R206, R219, R220, R305, R306, R319, R320, R405, R406, R419, R420, R505, R506, R519, R520	RES 5.1 1/4W, 5%	1300422	23
1	1	REF	R45	RES 470 1/4W, 5%	1300416	24
5	1	REF	R23, R223, R323, R423, R523	RES 150 1/4W, 5%	1300250	25
20	1	REF	R107, R108, R121, R122, R207, R208, R221, R222, R307, R308, R321, R322, R407, R408, R421, R422, R507, R508, R521, R522	RES 56 1/2W, 5%	1300995	26
21	1	REF	Q1, Q101 THRU Q104, Q201 THRU Q204, Q301 THRU Q304, Q401 THRU Q404, Q501 THRU Q504	TRANS 2N3725 (T05)	1510959	27
10	1	REF	T103, T104, T203, T204, T303, T304, T403, T404, T503, T504	TRANSFORMER SATURATING INHIBIT	1610961	28
5	1	REF	T102, T202, T302, T402, T502	TRANSFORMER, PULSE (DIP)	1609996	29

REVISIONS		
CHK	CHANGE NO	REV

TITLE	16K SENSE/INHIBIT	SIZE CODE	D C	NUMB R	G114-0-1	REV	F
SCALE		SHEET	3 OF 9	DIST			

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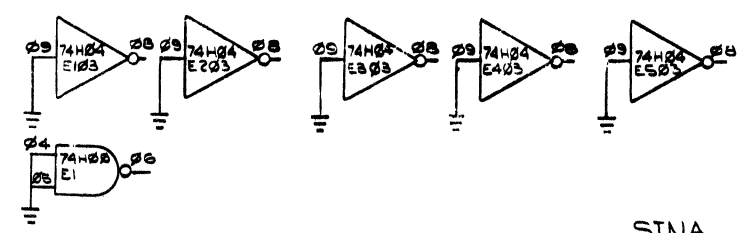
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C1 - C3	C10	C11	C13-C17	C19	C20	C21-C23	C25-C29	C31-C34	C35	C36	C38-C42	E1	E2	E3	E4	E5	E6	E7
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01

R1	R3	R5	R7	R9	R11	R13	R15	R17	R19	R21	R23	R25	R27	R29	R31	R33	R35	R37	R39
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

AM1	BM1	CM1	DM1	EM1	FM1	GM1	HM1	IM1	JM1	KM1	LM1	MM1	NM1	OM1	PM1	QM1	RM1	SM1	TM1
390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390

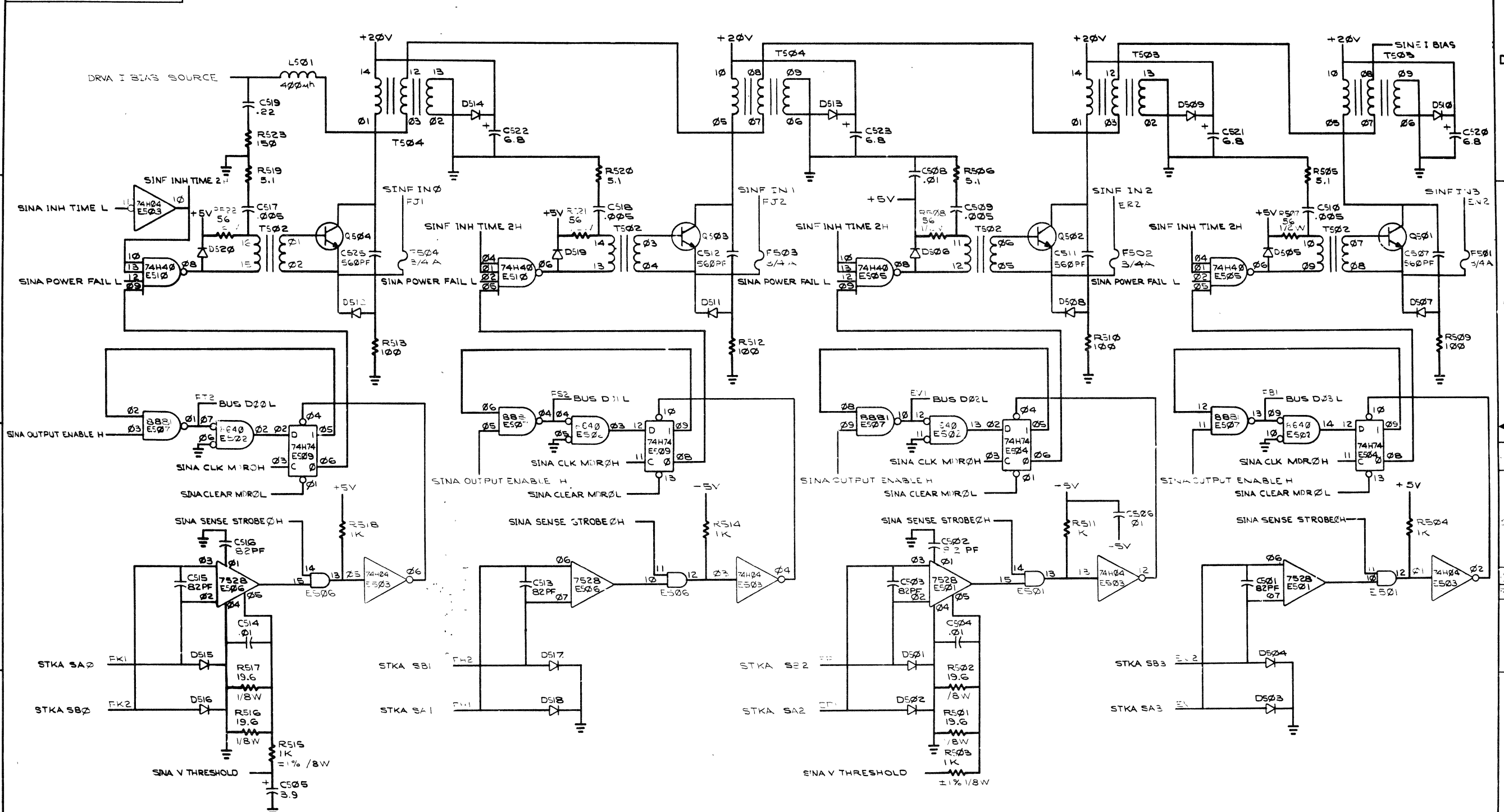


REVISIONS
 1
 2
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 9
 10

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
MF11-U & MF11-UP				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED		DATE	EQUIPMENT CORPORATION	
DIMENSION IN INCHES		4/13/73	MAYNARD MASSACHUSETTS	
TOLERANCES		DATE	TITLE	
DECIMALS	ANGLES	4/13/73	16K	
XXX - 008	± 0° 30'	DATE	SENSE/INHIBIT	
XX - 02		4/13/73	(SINA)	
X - 1		DATE	SIZE CODE NUMBER REV.	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	✓	7/13/73	D CS G114-0-1 F	
MATERIAL	NEXT HIGHER ASSY.	SCALE	SHEET 4 OF 9	
FINISH		DIST		

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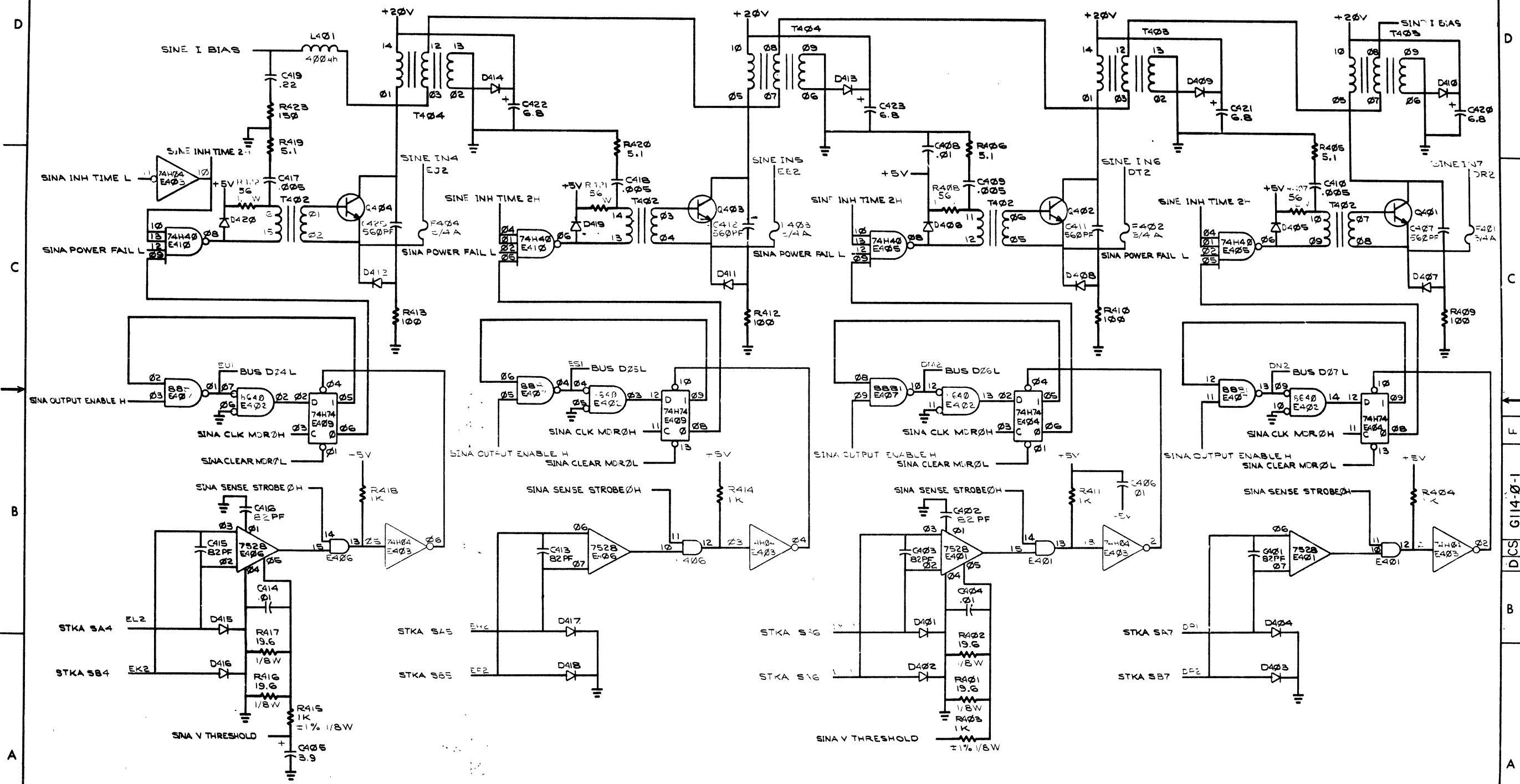


REVISIONS		
CHK	CHANGE NO	REV

TITLE		500 SERIES SINF	
16K SENSE/INHIBIT (SINF)		SIZE CODE	NUMBER
SCALE		DCS	G114-0-1
SHEET 5 OF 9		DIST	REV. F

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1-0-1119 DCS 2



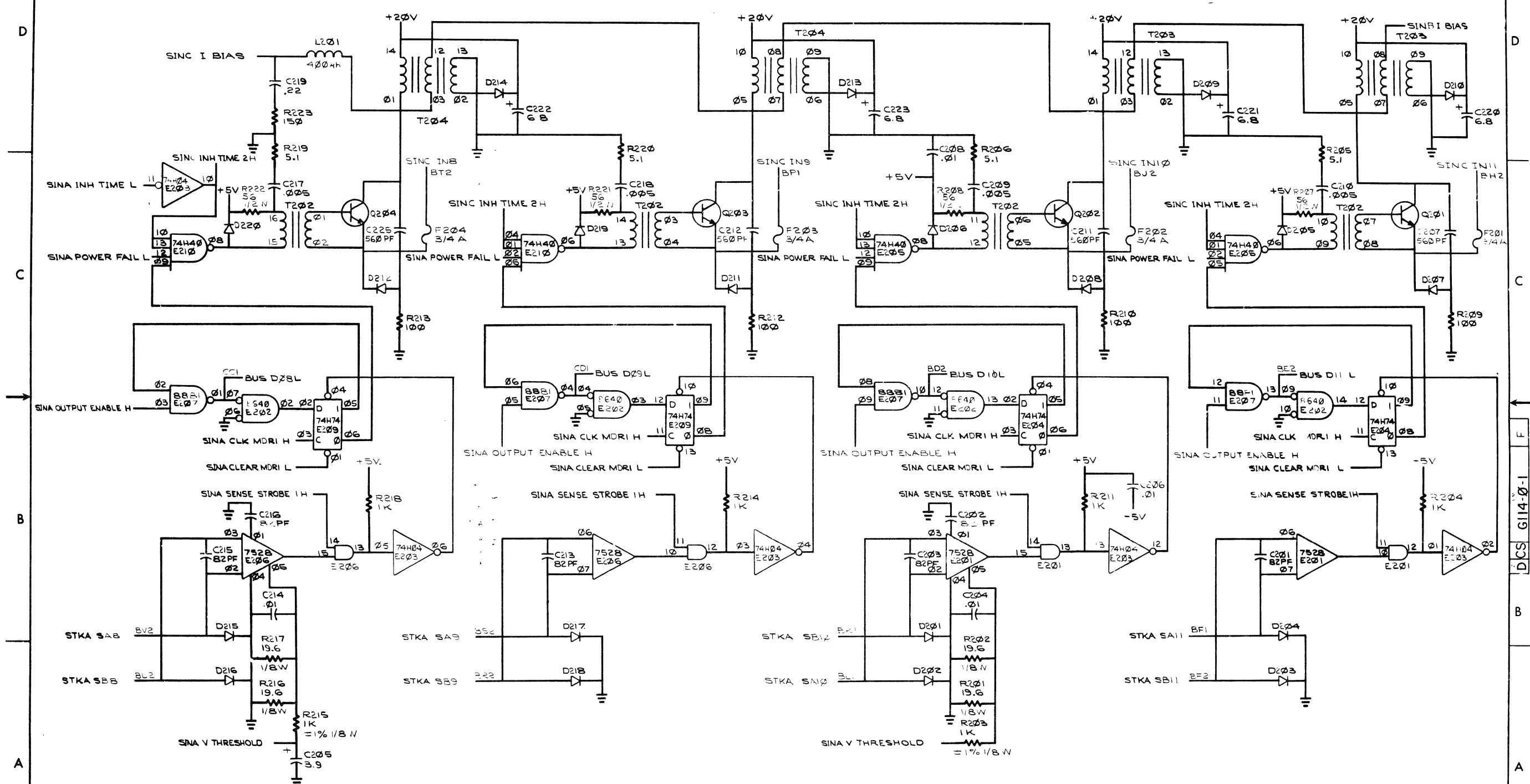
REVISIONS		
CHK	CHANGE NO	REV

400 SERIES SINE

TITLE	16K SENSE/INHIBIT (SINE)	SIZE CODE	DCS	NUMBFR	G114-0-1	REV.	F
SCALE		SHEET	6	OF	9	DIST	

DEC FORM NO. 128
DEC 128
378

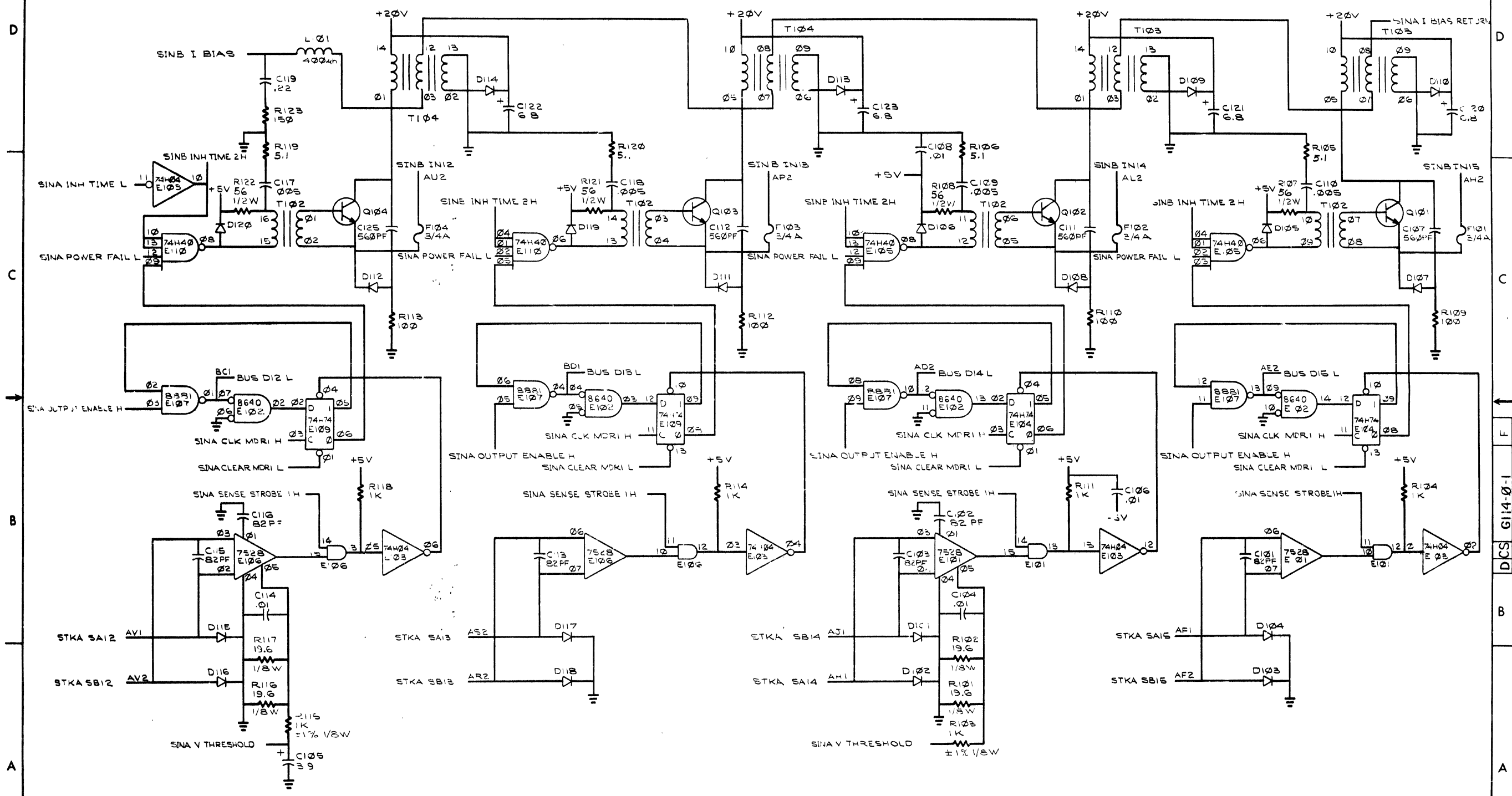
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REVISIONS		
CHK	CHANGE NO	REV

TITLE		200 SERIES SINC	
16K SENSE/INHIBIT (SINC)		SIZE CODE	NUMBER
SCALE		D CS	G114-0-1
SHEET 7 OF 9		DIST	

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REVISIONS		
CHK	CHANGE NO	REV

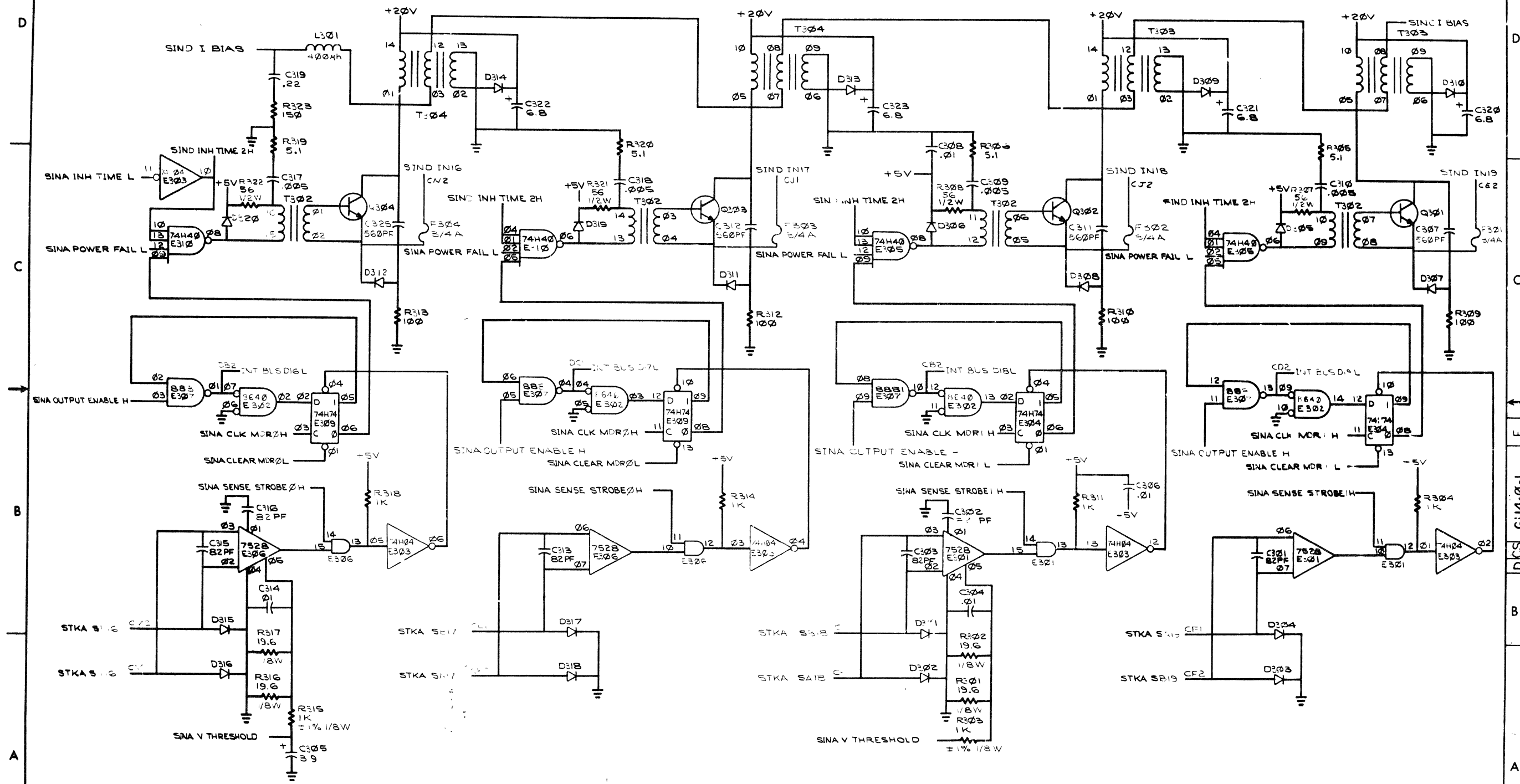
100 SERIES SINB

TITLE	16K SENSE/INHIBIT (SINB)	SIZE CODE	DCS	NUMBER	1	REV	F
SCALE	SHEET 8	OF 9	DIST				

340

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1-0-119 DCS 2



REVISIONS		
CHK	CHANGE NO	REV

300 SERIES SIND
 TITLE 16K SENSE/INHIBIT (SIND)
 SIZE CODE DCS
 NUMBER G114-0-1
 REV. F
 SCALE SHEET 9 OF 9

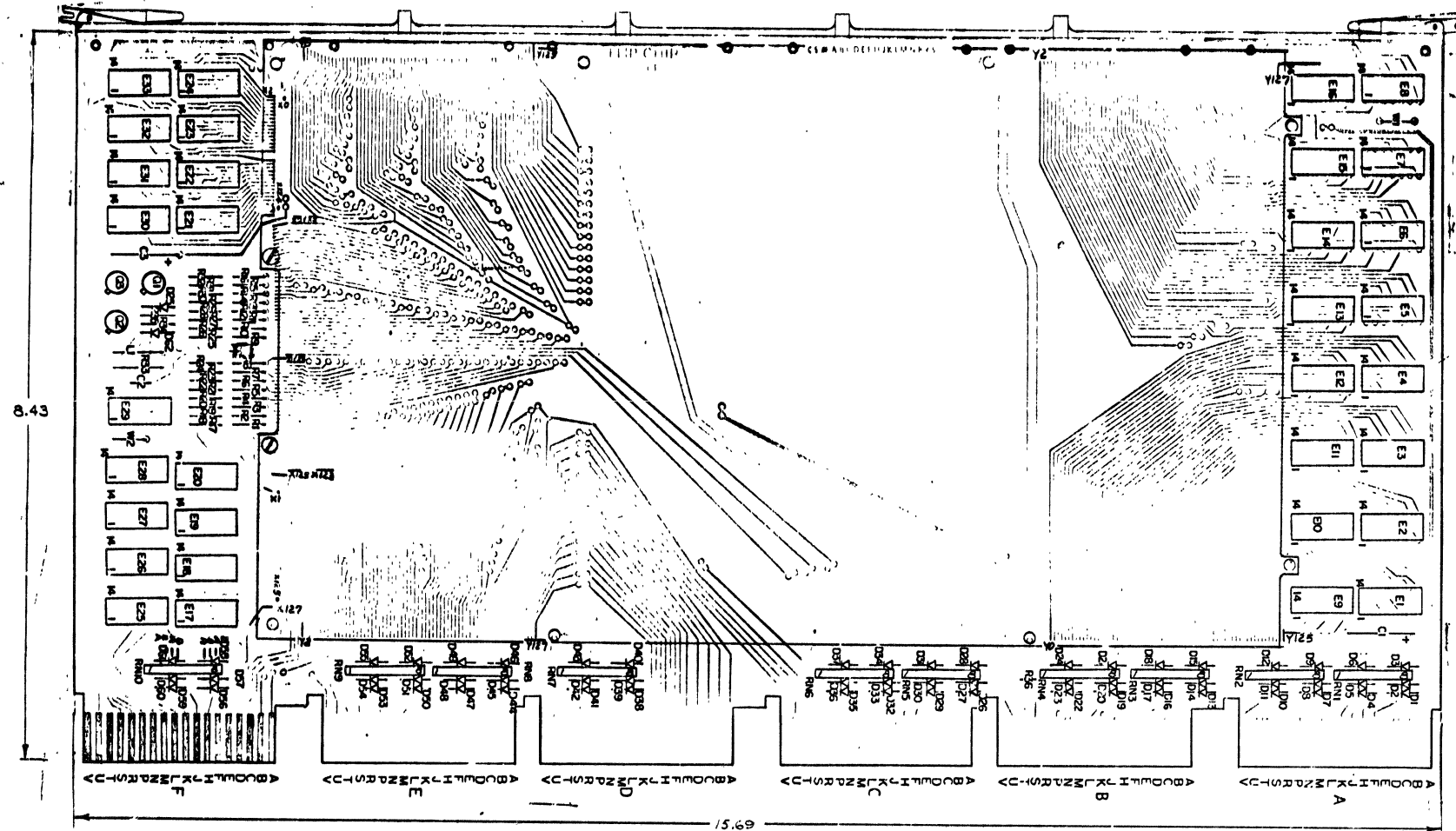
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NOTES:

1. X0 THRU X127 & Y0 THRU Y127 INDICATES RESIST WIRE TERMINATION (SOLDERED TO PRINTED CIRCUIT BOARD).
2. FOR ASSEMBLY INFORMATION & PART NOS. OF ITEMS NOT CALLED OUT ON THIS DRAWING, REFER TO E-AD-9303680-0-0 (MEMORY STACK ASSY).

NUMBER	DEC PURCHASE SPEC	DEC PART NO.	STACK CONFIGURATION
9305680-1		H217-A	16K X 20
9305680-2		H217-B	16K X 19
9305680-3		H217-C	16K X 18
9305680-4		H217-D	16K X 16



1	MEMORY STACK ASSY	9305680	24
3	TRANSIPADS	9007200	23
2	W1, W2	WIRE, BUS #22 AWG	22
			21
			20
			19
1	R36	RES 30 2% THERMAL DISC	1309735
1	L1	CAP 100 1% 10V	16 10462
3	R1, R2, R3	TRMM 1.0% DEC 734	15 10062
30	R1 THRU R32	RES 220 14W 5%	13 00271
2	R34, R35	RES 220 14W 5%	13 00219
1	R33	RES 39 12W 5%	13 02334
10	R11 THRU R10	RES NETWORK 2-SK, 4-IN	13 10964
1	D29	IC DEC 74140	19 05552
3	E1 THRU E8, E10 THRU E33	IC DEC 2121 (16 DIODE)	19 10010
62	D1 THRU D62	DIODE 672	11 05275
2	C1, C2	CAP 0.05 35V 3% STANT	9 05300
1	C2	CAP 0.1 50V 20%	10 01610-00
			6
			5
			4
			3
			2
REF	X-Y COORDINATE HOLE LOCATION	KCO-H217 0-4	
1	ETCH CAT BOARD (G 6 47)	5010023	7

DEC 2501	N/A	N/A
IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

FIRST USED ON OPTION MODEL
MF11-VUP

CHK	CHG	REV	REVISIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.
DEC 3734	NONE	DEC 672	1N3653

SEMICONDUCTOR CONVERSION CHART

DATE: 7-11-72
DATE: 11/17/73
DATE: 11/17/73
DATE: 8/16/73

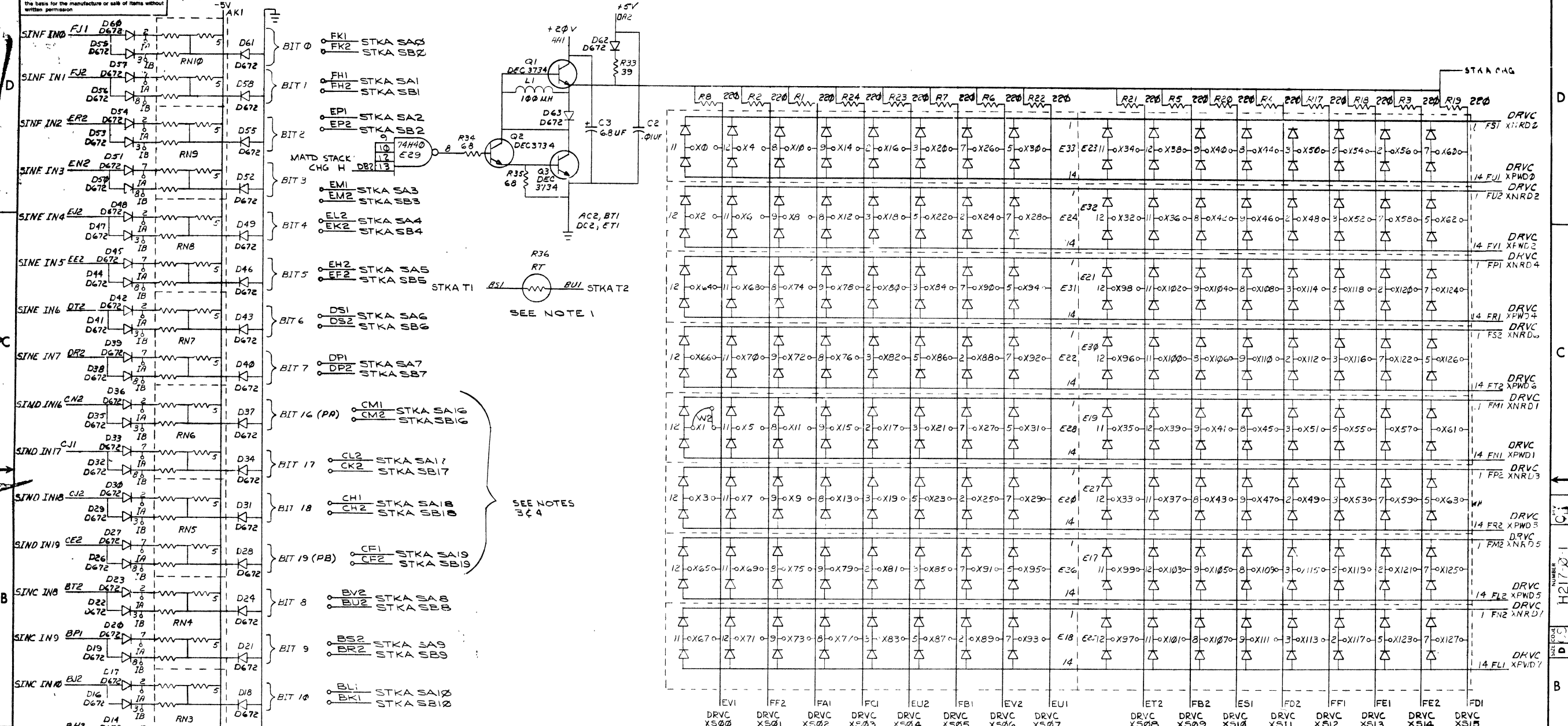
EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

STACK BOARD

SIZE CODE: DCS NUMBER: H217-0-1 REV: E

SHEET 1 OF 3

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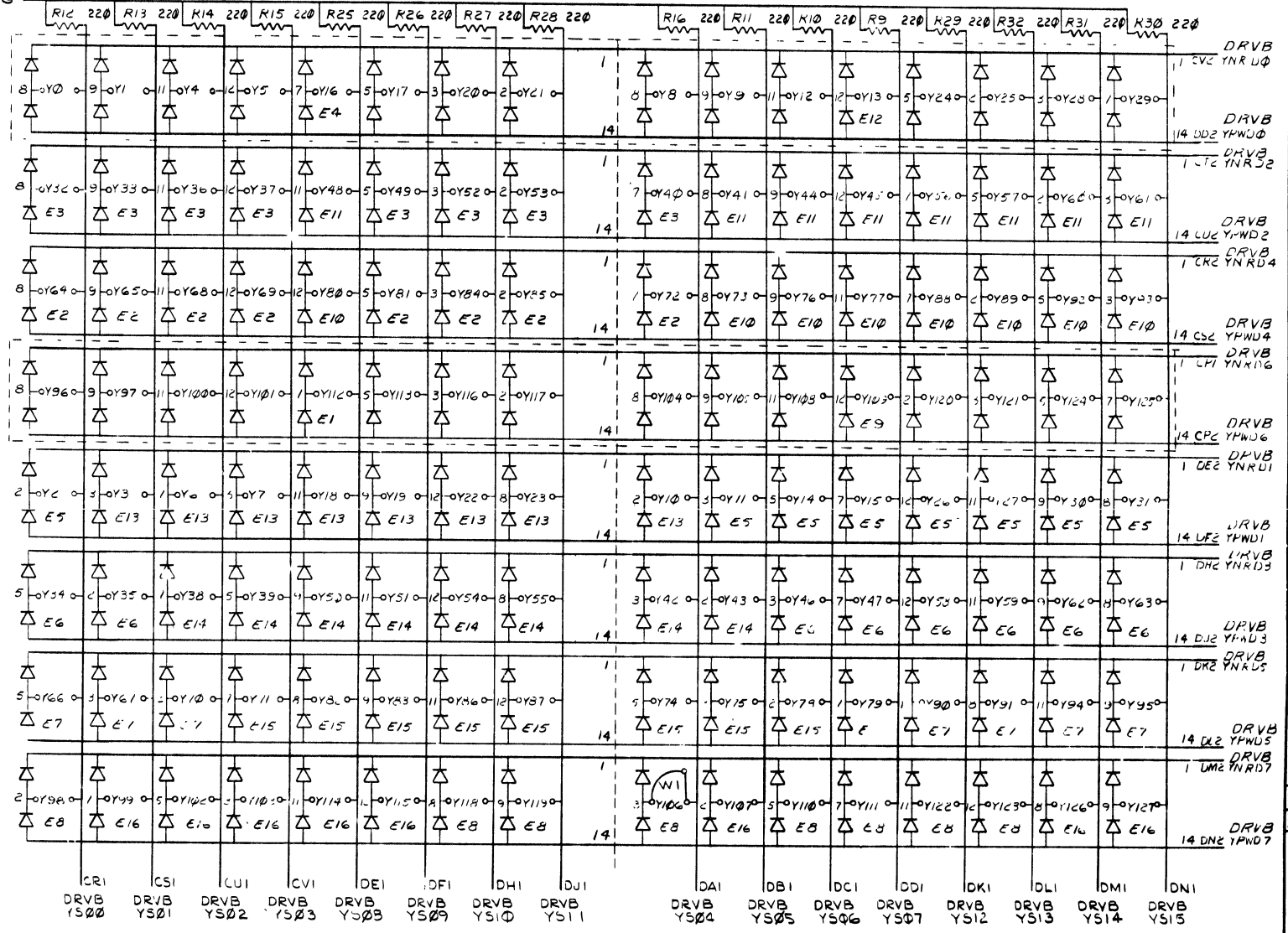
- NOTES:
1. THERMISTOR FOR TEMPERATURE COMPENSATION
 2. JUMPER W2 IS A CURRENT LOOP FOR TEST USE ONLY
 3. FOR H217-D (16 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; RN5, RN6, D26 THRU D37
 4. FOR H217C (18 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; D29, D30, D32, D33. FOR THE UNUSED BITS, THE FOUR MAGNET WIRE TERMINATION PADS (IA, IB, SA, SB) MUST BE SHORTED TOGETHER
- FOR H217B (19 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; D29, D30. FOR THE UNUSED BIT, THE FOUR MAGNET WIRE TERMINATION PADS (IA, IB, SA, SB) MUST BE SHORTED TOGETHER

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
ETCH BOARD REV E				
DRN		DATE	EQUIPMENT CORPORATION	
CHKD		DATE	MAYNARD MASSACHUSETTS	
EJG		DATE	TITLE	
RJO		DATE	STACK BOARD	
RJO		DATE	(STKA)	
RJO		DATE	NUMBER	
RJO		DATE	REV. C	
NEXT HIGHER ASSY		SCALE		
DEC NO		EIA NO.	DEC NO.	EIA NO.
SEMICONDUCTOR CONVERSION CHART				SHEET 2 OF 3
SIZE CODE DCS				DIST

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STKA CHG



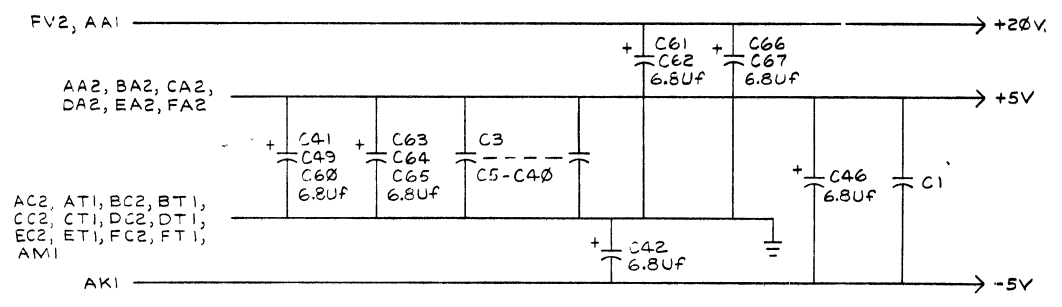
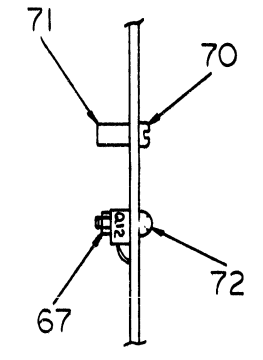
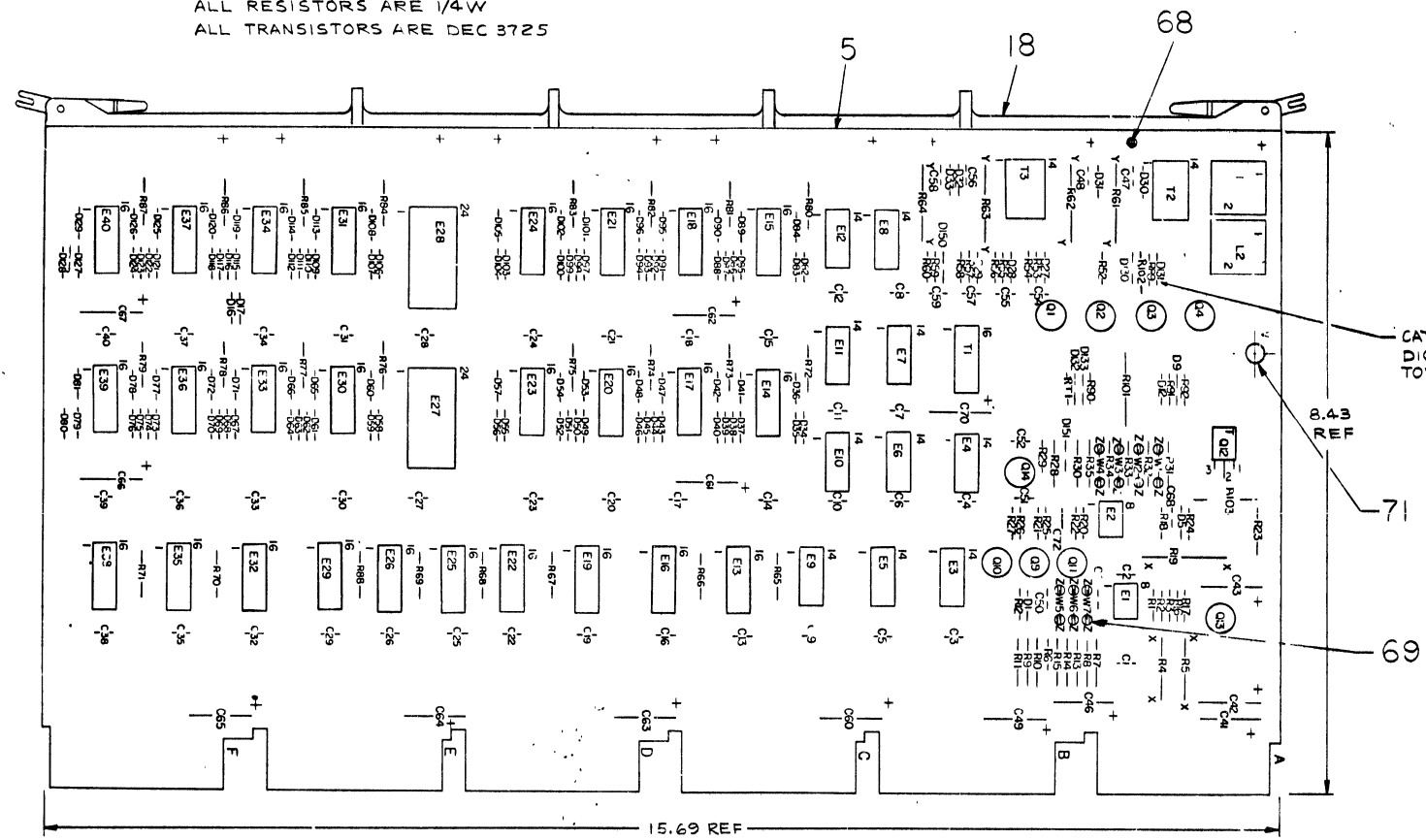
NOTE: JUMPER W1 IS A CURRENT LOOP FOR TEST USE ONLY

QTY		REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST					
ETCH BOARD REV E					
CHK CHANGE NO. REV	DATE	BY	EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS		
	DATE	BY	TITLE		
	DATE	BY	STACK BOARD (STK1)		
	DATE	BY	SIZE CODE	NUMBER	REV.
	DATE	BY	D1CS	H217-0-1	C
DEC NO.		EIA NO.	DEC NO.	EIA NO.	SCALE
					3 OF 3
		SEMICONDUCTOR CONVERSION CHART		SHEET	DIST.

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NOTES:

1. * INDICATES NOT USED ON MF11-U & MF11-UP (2 PLACES).
2. ** INDICATES NOT USED ON MF11-U & MF11-UP, BUT ARE TIED TO UNUSED TERMINATORS ON THE G114 MODULE, WHICH FORCES THEM TO +3V (5 PLACES).
3. † THERMISTOR LOGGED ON H217 STACK MODULE, † ON G235
4. UNLESS OTHERWISE INDICATED;
 ALL DIODES ARE D672
 ALL CAPACITORS ARE .01UF
 ALL RESISTORS ARE 1/4W
 ALL TRANSISTORS ARE DEC 3725



IC TYPE	GND	+5V	+20V
74121	7	—	—
741	—	—	—
75325	—	9	16
7442	8	16	—
74154	12	24	—

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
FIRST USED ON OPTION MODEL				
MF11-U & MF11-UP				
ETCH BOARD REV D				
PARTS LIST				
DRN		DATE	EQUIPMENT CORPORATION	
CHKD		DATE	MAYNARD, MASSACHUSETTS	
DWN		DATE	TITLE	
REV		DATE	1GK X-Y DRIVE	
NEXT HIGHER ASSY		DATE	SIZE CODE	
DEC NO.		EIA NO.	DEC NO.	EIA NO.
SCALE		NUMBER		R.V.
SHEET 2		DCS G235-0-1		N
SEMICONDUCTOR CONVERSION CHART				
SHEET 2		OF 6		DIST.

REV. 40-52 1649

346

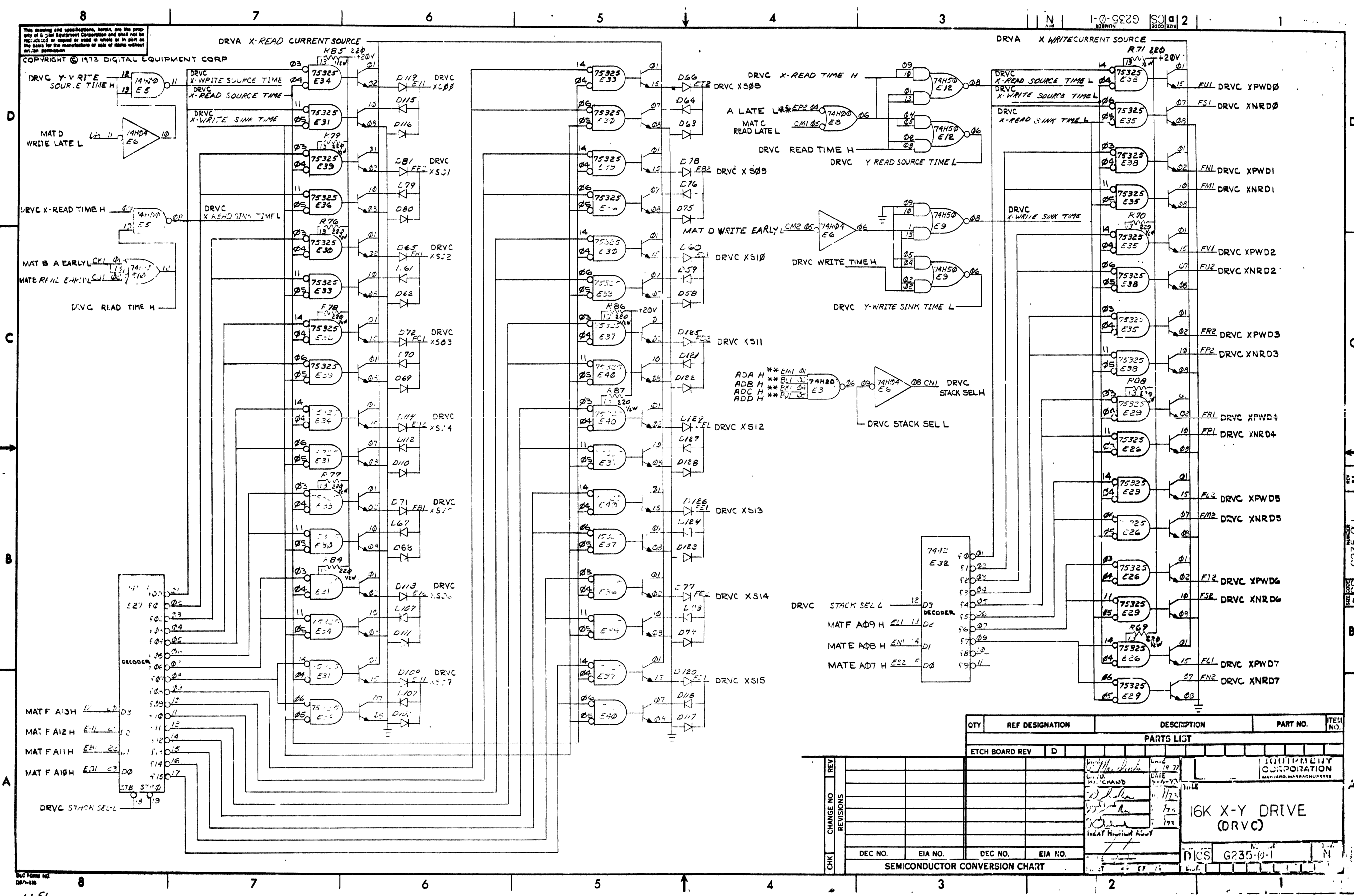
DCS G235-0-1 N

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D
C
B
A

QTY	REF	DESIGNATION	DESCRIPTION	PART NO	ITEM NO	QTY	REF	DESIGNATION	DESCRIPTION	PART NO	ITEM NO
1	E8	IC DEC 74H04		1909931	82						1
1	E10	IC DEC 74H10		1909057	83	REF	X-Y COORDINATE HOLE LOCATION		K-CO-G235-0-4		2
2	E7, E11	IC DEC 74H40		1905586	84	REF	ASSY/DRILLING HOLE LAYOUT		D-AH-G235-0-5		3
24	E13-E18, E20-E26, E28-E31, E33-E40	IC DEC 75325		1910980	85	REF	ECO MODULE HISTORY		B-WH-G235-0-8		4
2	E9, E12	IC DEC 74H50		1909060	86	1	ETCHED CIRCUIT BD.		5010145		5
1		KEPNUT 4-40		9008557	87	46	CAP 47 PF 100V 5% D.M.		1000011		8
12		EYELET HANDLE		9006732	88	4	C1-C40, C48, C50, C52, C58, C68, C72		CAP .01UF 50V 20%	1001810	7
14		SPLIT LUGS		9006735	89	1	C53, C54, C55, C57		CAP .005 UF 100V 20% DISC	1001765	8
1		SCREW NYLON 6-32		9008212-1	70	1	C51		CAP 18 PF 100V 5% D.M.	1002808	9
1		STAND OFF 1/4 X 3/8		9008213	71	13	C43		CAP 47 UF 20V 10% S. TANT	1004814	10
1		SCREW (PHILLIPS PAN HEAD) 4-40 X 5/16		9006016-1	72	1	C41, C42, C46, C49, C60-C67, C70		CAP 6.8UF 35V 10% S. TANT	1005308	11
1	R31	RES 19.6K 1/8W 1%		1309419	73	109	D1		DIODE ZENER IN753A 6.2V ± 5%	1102421	12
A/R	WI-WT	WIRE #22 AWG (SOLID)		9107560-1	74	1	D9, D12, D17, D27-D130, D132, D150		DIODE DB72	1105275	13
1	R91	RES 180Ω 1/4W 5%		1301322	75	1	D16		DIODE ZENER IN5248B 18V ± 10%	1110766	14
1	D133	DIODE ZENER IN752A 5.6V ± 5%		1102808	76	1	D5		DIODE ZENER IN749A 4.3V ± 5%	1109977	15
1	R92	RES 150Ω 1/4W 5%		1300250	77	1	D131		DIODE ZENER IN754A 6.8V ± 5%	1109991	16
2	C47, C56	CAP .022UF 50V		1011683	78	1	D151		DIODE ZENER IN750A 4.7V ± 5%	1100124	17
1	RT1	THERM SENS 300Ω 2%		1309785	79	2			HANDLE ASSY	1210711-2	18
1	R102	RES 330Ω 1/4W 5%		1300295	80	12	R18, R24		RES 100 1/4W 5%	1300229	19
1	Q11	TRANS DEC 4258		1505321	81	1	R69-R71, R76-R79, R84-R88		RES 220 1/2W 5%	1300274	20
1	E3	IC DEC 74H20		1905635	82	12	R101		RES 220 2W 10%	1300278	21
1	R7	RES 909K 1/8W 1%		1304855	83	2	R65-R68, R72-R75, R80-R83		RES 270 1/2W 5%	1300285	22
1	R103	RES 75Ω 1W 5%		1305281	84	2	R21, R27		RES 470 1/4W 5%	1300318	23
A/R		WIRE #30		9105740-55	85	1	R3, R16		RES 1K 1/4W 5%	1300365	24
						1	R23		RES 1K 1/2W 5%	1300264	25
						1	R2		RES 4.7K 1/4W 5%	1300447	26
						1	R17		RES 10 1/4W 5%	1301317	27
						1	R89		RES 82Ω 1/4W 5%	1301477	28
						4	R61-R64		RES 10Ω 2W 10%	1300172	29
						1	R22		RES 22K 1/4W 5%	1301808	30
						1	R12		RES 270 1/4W 5%	1301972	31
						4	R54, R56, R58, R60		RES 18 1/4W 5%	1302124	32
						4	R53, R55, R57, R59		RES 75 1/4W 5%	1302379	33
						4	R25, R26, R52, R20		RES 2K 1/4W 5%	1302388	34
						2	R1, R6		RES 470K 1/4W 5%	1302398	35
						1	R29		RES 120K 1/4W 5%	1302539	36
						2	R32, R8		RES 10K 1/8W 1%	1302886	37
						2	R28, R30		RES 14.7K 1/8W 1%	1302941	38
						1	R9		RES 207 1/8W 1%	1305124	39
						1	R10		RES 188 1/8W 1%	1302958	40
						1	R35		RES 1.16K 1/8W 1%	1303045	41
						1	R34		RES 34.8K 1/8W 1%	1303156	42
						1	R14		RES 243K 1/8W 1%	1304843	43
						1	R11		RES 2.61K 1/8W 1%	1305252	44
						2	R15, R33		RES 68.1K 1/8W 1%	1305252	45
						1	R13		RES 121K 1/8W 1%	1305255	46
						2	R4, R5		RES .25 3W 1%	1310219	47
						1	R19		RES .08 5W 3%	1310983	48
						1	R90		RES 6.8K 1/4W 5%	1302402	49
						1	Q14		TRANS DEC 2904A	150.913	50
						1	Q13		TRANS DEC 6534B	1503409-1	51
						1	Q12		TRANS DEC 4820	1509605	52
						6	Q1-Q4, Q9, Q10		TRANS DEC 3725	1510959	53
						1	T1		PULSE TRANSFORMER (DIP)	1809951	54
						2	T2, T3		SATURATING TRANSFORMER-XY	1610982	55
						2	L1, L2		CHOKER 400 UH	1810963	56
						2	E27, E28		IC DEC 74154	1809701	57
						2	E19, E32		IC DEC 7442	1810048	58
						1	E4		IC DEC 74121	1910230	59
						2	E1, E2		IC DEC 741	1910298	60
						2	E5, E8		IC DEC 74H00	1909056	61

REVISIONS		
CHK	CHANGE NO	REV

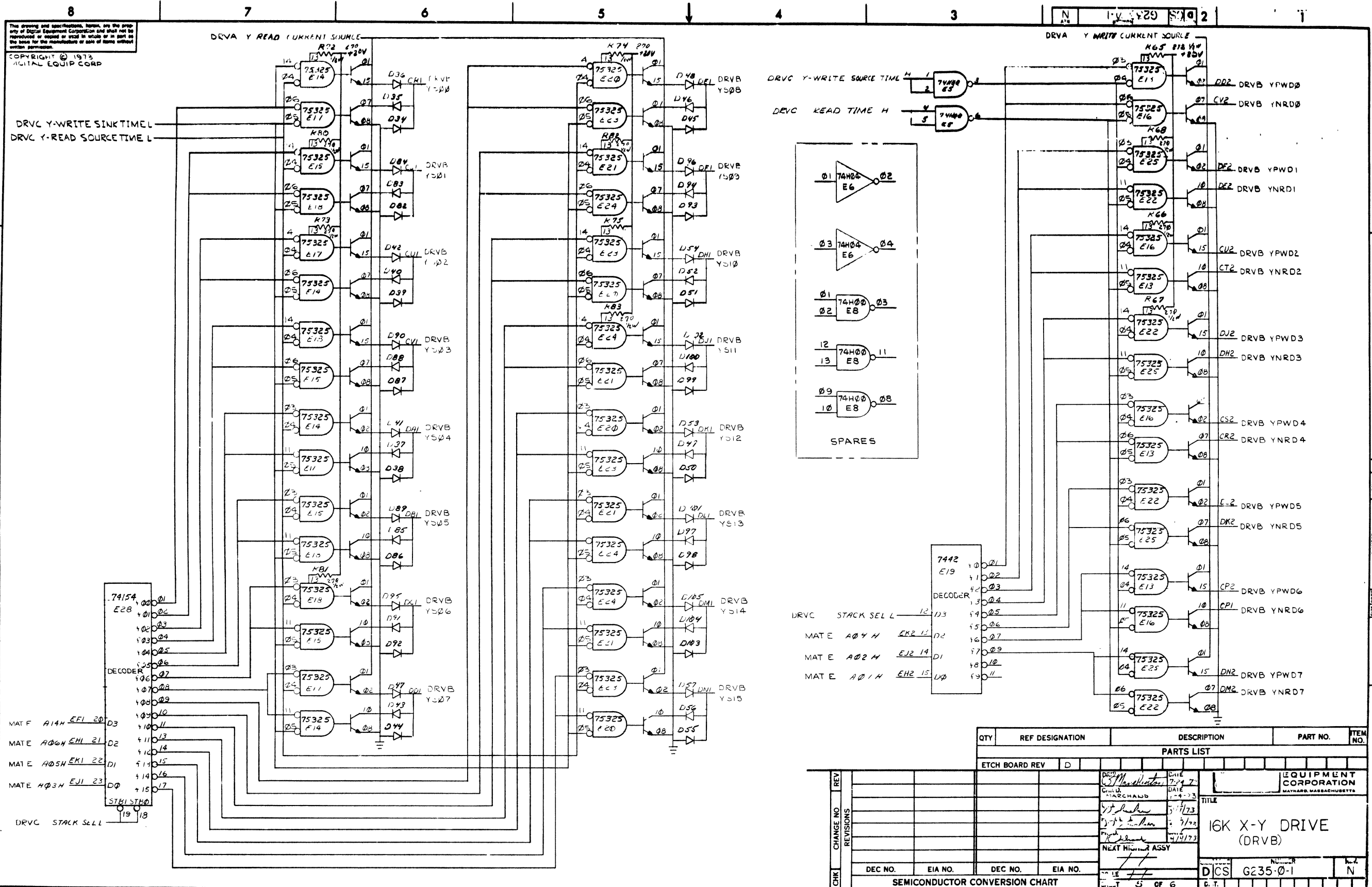


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QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
ETCH BOARD REV D				
16K X-Y DRIVE (DRVC)				
SEMICONDUCTOR CONVERSION CHART				
DEC NO.	EIA NO.	DEC NO.	EIA NO.	

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REV N C235-01



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DRVC Y-WRITE SINK TIME L
 DRVC Y-READ SOURCE TIME L

DRVC STACK SEL L

MATE A14H EFL 20 D3
 MATE A06H EHL 21 D2
 MATE A05H EKI 22 D1
 MATE A03H EJI 23 D0

7442
 E19
 DECODER

DRVC STACK SEL L 12 113
 MATE A04H EKR 12 D2
 MATE A02H EJ2 14 D1
 MATE A01H EHR 15 D0

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
ETCH BOARD REV D				
REV	CHG NO	REVISIONS	DATE	TITLE
1			5/24/73	16K X-Y DRIVE (DRVB)
2			1-4-73	
3			5/17/73	
4			7/22	
5			9/19/73	
NEAT HIGH ASSY				
DEC NO.		EIA NO.	DEC NO.	EIA NO.
SEMICONDUCTOR CONVERSION CHART				
PAGE 5 OF 6				

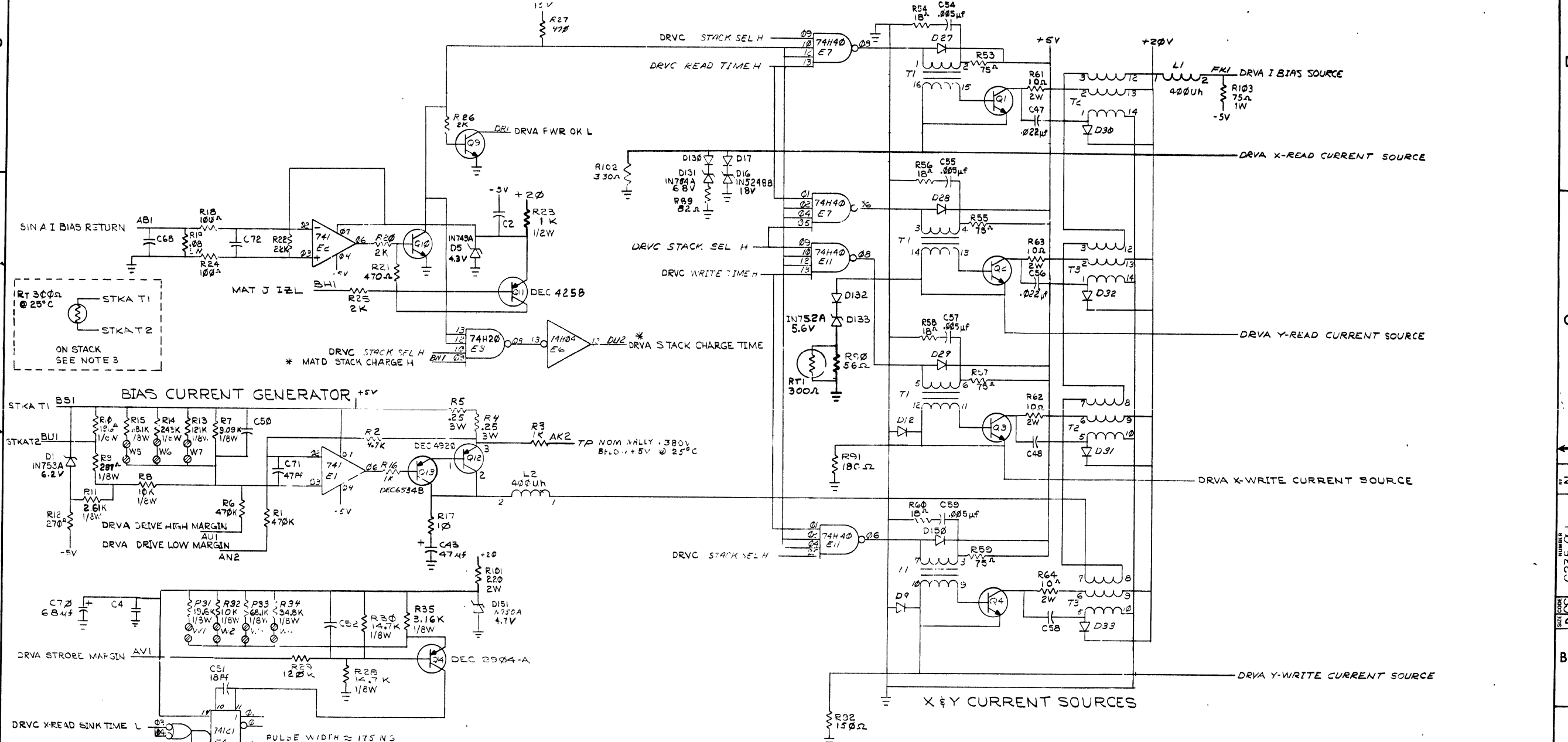
DIGITAL EQUIPMENT CORPORATION
 MAYNARD, MASSACHUSETTS

16K X-Y DRIVE (DRVB)

NUMBER G235-0-1
 N

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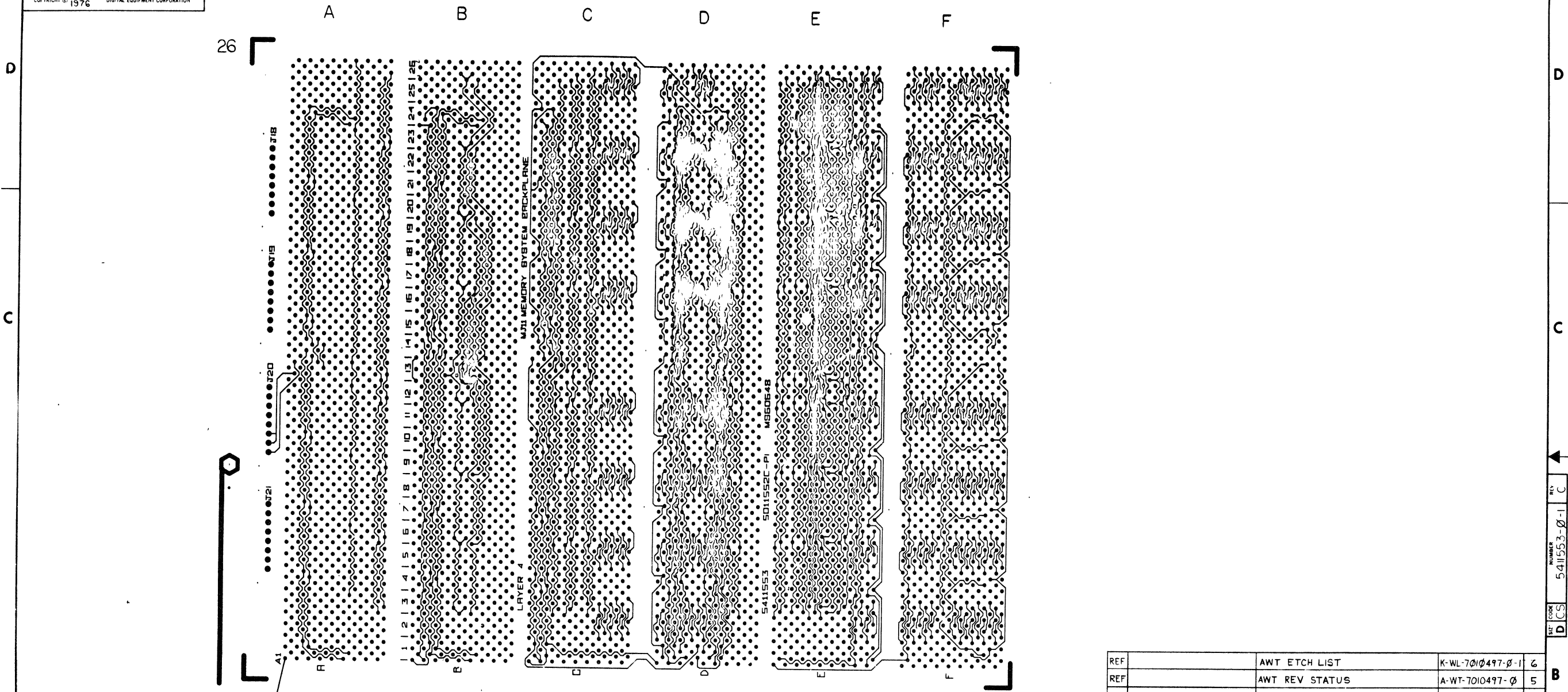


QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
ETCH BOARD REV D				
DRN		DATE	EQUIPMENT CORPORATION	
CHKD.		DATE	MAYNARD MASSACHUSETTS	
ENGR.		DATE	TITLE	
PROJ. ENGR.		DATE	16K X-Y DRIVE (DRVA)	
PROD. ENGR.		DATE	SIZE/CODE NUMBER REV.	
NEXT HIGHER ASSY		DCS G235-0-1 N		
DEC NO.		EIA NO.	DEC NO.	EIA NO.
SEMICONDUCTOR CONVERSION CHART		SCALE	SHEET 6 OF 6	

DRVA 16K
DI -135

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NOTES:



IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

A0IA1

(LAYER 4)

REF	AWT ETCH LIST	K-WL-7010497-0-1	6
REF	AWT REV STATUS	A-WT-7010497-0	5
REF	MODULE ECO HISTORY	B-MH-5411553-0-6	4
REF	ASSY/DRILL HOLE LOCATION	D-AH-5411553-0-5	3
REF	X-Y COOR. HOLE LOCATION	K-CO-5411553-0-4	2
I	ETCH CIRCUIT BOARD	D-IA-5011552-0-0	1
QTY	REF. DESIGNATION	DESCRIPTION	PART NO. ITEM NO.

FIRST USED ON OPTION MODEL	MJ11-A
ETCH BOARD REV	C-P1

DRW	DATE	2/2/76
CHKD	DATE	6/15/76
ENG	DATE	7-5-76
PROJ ENR	DATE	9-2-76
PROD	DATE	
NEXT HIGHER ASSY		
E-IA-7010497-0-0		
SCALE	1/1	
SHEET	1 OF 4	

DEC NO.	EIA NO.	DEC NO.	EIA NO.

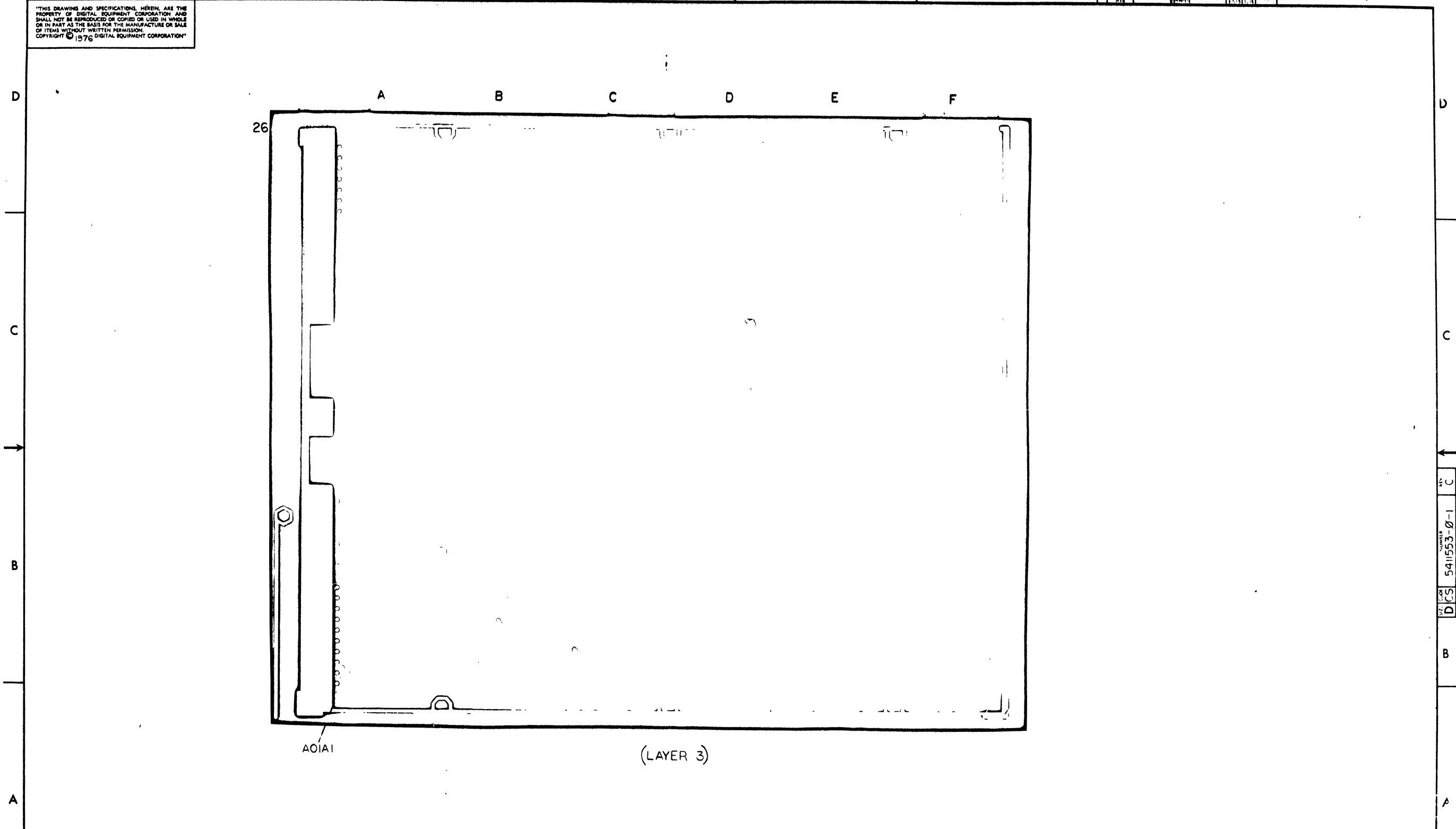
SIZE CODE	D CS
NUMBER	5411553-0-1
REV.	C

DEC FORM NO. DRC 135.8

REV. C
 NUMBER 5411553-0-1
 CS
 D

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CS 5411553-0-1 2



AOIA1

(LAYER 3)

REVISIONS		
CHK	CHANGE NO.	REV.

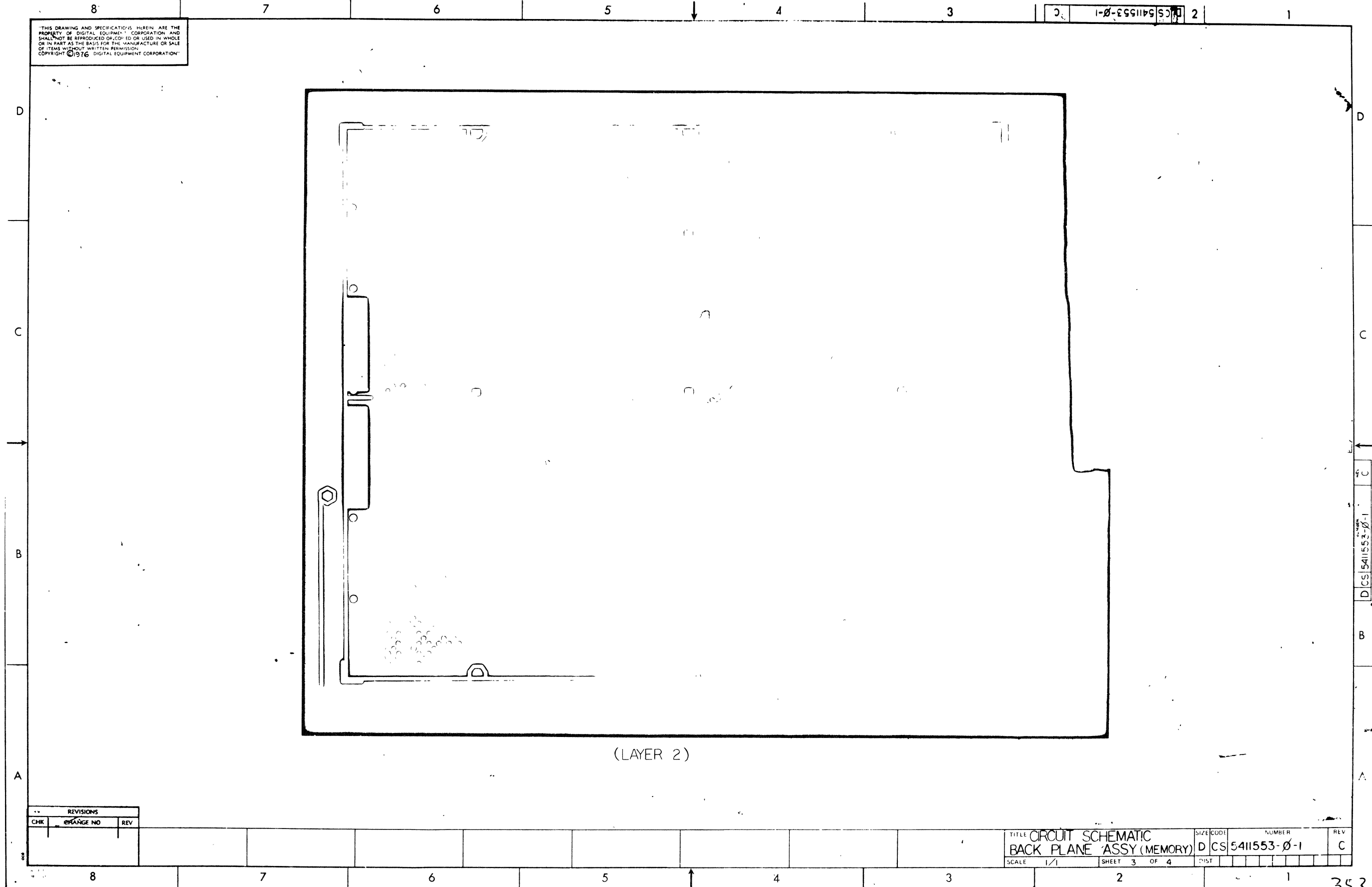
TITLE	CIRCUIT SCHEMATIC	SIZE CODE	NUMBER	REV.
BACK PLANE ASSY (MEMORY)	D/CS	5411553-0-1	C	
SCALE	1/1	SHEET	2 OF 4	DIST.

352

CS 5411553-0-1 C

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D CS 5411553-Ø-1 2



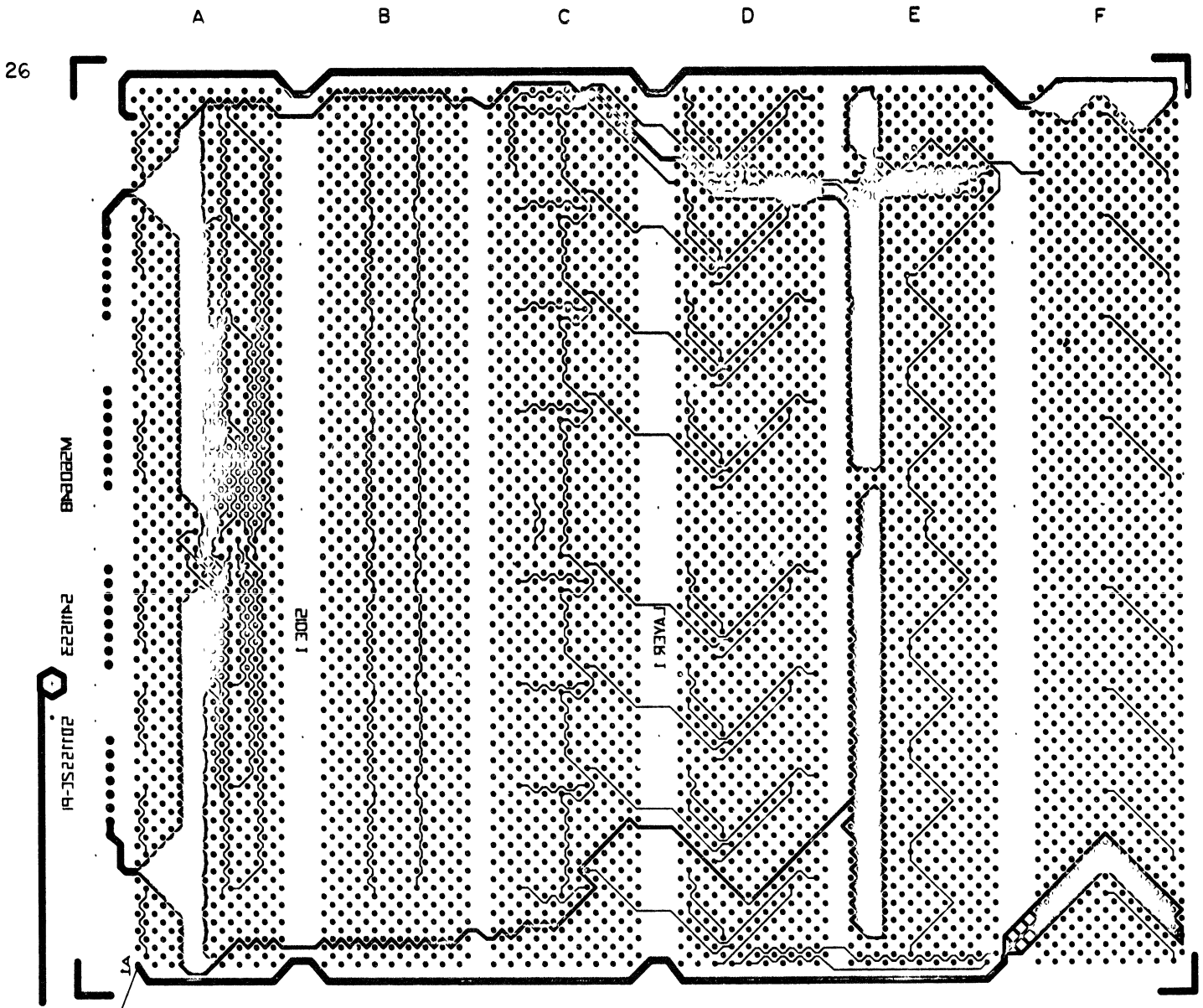
(LAYER 2)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	CIRCUIT SCHEMATIC	SIZE CODE	D CS	NUMBER	5411553-Ø-1	REV	C
SCALE	1/1	SHEET	3	OF	4	DIST	

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5411553-0-1 DCS 2



AOIAI

(LAYER 1)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE CIRCUIT SCHEMATIC
 BACK PLANE ASSY (MEMORY) DCS
 SCALE 1/1 SHEET 4 OF 4 DIST
 SIZE CODE NUMBER REV.
 DCS 5411553-0-1 C

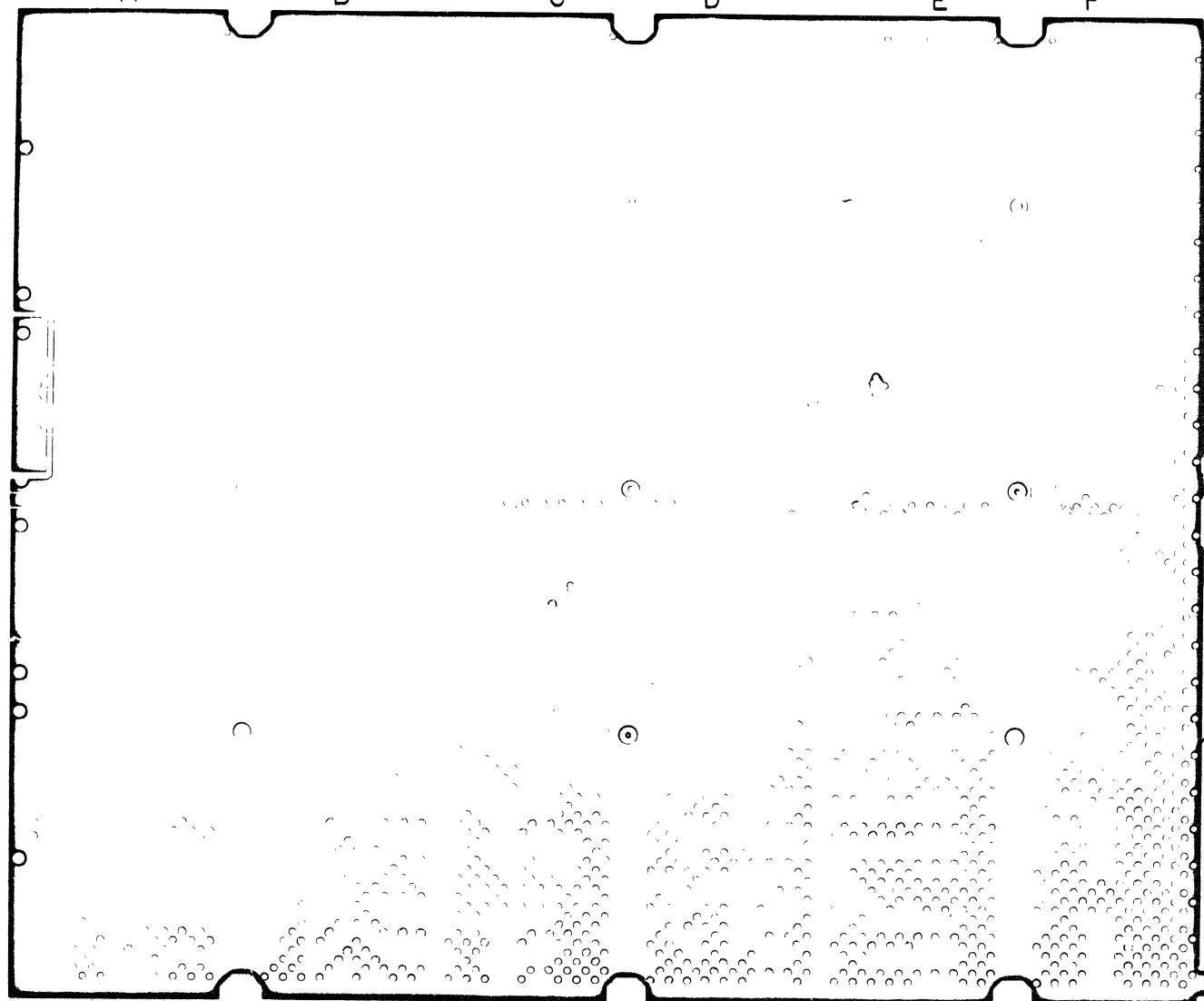
DEC FORM NO 1-63 354

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NOTES:

26

SIDE 2
(LAYER 2)



IC TYPE	GND	+5V	
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.			
IC PIN LOCATIONS			

REF	AWT - ETCH LIST	K-WL-7010214-01	6
REF	AWT REV STATUS (EL-FAB)	A-WT-7010497-1	5
REF	MODULE ECO HISTORY	B-MH-5411581-0-6	4
REF	ASSY DRILL HOLE LAYOUT	D-AH-5411581-0-5	3
REF	X-Y COORD. HOLE LOC	K-CO-5411581-0-4	2
1	ETCH CIRCUIT BOARD	E-IA-5011580-0-0	1

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO

FIRST USED ON OPTION MODEL	PARTS LIST		
ETCH BOARD REV	B		

CHK	CHANGE NO	REV	REVISIONS		

DRN	DATE	digital EQUIPMENT CORPORATION NORTON, MASSACHUSETTS
CHK'D	DATE	
ENG	DATE	
PRD	DATE	

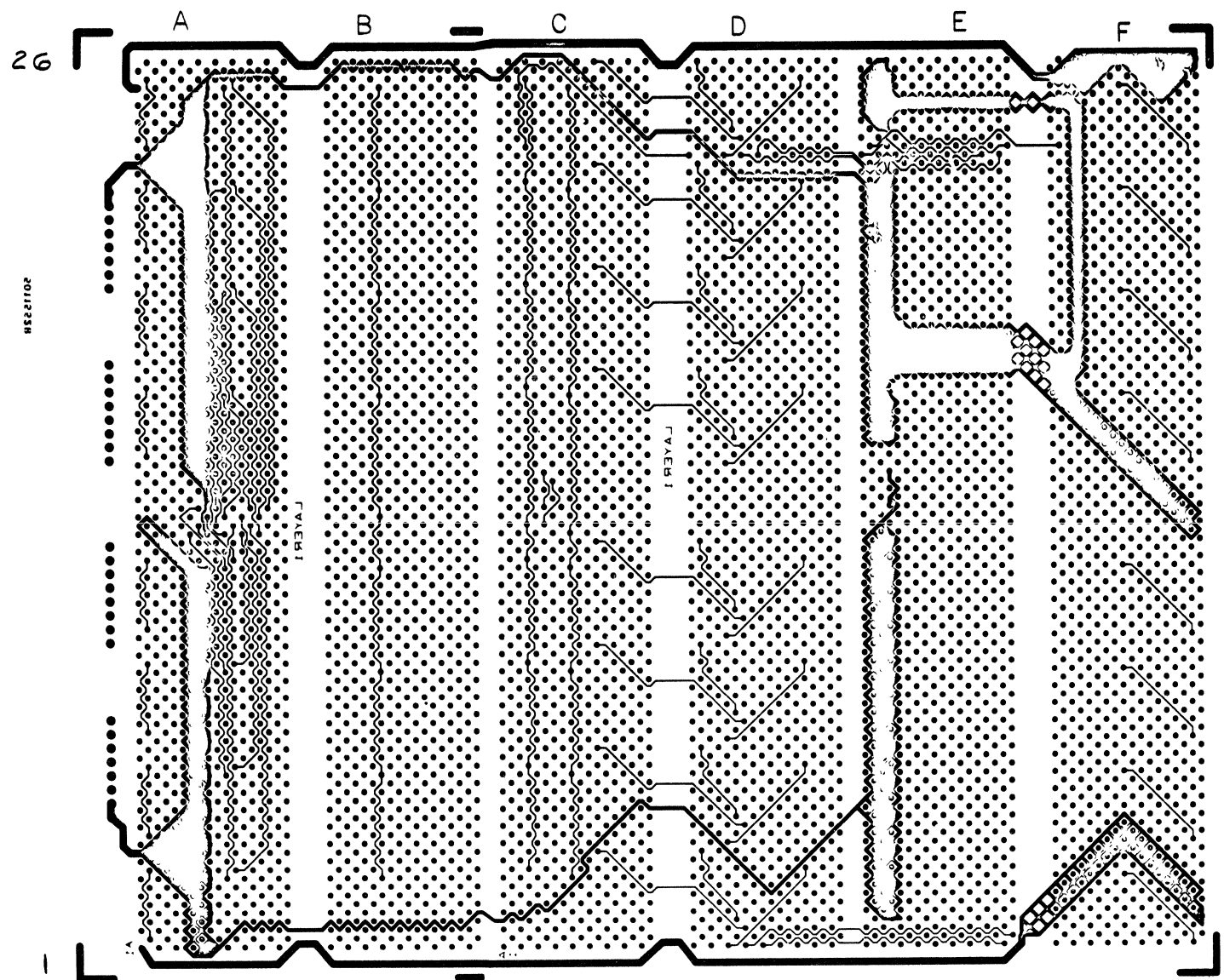
TITLE	
CIRCUIT SCHEMATIC BACKPLANE (MEMORY EL FAB)	

E-AD-7010214-1-0	SIZE CODE	NUMBER	REV
SCALE	DCS	5411581-0-1	A

SEMICONDUCTOR CONVERSION CHART
SHEET 1 OF 2

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DCS 5411581-0-1 2



SIDE 1
(LAYER 1)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	CIRCUIT SCHEMATIC	SIZE CODE	NUMBER	REV.
	BACKPLANE (MEM-EL FAB)	DCS	5411581-0-1	A
SCALE	SHEET 2 OF 2	DIST.		

356

DEC FORM NO 080 137

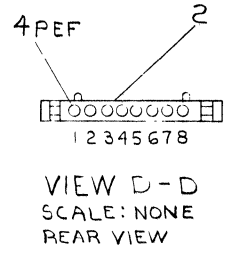
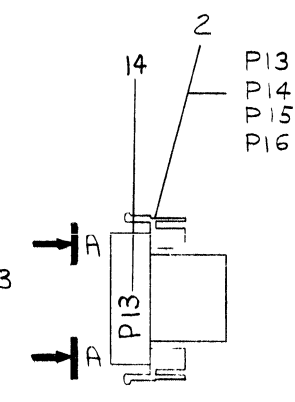
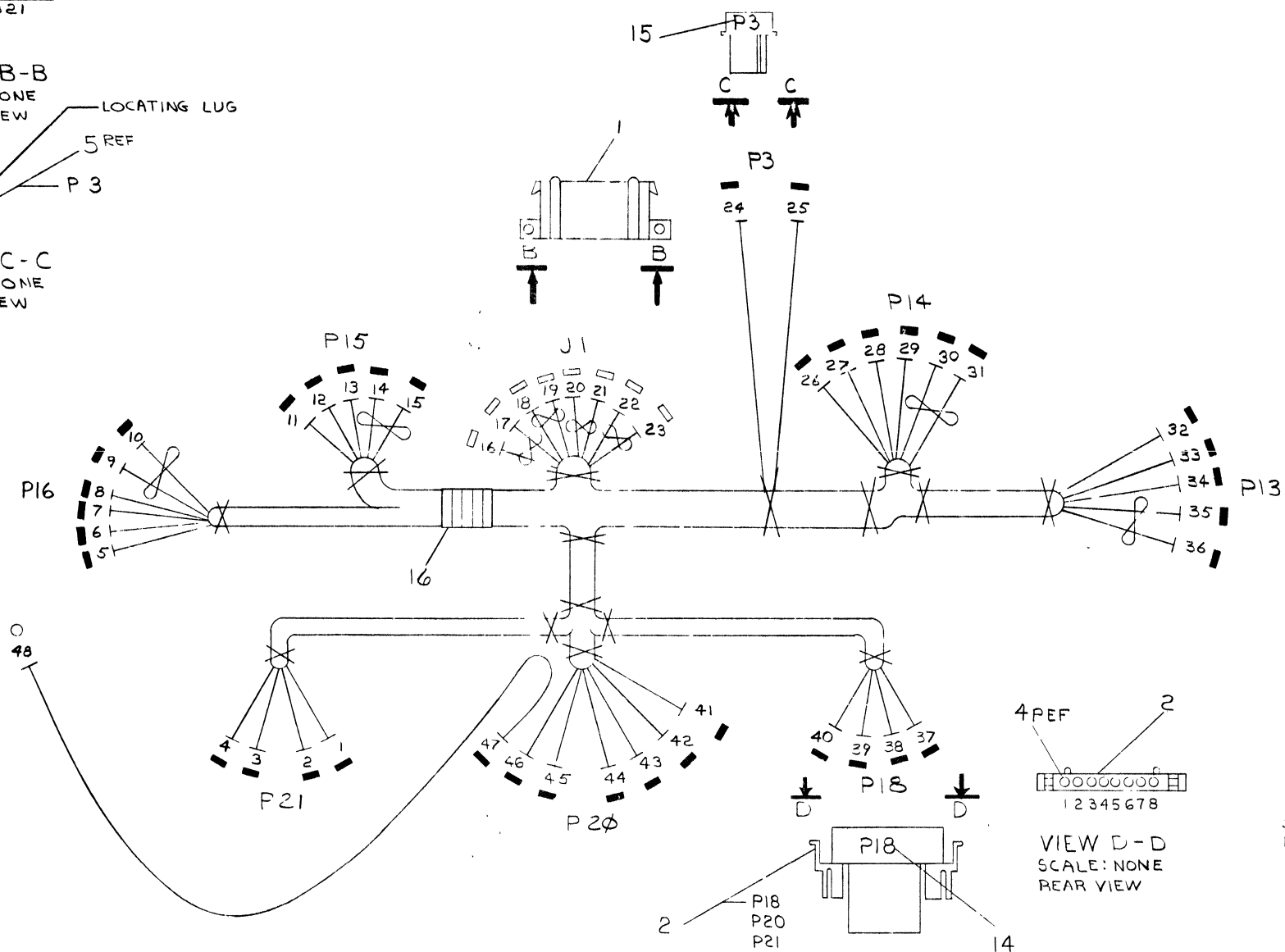
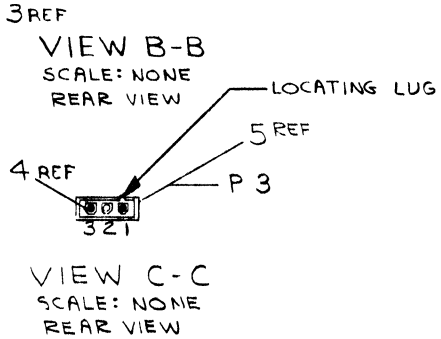
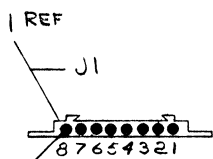
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DO NOT REDUCE
SCALE
6IN

0-0-0890102/VIQ 2

NOTES:
1. USE TIE, CABLE (X) (ITEM #13) APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY, AND AT EVERY BREAKOUT POINT.

FOR MANUFACTURING PURPOSES ONLY



QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	SERIAL TAG	9009532-00	16
A/R	PWR HARN. DECALS (J)	A-DC-7409873-0-0	15
A/R	PWR HARN. DECALS (P)	A-DC-7409872-0-0	14
A/R	TIE, CABLE	9007880	13
A/R	WIRE #14 AWG. TWP RED/WHT	9107440-29	12
A/R	WIRE #14 STRD. INS. BLK	9107370-00	11
A/R	WIRE #14 STRD. INS. RED	9107370-22	10
A/R	WIRE #14 STRD. INS. BRN	9107370-33	9
A/R	WIRE #14 STRD. INS. BRN	9107370-11	8
A/R	WIRE #18 STRD. INS. BLK	9107360-00	7
0	TERMINAL #10 HOLE	9007930-00	6
1	CONN. MALE 3 PINS	1209351-03	5
39	TERMINAL (MALE)	1209378-01	4
8	TERMINAL (FEMALE)	1209379-01	3
7	CONN. MALE 8 PINS	1209340-01	2
1	CONN. FEMALE 8 PINS	1209340-00	1

FIRST USED ON OPTION/MODEL		PARTS LIST	
MJ11-A		DRN. <i>K. Davis</i>	DATE 2-4-74
DIMENSIONAL TOLERANCE		CHK'D. <i>D. J.</i>	DATE
DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED		TITLE	
MILLIMETERS		PWR HARNESS (MJ11-A)	
XXX ±0.10	XXX ±0.005	DATE 7/5/75	
XX ±0.05	XX ±0.02	DATE	
X ±0.2	X ±0.1	DATE	
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	
MATERIAL SEE PARTS LIST	FINISH	SIZE CODE	NUMBER
		D-UA-MJ11-A-0	7010580-0-0
SCALE 1/1	SHEET 1 OF 2	DIST.	REV. A

REV.	CHANGE NO.	BY	DATE
1	7010580-0001	A	
2			
3			

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0-0-08-SCIC2 VID 2

ITEM NO	DESCRIPTION			FROM			TO		
	AWG	COLOR	POINT	CONNECTION	WITH	POINT	CONNECTION	WITH	
10	14	RED	1	P21-B	4	5	P16-2	4	
10	↑	RED	2	P21-7	↑	8	P16-5	↑	
9	↑	ORN	3	P21-4	↑	13	P15-5	↑	
8	↑	BRN	4	P21-1	↑	12	P15-3	↑	
11	↑	BLK	6	P16-3	↑	43	H20-6	↓	
11	↑	BLK	7	P16-4	↑	41	P20-8	4	
12	↑	RED	9	P16-6	↑	16	J1-8	3	
TWP	↑	WHT	10	P16-7	↑	17	J1-7	3	
11	↑	BLK	11	P15-2	↑	42	P20-7	4	
12	↑	RED	14	P15-7	↓	18	J1-6	3	
TWP	↑	WHT	15	P15-8	4	19	J1-5	3	
12	↑	RED	20	J1-4	3	30	P14-6	4	
TWP	↑	WHT	21	J1-3	3	31	P14-7	↑	
12	↓	RED	22	J1-2	3	35	P13-7	↑	
TWP	14	WHT	23	J1-1	3	36	P13-8	↑	
7	18	BLK	24	P3-3	4	25	P3-1	↑	
10	14	RED	26	P14-2	↑	39	P18-2	↑	
11	↑	BLK	27	P14-3	↑	44	P20-6	↑	
11	↑	BLK	28	P14-4	↑	45	P20-4	↑	
10	↑	RED	29	P14-5	↑	40	P18-1	↑	
11	↑	BLK	32	P13-2	↑	46	P20-3	↑	
8	↓	BRN	33	P13-3	↑	37	P18-8	↓	
9	14	ORN	34	P13-5	↓	38	P18-5	4	
7	18	BLK	47	P20-2	4	48	---	6	

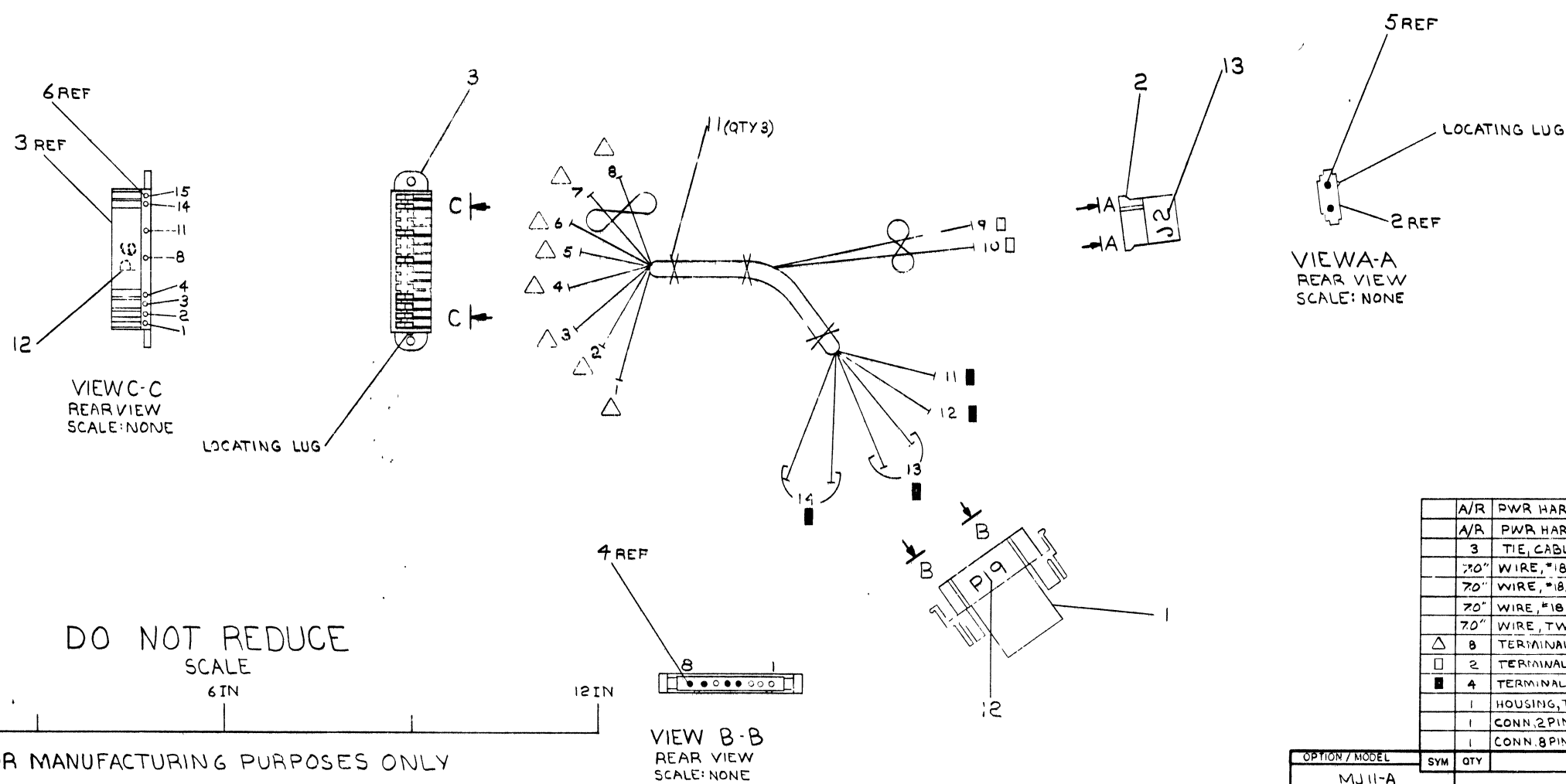
REVISIONS		
CHK	CHANGE NO	REV

TITLE PWR. HARNESS (MJ11-A) SIZE CODE D IA NUMB R 7010580-JC REV A SCALE --- SHEET 2 OF 2 DIST

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WIRE TABLE

ITEM NO	DESCRIPTION	COLOR	FROM			TO		
			POINT	CONNECTION	TERM	POINT	CONNECTION	TERM
10	18	VIO	1	P6-1	6	13	P19-7	4
10		VIO	2	P6-2				
9		YEL	3	P6-3		14	P19-8	
9		YEL	5	P6-8				
8		BLK	4	P6-4		12	P19-5	
8		BLK	6	P6-11		11	P19-4	
7		WHT	7	P6-14		10	J2-1	
TWP	18	RED	8	P6-15	6	9	J2-2	



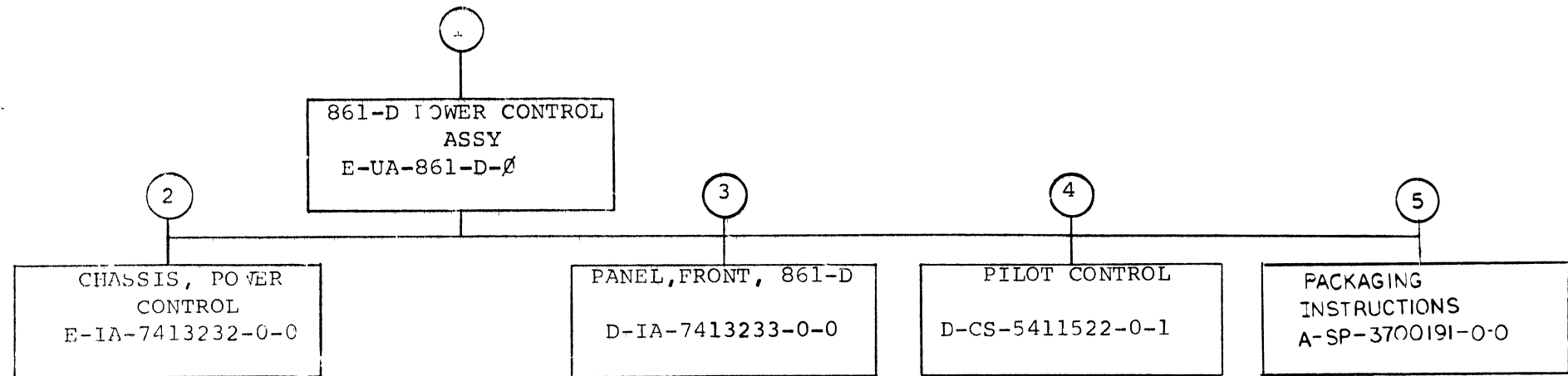
A/R	DESCRIPTION	PART NO	QTY
A/R	PWR HARN. DECAL (J)	A-DC-7409873-00	13
A/R	PWR HARN. DECAL (P)	A-DC-7409872-00	12
3	TIE, CABLE	9007880	11
70"	WIRE, #18 AWG, VIOLET	9107360-77	10
70"	WIRE, #18 AWG, YEL	9107360-44	9
70"	WIRE, #18 AWG, BLK	9107360-00	8
70"	WIRE, TWP #18 AWG RED/WHT	9107430-29	7
△	TERMINAL, RIGHT ANGLE	1210381	6
□	TERMINAL, FEMALE	1209379-01	5
■	TERMINAL, MALE	1209378-01	4
1	HOUSING, TERMINAL	1210380-07	3
1	CONN. 2 PIN FEMALE	1210821-2	2
1	CONN. 8 PIN MALE	1209340-01	1

OPTION / MODEL		SYMBOL		QTY		DESCRIPTION		PART NO		ITEM NO	
MJ11-A											
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				DRN		DATE		EQUIPMENT CORPORATION			
DECIMALS				CHK'D		DATE		MAYNARD MASSACHUSETTS			
ANGLES				DATE		DATE		TITLE			
XXX - 005 ±0° 30'				DATE		DATE		WIRE HARNESS			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				DATE		DATE		A.C./D.C. LOW			
MATERIAL				NEXT HIGHER ASSY		SIZE CODE		NUMBER		REV	
SEE PARTS LIST				D-UA-MJ11-A-φ		DIA		7010561-00			
FINISH				SCALE		SHEET		OF		1	
				1/1		1 OF 1					

REV	
CHG	
CHK	
REVISIONS	
CHANGE NO	
DATE	

DEC FORM NO DRD 100-A

360



TITLE	SHEET	OF	SIZE	CODE	NUMBER	REV
861-D POWER CONTROL	2	3	B	DD	861-D	B

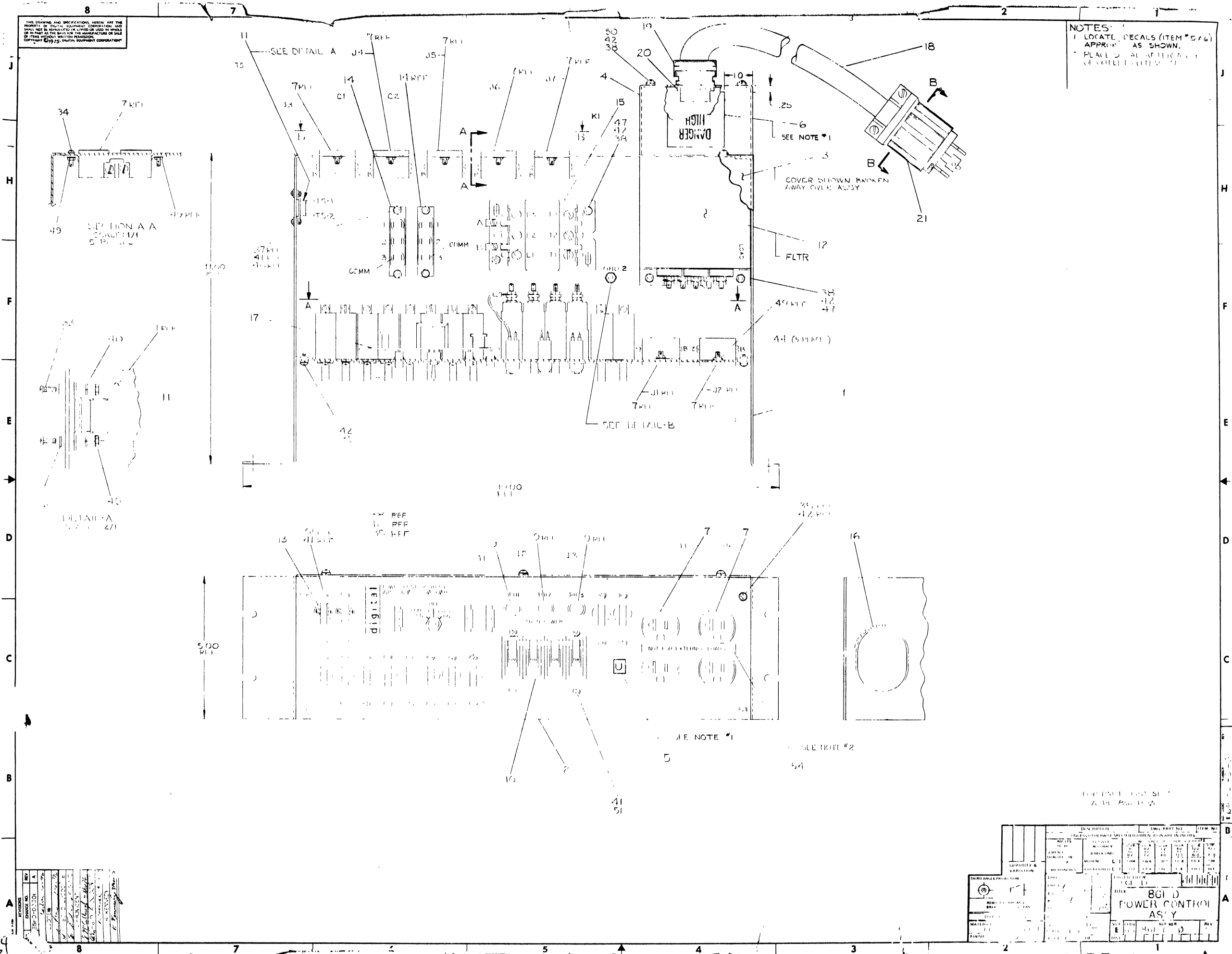
CUSTOMER PRINT SET		MECHANICAL					CUSTOMER PRINT SET		ELECTRICAL								
		MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE			MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X			1	E-UA-861-D-0	*	2	861-D POWER CONTROL ASSY		X			1	B-DD-861-D	*	2	861-D POWER CONTROL ASSY	
X				A-PL-861-D-0	*	3	861-D POWER CONTROL ASSY P.L.		X				D-CS-861-D-1	*	1	861-D POWER CONTROL SCHEMATIC	
				C-MD-7413234-0-0		1	COVER, POWER CONTROL						A-SP-861-D-2		4	861-D TEST PROCEDURE	
				D-MD-7413419-0-0		1	BRACKET, STRAIN RELIEF										
				C-IA-7011052-0-0		1	MOV ASSY										
				C-IA-7011053-0-0		1	PILOT LAMP ASSY										
				D-IA-7010966-0-0		1	HARNESS #1, POWER CONTROL										
				D-IA-7010967-0-0		1	HARNESS #3, POWER CONTROL										
				D-IA-7010969-0-0		1	HARNESS #5, POWER CONTROL										
				D-IA-7010970-0-0		1	HARNESS #6, POWER CONTROL		X			4	D-CS-5411522-0-1	*	1	PILOT CONTROL	
				C-IA-7010968-0-0		1	HARNESS #8, POWER CONTROL						K-CG-5411522-0-4			DRILL TAPE	
				D-IA-7010972-0-0		1	JUMPER, WIRE						B-MH-5411522-0-6			MODULE ECO HISTORY	
				A-DC-7416582-0-1		1	DECAL (NOT FOR EXTERNAL LOADS)						A-SP-5411522-0-7			PILOT CONTROL TEST PROCEDURE	
													D-1-5411522-0-5			ASSY DRILL HOLE LAYOUT	
			2	E-IA-7413232-0-0		2	CHASSIS, POWER CONTROL										
				B-SS-7413232-0-1		1	SILK SCREEN, CHASSIS										
			3	D-IA-7413233-0-0		2	PANEL, FRONT, 861-D										
				B-SS-7413233-0-1		1	SILK SCREEN, FRONT PANEL, 861-D										
X			5	A-SP-3700191-0-0	-	2	PACKAGING INSTRUCTIONS, 861-D										
				A-PS-9905726-0-0	-	2	FULL OVERLAP CARTON										
				A-PS-9905727-0-0	-	2	LAMINATED BUILDUP										
				A-PS-9905729-0-0	-	1	TAPE - GLASFLEX										

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE
861-D POWER CONTROL
SHEET 3 OF 3
SIZE CODE B DD
NUMBER 861-D
REV B

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NOTES:
 1. LOCATE DECALS (ITEM #576) APPROX. AS SHOWN.
 2. PLACE DECAL AFTER ASSEMBLY OF COVER (ITEM #18).



REV	DATE	BY	CHKD	DESCRIPTION
1	10/1/75	J. J. ...	J. J.
2
3
4
5
6
7
8

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1
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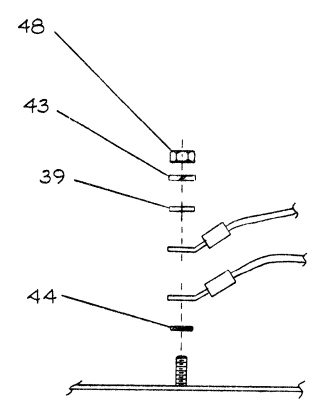
364

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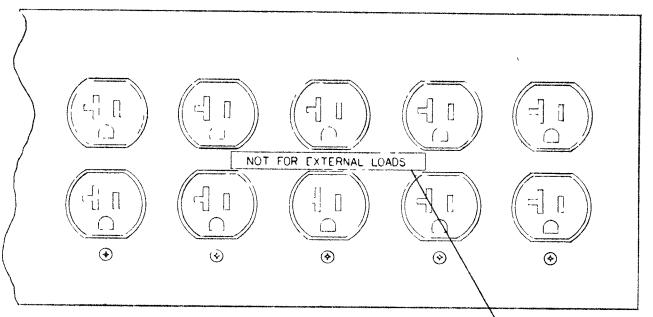
ITEM NO	DESCRIPTION	FROM		TO		REMARKS	
		COLOR	AWG	CONNECTION	WITH		CONNECTION
22	BLK	10		HARNESS 1-1		K1-T3	
	RED					K1-T1	
	RED					K1-T2	
23	RED					CB7-C-LOAD	
	BLK					CB7-D-LOAD	
	BLU	10		HARNESS 1-6		CB7-B-LOAD	
	RED	10		HARNESS 3-1		CB7-C-LINE	
	BLK					CB7-D-LINE	
	WHT					CB7-B-LINE	
	GRN					CB7-A-LINE	
	WHT					GND *2	
	GRN					FLTR-LOAD-NEUT	
	BLK					FLTR-LOAD-GND	
24	BLU					FLTR-LOAD-PH1	
	BLU					FLTR-LOAD-PH2	
	RED	10		HARNESS 3-10		FLTR-LOAD-PH3	
	BLK	14		HARNESS 5-1		CB2-B-LINE	
	BLK					CB7-D-LOAD	
	WHT					CB2-A-LINE	
	WHT					CB7-A-LOAD	
	BLU					CB7-A-LOAD	
	WHT					PLT CONT-J6	
	WHT					CB7-A-LOAD	
25	WHT					CB6-A-LINE	
	RED					CB5-B-LINE	
	WHT					CB5-A-LINE	
	WHT/BLU					PLT CONT-J5	
	RED					CB4-B-LINE	
	WHT					CB4-A-LINE	
	BLU					CB1-B-LINE	
	WHT					CB1-A-LINE	
	BLU					CB3-B-LINE	
	WHT					CB3-A-LINE	
26	WHT					CB7-A-LOAD	
	WHT					CB7-B-LOAD	
	RED					CB7-C-LOAD	
	WHT					CB7-A-LOAD	
	BLK	22	I1- BLK			CB7-A-LINE	
	RED	22	I1- RED			CB7-B-LINE	
	BLK	22	I2- BLK			CB7-C-LINE	
	RED	22	I2- RED			CB7-A-LINE	
	BLK	22	I3- BLK			CB7-A-LINE	
	RED	22	I3- RED			CB7-B-LINE	

ITEM NO	DESCRIPTION	FROM		TO		REMARKS	
		COLOR	AWG	CONNECTION	WITH		CONNECTION	WITH
25	WHT	14		HARNESS 6-1		J7-5	
	BLK					J7-B	
	WHT					J6-S	
	RED					J6-B	
	WHT					J5-S	
	RED					J5-B	
	WHT					J4-S	
	BLU					J4-B	
	WHT					J3-S	
	BLU					J3-B	
26	WHT					CB1-A-LOAD	
	BLU					CB1-B-LOAD	
	WHT					CB3-A-LOAD	
	BLU					CB3-B-LOAD	
	WHT					CB4-A-LOAD	
	RED					CB4-B-LOAD	
	WHT					CB5-A-LOAD	
	RED					CB5-B-LOAD	
	WHT					CB6-A-LOAD	
	BLK	14			HARNESS 6-20		CB6-B-LOAD
27	WHT	14		HARNESS 8-PI		PLT CONT-J4	
	WHT	14		HARNESS 8-3		TS-1	
	WHT	14		HARNESS 8-4		TS-2	
	GRN	10		GND *1		GND *2	
	WHT	14		CI-3		CI-2	
	WHT	14		J1-S		J2-S	
	GRN	14		PLT CONT-J7		GND *1	
	BLK	14		J1-B		J2-B	
	RED			FLTR-LINE-PH1		PLUG - X	
	ORN			FLTR-LINE-PH2		PLUG - Y	
28	WHT					FLTR-LINE-PH3	
	WHT					FLTR-LINE-NEUT	
	GRN	10		FLTR-LINE-GND		PLUG - W	
	BLK					PLUG - G	
	BLK					KI-B	
	BLU					KI-L3	
	BLU					CI-1	
	BLU					KI-L2	
	RED					CI-2	
	BLK					KI-L1	

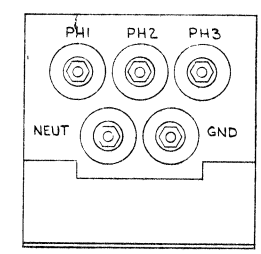
NOTES FOR WIRING:
1. FOR HARNESS POINT NUMBERS, REFER TO HARNESS DWG.



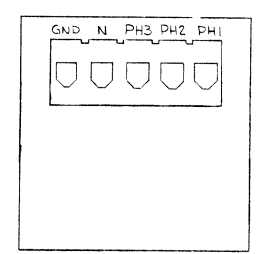
DETAIL B
TYPICAL FOR "GND 1" & "GND 2"



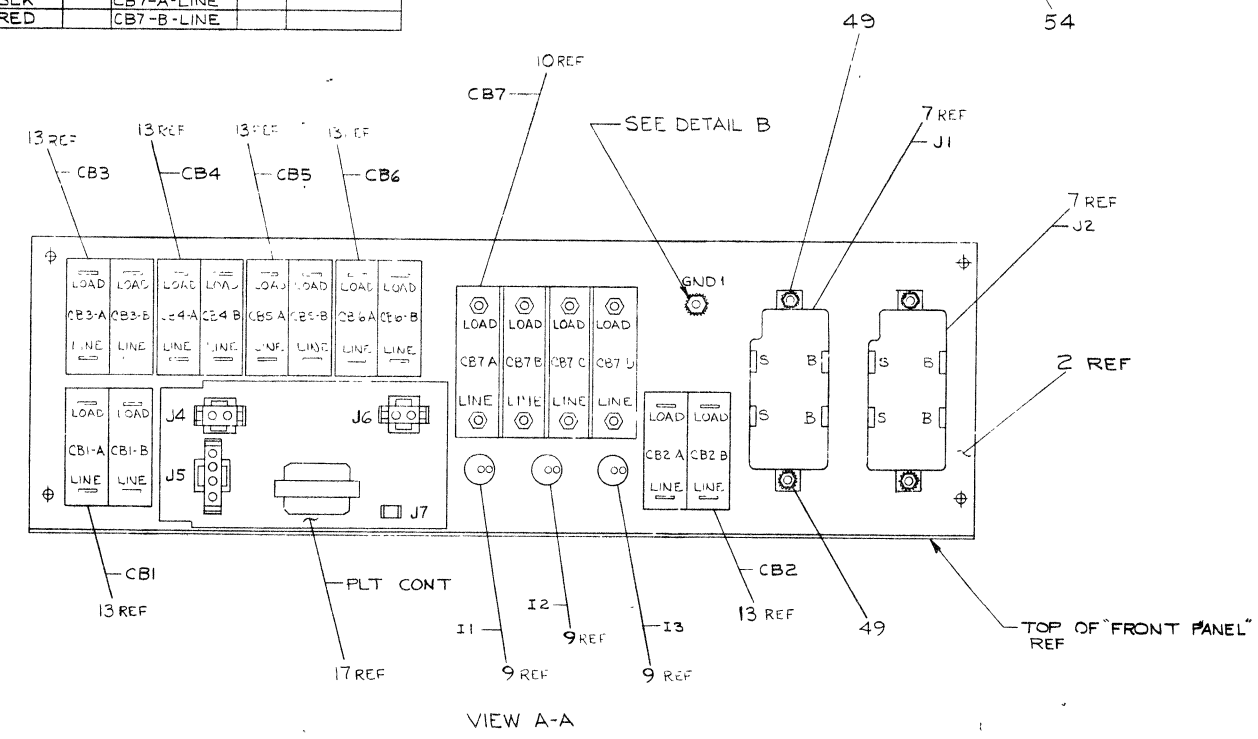
VIEW B-B
SEE NOTE #2 SHT #1



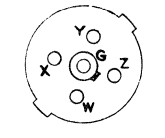
FILTER
(ITEM 12)
LOAD SIDE



FILTER
(ITEM 12)
LINE SIDE



VIEW A-A
TOP OF "FRONT PANEL" REF



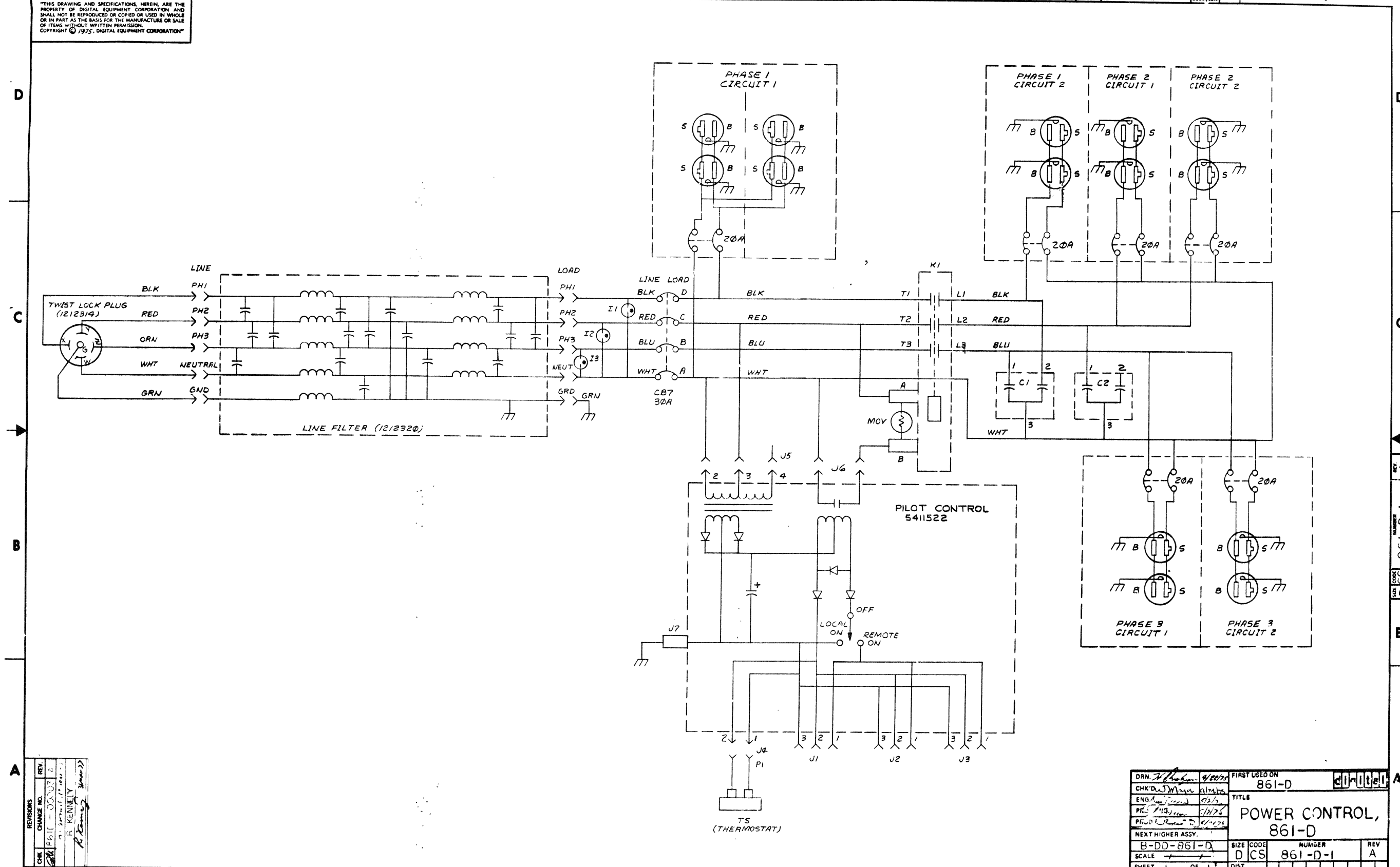
SECTION B-B
SCALE NONE
"TWIST LOCK PLUG" (ITEM 21)

QUANTITY & VARIATION	DESCRIPTION	DWG PART ID	ITEM NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				
				ANGLES	CLASSIFY	TOLERANCES	FINISHES	WORKS
1	POWER CONTROL	861-D	1	±.004	±.008	±.012	±.016	±.024
1	POWER CONTROL	861-D	2	±.004	±.008	±.012	±.016	±.024
1	POWER CONTROL	861-D	3	±.004	±.008	±.012	±.016	±.024
1	POWER CONTROL	861-D	4	±.004	±.008	±.012	±.016	±.024
1	POWER CONTROL	861-D	5	±.004	±.008	±.012	±.016	±.024

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V 1-D-198 2



REV.	DATE	BY	CHK
1	10/27/75	R. KENNEDY	
2	11/17/75	R. KENNEDY	

DRN. <i>[Signature]</i> 4/20/76	FIRST USED ON	861-D
CHK'D <i>[Signature]</i> 4/20/76	TITLE	POWER CONTROL, 861-D
ENG. <i>[Signature]</i> 5/12/75	SIZE	D
PKG. <i>[Signature]</i> 5/12/75	CODE	CS
PHOTO. <i>[Signature]</i> 5/12/75	NUMBER	861-D-1
NEXT HIGHER ASSY.	SCALE	1" = 1"
B-DD-861-D	REV	A
SHEET 1 OF 1	DIST.	

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**DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS**

PACKAGING INSTRUCTION

REV: _____ DATE: _____

TITLE 861-D-E POWER CONTROL

MATERIAL REQUIREMENTS

Quantity	Purchase Specification No.	Description
1	9905726	Full-Overlap Carton
1	9905727	Laminated Buildup
5 ft.	9905729	Glasflex Tape

PACKAGING INSTRUCTIONS

Step	Procedure
1	Set up and tape Full-Overlap Carton (9905726) using one strip of Glasflex tape.
2	Place 861 Power Control into Laminated Buildup (9905727) as shown in Figure 1. Make sure that the slots in the Laminated Buildup align with the power control chassis.
3	Pick up Laminated Buildup from both sides and slide it into the Full-Overlap Carton (front end first).
4	Coil the cable on the rear of the power control so that it will fit into the carton.
5.	Close and seal carton with Glasflex tape.

ENG <i>Rob Sweet</i>	APPD <i>Jim Morrison</i>	DATE <i>5/14/75</i>	SIZE <i>A</i>	CODE <i>SP</i>	NUMBER <i>3700191-0-0</i>	REV
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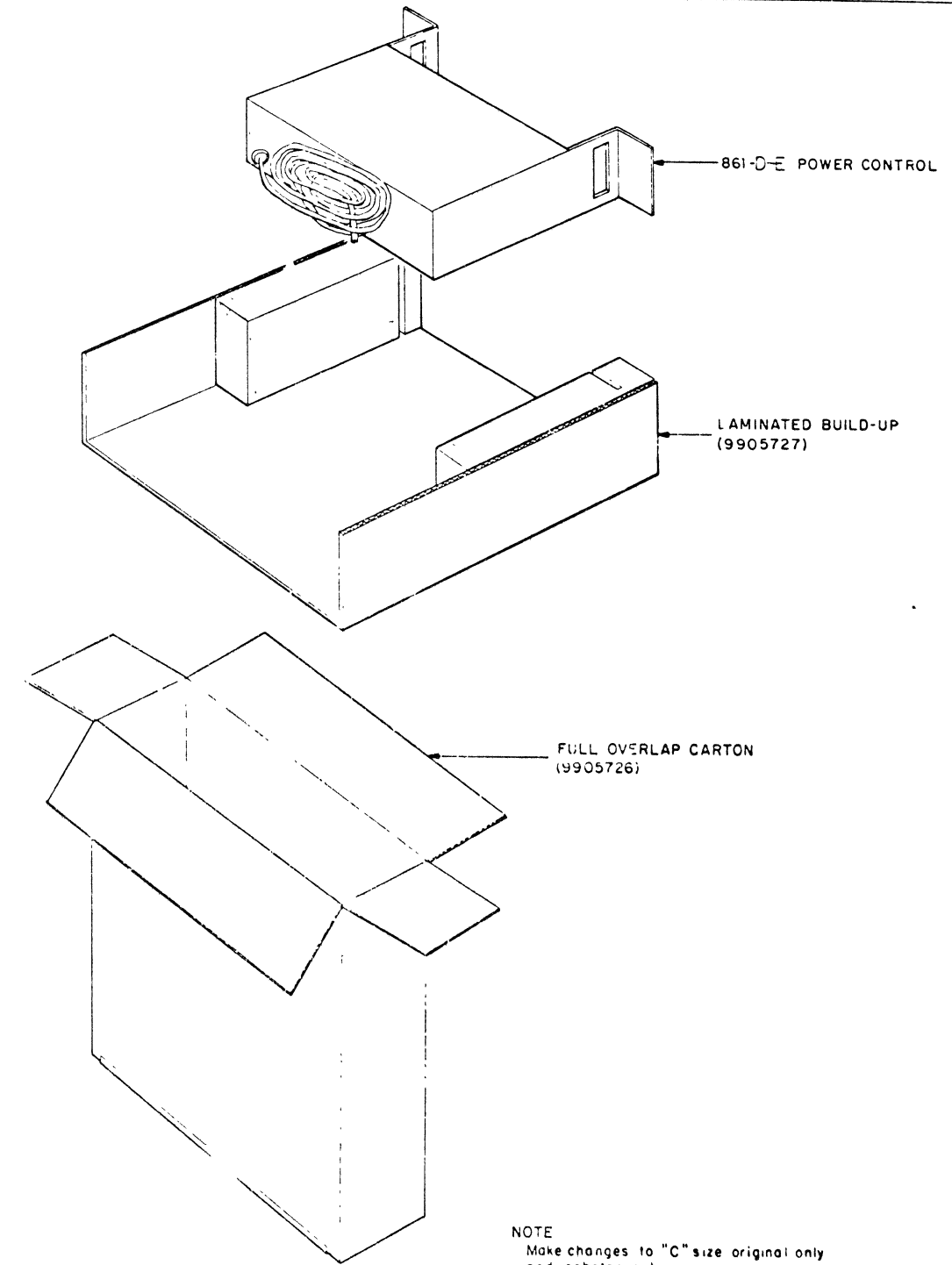
DEC 8-(551)-1031-1-R671
DRA - 129

SHEET 1 OF 2

PACKAGING INSTRUCTION

REV: _____ DATE: _____

TITLE 861-D-E POWER CONTROL PACKAGING INSTRUCTION

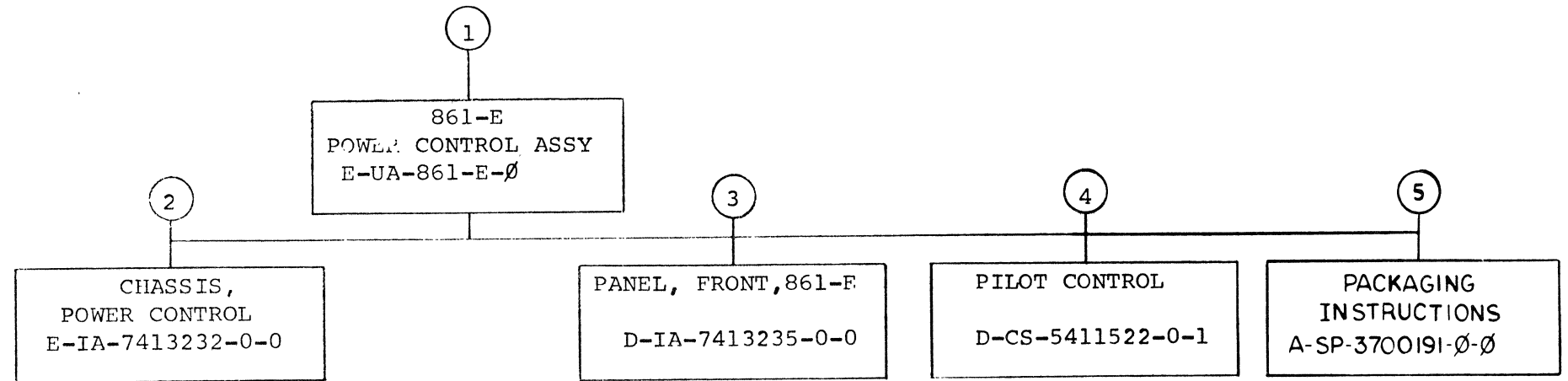


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ENG <i>Rob Sweet</i>	APPD <i>Jim Morrison</i>	DATE <i>5/14/75</i>	SIZE <i>A</i>	CODE <i>SP</i>	NUMBER <i>3700191-0-0</i>	REV
----------------------	--------------------------	---------------------	---------------	----------------	---------------------------	-----

DRC-106

SHEET 2 OF 2



TITLE 861-E POWER CONTROL	SHEET 2 OF 3	SIZE CODE B DD	NUMBER 861-E	REV B
-------------------------------------	---------------------	--------------------------	------------------------	-----------------

CUSTOMER PRINT SET		MECHANICAL					CUSTOMER PRINT SET		ELECTRICAL						
1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE	1	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
X		1	E-UA-861-E-Ø	*	2	861-E POWER CONTROL ASSY		X		1	B-DD-861-E	*	3	861-E POWER CONTROL	
X			A-PL-861-E-Ø	*	3	861-E POWER CONTROL ASSY P.L.		X			D-CS-861-E-1	*	1	861-E POWER CONTROL SCHEMATIC	
			C-MD-7413234-0-0		1	COVER, POWER CONTROL					A-SP-861-E-2		4	TEST PROCEDURE 861-E	
			D-MD-7413419-0-0		1	BRACKET, STRAIN RELIEF									
			C-IA-7011052-0-0		1	MOV ASSY									
			C-IA-7011053-0-0		1	PILOT LAMP ASSY									
			D-IA-7010938-0-0		1	HARNES #2, POWER CONTROL									
			D-IA-7010936-0-0		1	HARNES #4, POWER CONTROL									
			D-IA-7010971-0-0		1	HARNES #7, POWER CONTROL									
			C-IA-7010968-0-0		1	HARNES #8, POWER CONTROL									
			D-IA-7010972-0-0		1	JUMPER, WIRE		X		4	D-CS-5411522-0-1	*	1	PILOT CONTROL	
			A-DC-7416582-Ø-1		1	DECAL (NOT FOR EXTERNANAL LOADS)					A-SP-5411522-0-7			TEST PROCEDURE	
		2	E-IA-7413232-0-0		2	CHASSIS, POWER CONTROL									
			B-SS-7413232-0-1		1	SILK SCREEN, CHASSIS									
		3	B-SS-7413235-0-1		1	SILK SCREEN, FRONT PANEL, 861-E									
			D-IA-7413235-0-0		2	PANEL, FRONT, 861-E									
		4	D-CS-5411522-0-1			PILOT CONTROL									
			K-CO-5411522-0-4			DRILL TAPE									
			D-AH-5411522-0-5			ASSY DRILLING HOLE LAYOUT									
			B-MH-5411522-0-6		1	MODULE ECO HISTORY									
		5	A-SP-3700191-0-0	-	2	PACKAGING INSTRUCTIONS, 861-E									
			A-PS-9905726-0-0	-	2	FULL OVERLAP CARTON									
			A-PS-9905727-0-0	-	2	LAMINATED BUILDUP									
			A-PS-9905729-0-0	-	1	GLASFLEX TAPE									

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE
861-E POWER CONTROL

SHEET 3 OF 3

SIZE CODE
B DD

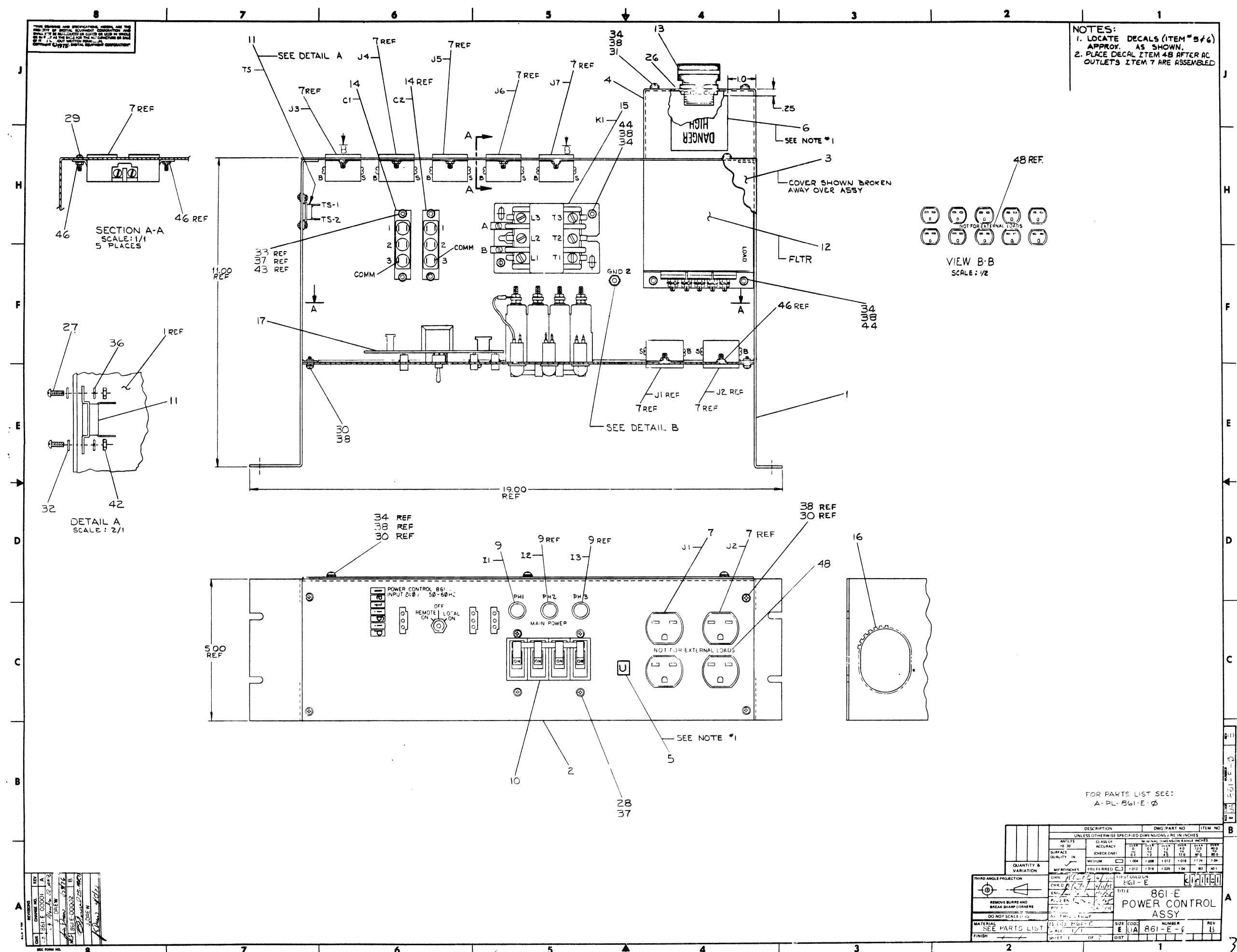
NUMBER
861-E

REV
B

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NOTES:
 1. LOCATE DECALS (ITEM #5+6) APPROX. AS SHOWN.
 2. PLACE DECAL ITEM 48 AFTER AC OUTLETS ITEM 7 ARE ASSEMBLED.



REV	DATE	BY	CHKD	DESCRIPTION
1	11/15/72	J. DREW	J. DREW	ISSUE FOR PRODUCTION
2	11/15/72	J. DREW	J. DREW	REVISION

THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
AMT'S	CLASS OF ACCURACY	MIN	MAX
0.00	0.00	0.00	0.00
SURFACE QUALITY		CHECK ONE	
IN	MEDIUM	1.00	1.00
QUANTITY & VARIATION		PREFERRED	
1.02	1.01	1.00	1.04
MATERIAL		SEE PARTS LIST	
FINISH		SEE PARTS LIST	

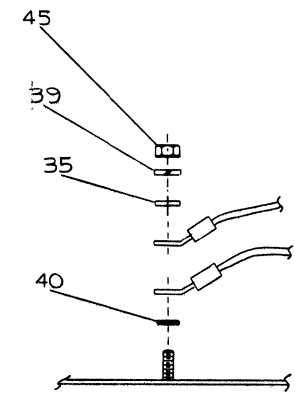
373

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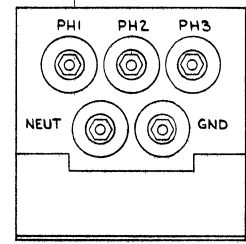
ITEM NO.	DESCRIPTION	FROM			TO			REMARKS
		COLOR	AWG	CONNECTION WITH	CONNECTION WITH	CONNECTION WITH	CONNECTION WITH	
18	BLU	10	HARNES 2-1	-2	K1-T3			
	RED			-2	K1-T2			
	BLK			-3	K1-T1			
	BLK			-4	CBI-D-LOAD			
	RED			-5	CBI-C-LOAD			
19	BLU	10	HARNES 2-6	-4	CBI-B-LOAD			
	GRN	18	HARNES 4-1	-2	PLT CONT-J7			
	WHT	10		-2	CBI-A-LINE			
	BLU			-3	CBI-B-LINE			
	RED			-4	CBI-C-LINE			
	BLK			-5	CBI-D-LINE			
	GRN			-6	GND 1			
	BLK			-7	FLTR-PH1			
	WHT			-8	FLTR-NEUT			
	BLU			-9	FLTR-PH3			
	RED			-10	FLTR-PH2			
20	GRN	10		-11	FLTR-GND			
	GRN	18	HARNES 4-12	-1	GND 1			
	BLU	14	HARNES 7-1	-2	J3-B			
	WHT			-2	J3-S			
	BLU			-3	J4-B			
	WHT			-4	J4-S			
	RED			-5	J5-B			
	BLU			-6				
	BLU			-7	K1-L3			
	WHT			-9	J5-S			
	RED			-10	J6-B			
9	WHT			-11	J6-S			
	WHT			-12	J7-S			
	BLK			-13	J7-B			
	RED			-14				
	RED			-15	K1-L2			
	RED			-16				
	BLK			-17				
	BLK			-18	K1-L1			
	BLK			-19	C1-2			
	WHT			-20	C2-3			
	WHT			-21/22				
WHT			-23/24	CBI-A-LOAD				
WHT			-25/26					
WHT			-27/28					
BLU			-29	CBI-B-LOAD				
RED			-30	CBI-C-LOAD				
BLK			-31	CBI-D-LOAD				
BLK			-32	J1-B				
WHT			-33	J1-S				
WHT			-34	CBI-A-LOAD				
			-J1	PLT CONT-J5				
			-J2	PLT CONT-J6				
RED			-39	K1-A				
RED			-40	K1-B				
RED			-41	C2-1				
BLU	14	HARNES 7-42	-1	C1-1				
9	BLK	22	I1-BLK		CBI-A-LINE			
9	RED	22	I1-RED		CBI-D-LINE			
9	BLK	22	I2-BLK		CBI-A-LINE			
9	RED	22	I2-RED		CBI-C-LINE			
9	BLK	22	I3-BLK		CBI-A-LINE			
9	RED	22	I3-RED		CBI-B-LINE			

ITEM NO.	DESCRIPTION	FROM			TO			REMARKS
		COLOR	AWG	CONNECTION WITH	CONNECTION WITH	CONNECTION WITH	CONNECTION WITH	
21	WHT	14	HARNES 8-3		PLT CONT-J4			
22	GRN	10	GND 1		GND 2			
23	WHT	14	C1-3		C2-3			
24	WHT	14	J1-S		J2-S			
25	BLK	14	J1-B	41	J2-B	41		
8			K1-A		K1-B			

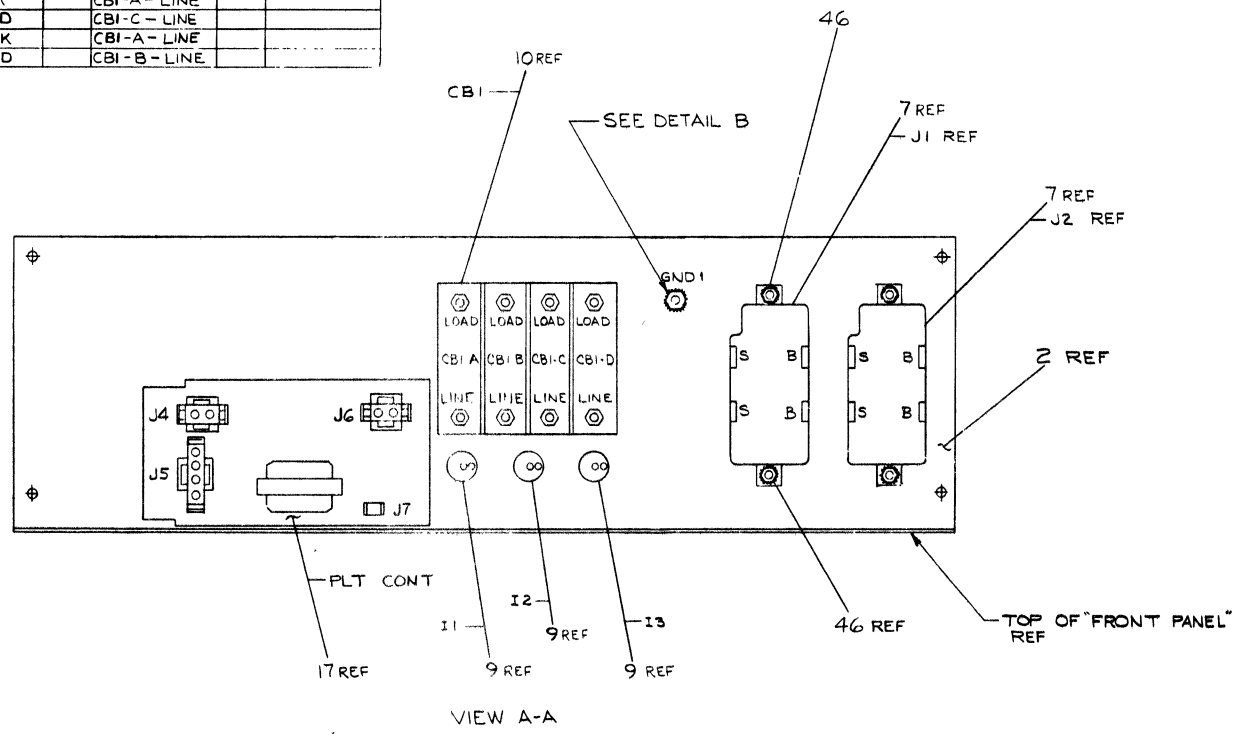
NOTES FOR WIRING:
1. FOR HARNESS POINT NUMBERS, REFER TO HARNESS DWG.



DETAIL B
TYPICAL FOR "GND 1" & "GND 2"



FILTER
(ITEM 12)
LOAD SIDE



VIEW A-A

DESCRIPTION		DWG PART NO	ITEM NO
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ANGLE	CLASS OF ACCURACY	25	10
SURFACE QUALITY	(CHECK ONE)	1.0M	1.0M
QUANTITY & VARIATION	MICROINCHES	1.0M	1.0M
THIRD ANGLE PROJECTION	DRN	1.0M	1.0M
REMOVE BURRS AND BREAK SHARP CORNERS	CHK D	1.0M	1.0M
DO NOT SCALE Dwg	SCALE	1/1	1/1
MATERIAL	FINISH	1.0M	1.0M
TITLE		861-E	861-E
NUMBER		861-E-4	861-E-4
REV		1	1

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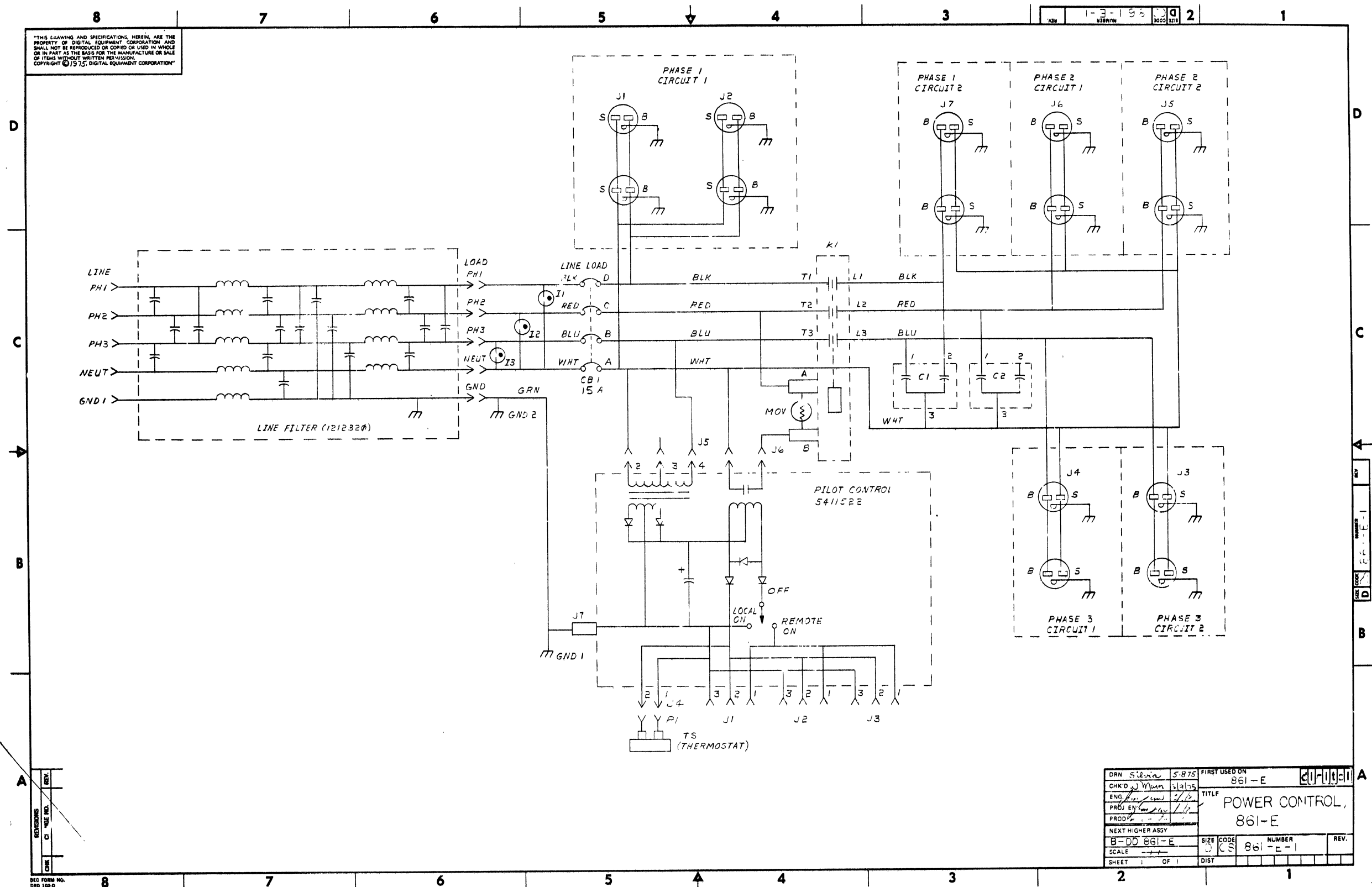
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION			
PARTS LIST							
MADE BY W. McCarthy		CHECKED <i>W. McCarthy</i>		SECTION 1			
DATE 4/18/75		DATE 4/29/75		ISSUED SECT. 1			
ENG <i>Tom Dineen</i>		PROD <i>John B. Brennan</i>					
DATE 5/6/75		DATE 5/6/75					
ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY	UNIT	REVISION	ECO NO	
1	E-IA-7413232-0-0	CHASSIS, POWER CONTROL	1				
2	D-IA-7413235-0-0	PANEL, FRONT, 851-E	1				
3	C-MD-7413234-0-0	COVER, POWER CONTROL	1				
4	D-MD-7413419-0-0	BRACKET, STRAIN RELIEF	1				
5	3612063-00	DECAL, UL	1				
6	3610267-00	DECAL, "DANGER HIGH VOLTAGE"	1				
7	1211204-01	POWER CONN RECEPTACLE, 240 VAC	7				
8	C-IA-7011052-0-0	MOV ASSY	1				
9	C-IA-7011053-1-0	PILOT LAMP ASSY, 240V	3				
10	1212321-00	CIRCUIT BREAKER, 15A, 240VAC	1				
11	1211158-00	THERMOSTAT, SPST, FIXED TEMP.	1				
12	1212320-00	FILTER	1				
13	1212410-00	STRAIN RELIEF	1				
14	1000034-00	DC PAPER CAPACITOR, 10000 VDC	2				
15	1212266-00	CONTACTOR, 3 POLE, 40 A, 600 VAC	1				
16	9007035-00	GROMMET, CATERPILLAR	A/R				
17	D-CS-5411522-0-1	PILOT CONTROL	1				
18	D-IA-7010938-0-0	HARNESS #2, POWER CONTROL	1				
19	D-IA-7010936-0-0	HARNESS #4, POWER CONTROL	1				
20	D-IA-7010971-0-0	HARNESS #7, POWER CONTROL	1				
21	C-IA-7010968-0-0	HARNESS #8, POWER CONTROL	1				
22	D-IA-7010972-0-0	JUMPER, WIRE (GRN, #10 AWG)	1				
TITLE 861-E POWER CONTROL ASSY		ASSY NO. E-UA-861-E-0	SIZE CODE A PL	NUMBER 861-E-0	REV B	ECO NO 861-E-00002	
DEC FORM DEC 16-(325)-1031-N870 DRA 110		SHEET 1 OF 3		DIST			

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION			
PARTS LIST							
MADE BY W. McCarthy		CHECKED <i>W. McCarthy</i>		SECTION 1			
DATE 4/18/75		DATE 4/29/75		ISSUED SECT. 1			
ENG <i>Tom Dineen</i>		PROD <i>John B. Brennan</i>					
DATE 5/6/75		DATE 5/6/75					
ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY	UNIT	REVISION	ECO NO	
45	9006564-00	NUT, HEX, #10-32	2				
46	9008185-00	NUT, KEPS, #6-32	14				
47	A-SP-3700191-0-0	PACKAGING INSTRUCTIONS 861-E	1				
48	A-DC-7416582-0-1	DECAL (NOT FOR EXTERNAL LOADS)	2				
REF	D-CS-861-E-1	861-E POWER CONTROL CIRCUIT SCHEMATIC	-				
TITLE 861-E POWER CONTROL ASSY		ASSY NO. E-UA-861-E-0	SIZE CODE A PL	NUMBER 861-E-0	REV B	ECO NO 861-E-00002	
DEC FORM DEC 16 (325) 1031 N870 DRA 110		SHEET 3 OF 3		DIST			

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION			
PARTS LIST							
MADE BY W. McCarthy		CHECKED <i>W. McCarthy</i>		SECTION 1			
DATE 4/18/75		DATE 4/29/75		ISSUED SECT. 1			
ENG <i>Tom Dineen</i>		PROD <i>John B. Brennan</i>					
DATE 5/6/75		DATE 5/6/75					
ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY	UNIT	REVISION	ECO NO	
23	D-IA-7010972-1-0	JUMPER, WIRE (WHT, #14 AWG)	1				
24	D-IA-7010972-2-0	JUMPER, WIRE (WHT, #14 AWG)	1				
25	D-IA-7010972-4-0	JUMPER, WIRE (BLK, #14 AWG)	1				
26	9009309-00	LOCKNUT, .5" PIPE THD	1				
27	9006010-01	SCR, PHL PAN HD, #4-40 x .31 LG	2				
28	9006020-01	SCR, PHL PAN HD, #6-32 x .25 LG	4				
29	9006021-01	SCR, PHL PAN HD, #6-32 x .31 LG	5				
30	9006037-01	SCR, PHL PAN HD, #8-32 x .38 LG	10				
31	9006051-01	SCR, PHL PAN HD, #8-32 x 3.00 LG	2				
32	9006655-00	WASHER, FLAT, #4	2				
33	9006653-00	WASHER, FLAT, #6	6				
34	9006660-00	WASHER, FLAT, #8	10				
35	9006664-00	WASHER, FLAT, #10	2				
36	9006688-00	WASHER, SPLIT LOCK, #4	2				
37	9007801-00	WASHER, SPLIT LOCK, #6	10				
38	9006690-00	WASHER, SPLIT LOCK, #8	14				
39	9007906-00	WASHER, SPLIT LOCK, #10	2				
40	9007651-00	WASHER, EXT TOOTH LOCK, #10	2				
41	9006633-00	WASHER, INT TOOTH LOCK, #6	2				
42	9006556-00	NUT, HEX, #4-40	2				
43	9006558-00	NUT, HEX, #6-32	4				
44	9006561-00	NUT, HEX, #8-32	4				
TITLE 861-E POWER CONTROL ASSY		ASSY NO. E-UA-861-E-0	SIZE CODE A PL	NUMBER 861-E-0	REV B	ECO NO 861-E-00002	
DEC FORM DEC 16 (325) 1031 N870 DRA 110		SHEET 2 OF 3		DIST			

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DRN	Sierra	5-875	FIRST USED ON	861-E
CHK'D	Wynn	3/3/75	TITLE	POWER CONTROL,
ENG.		2/12		861-E
PROJ. EN.		1/17		
PROD.				
NEXT HIGHER ASSY				
B-DD	861-E	SIZE	CS	NUMBER
SCALE			861-E-1	REV.
SHEET	1	OF	1	

REV.	
DATE	
BY	
CHK'D	
APP'D	

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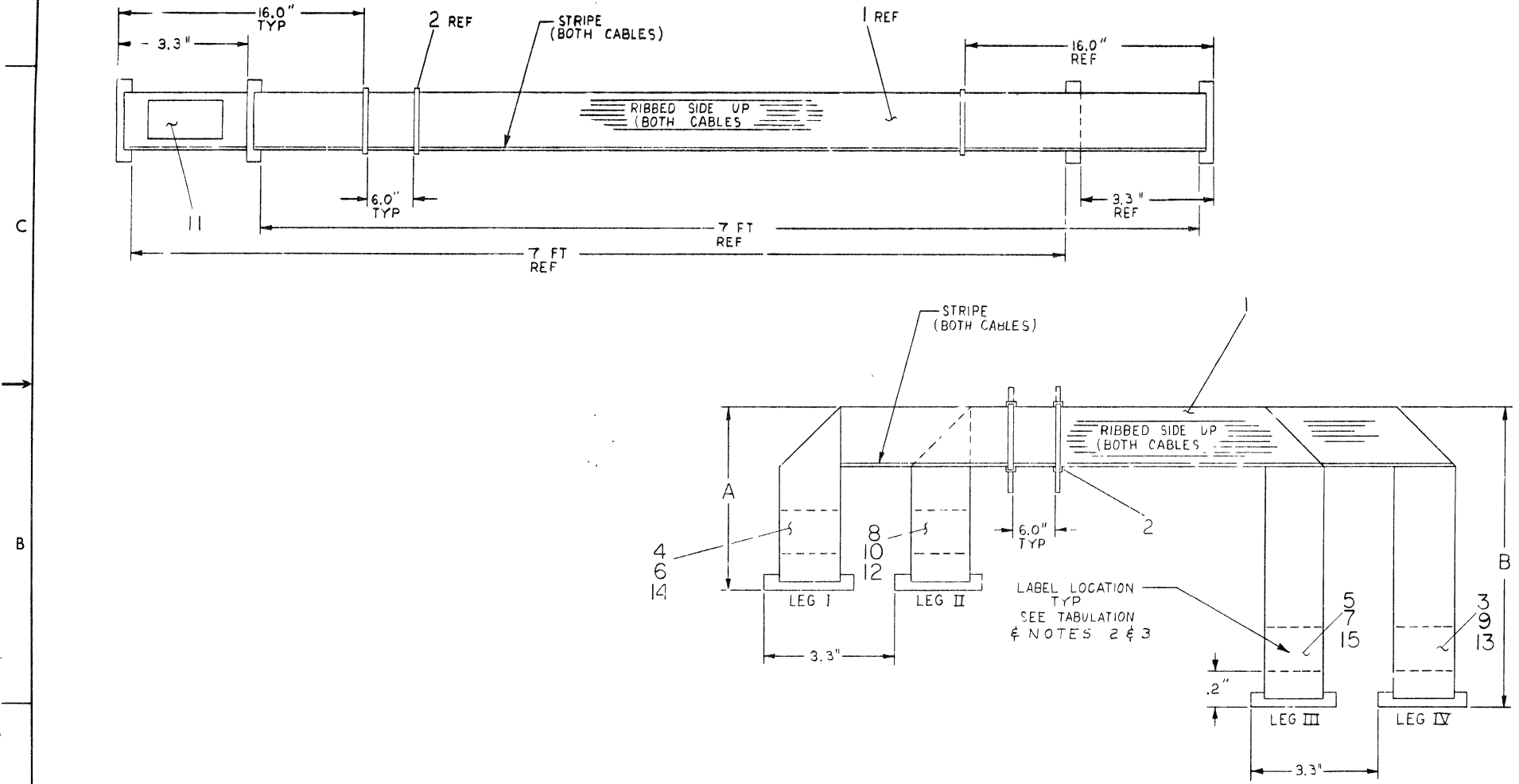
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LEGEND									
TITLE	NUMBER	FOLD TO INDICATED DIM		TABULATION				FOR INSTALLATION IN CAB	REMARKS
		A	B	LEG I	LEG II	LEG III	LEG IV		
DATA CABLE	7010824-0	4.0	11.0	M8149 J1	M8149 J3	M8149 J2	M8149 J4	11/70 CAB 1	SEE NOTE 1
ADDRESS CABLE	7010824-1	3.5	11.5	M8148 J3	M8148 J1	M8148 J4	M8148 J2	11/70 CAB 1	SEE NOTE 1
ADDRESS CABLE	7010824-2	3.5	11.5	M8147 J3	M8147 J1	M8147 J4	M8147 J2	11/70 CAB 1	SEE NOTE 1

NOTES:

- IF CABLES ARE USED IN MJ11-AC, BC EXPANSION CABINET, REWORK AT INSTALLATION AS FOLLOWS:
 (1) UNFOLD CABLES AND REFOLD WITH FOLLOWING DIMENSIONS PRIOR TO INSTALLATION

	A DIM	B DIM
7010824-0	6.8"	8.0"
7010824-1	6.0"	7.8"
- APPLY LABEL ON LEGS I & II WITH LEGEND VISIBLE NEAR SIDE
- APPLY LABEL ON LEGS III & IV WITH LEGEND VISIBLE ON FAR SIDE.



QTY	DESCRIPTION	PART NO	ITEM NO
1	CABLE MARKER M8147 J4	3612427-21	15
1	CABLE MARKER M8147 J3	3612427-20	14
1	CABLE MARKER M8147 J2	3612427-19	13
1	CABLE MARKER M8147 J1	3612427-18	12
1	LABEL, CABLE IDENT	9009532	11
1	CABLE MARKERS M8148 J1	3612427-17	10
1	CABLE MARKERS M8149 J4	3612427-06	9
1	CABLE MARKERS M8149 J3	3612427-05	8
1	CABLE MARKERS M8149 J2	3612427-04	7
1	CABLE MARKERS M8149 J1	3612427-03	6
1	CABLE MARKERS M8148 J4	3612427-02	5
1	CABLE MARKERS M8148 J3	3612427-01	4
1	CABLE MARKERS M8148 J2	3612427-00	3
A/R	CABLE, TIE	9007031	2
2	I/O CABLE BC06R	D-UA-BC06R-07-0	1

REV	CHANGE NO	DATE	BY
A	1	2/28/75	R. BOUCHER
	2	3/11/75	R. BOUCHER

FIRST USED ON OPTION/MODEL MJ11-A

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES

TOLERANCES
 DIMENSIONS: ±0.005
 ANGLES: ±0.030°
 FINAL SURFACE QUALITY: REMOVE BURRS AND BREAK SHARP CORNERS

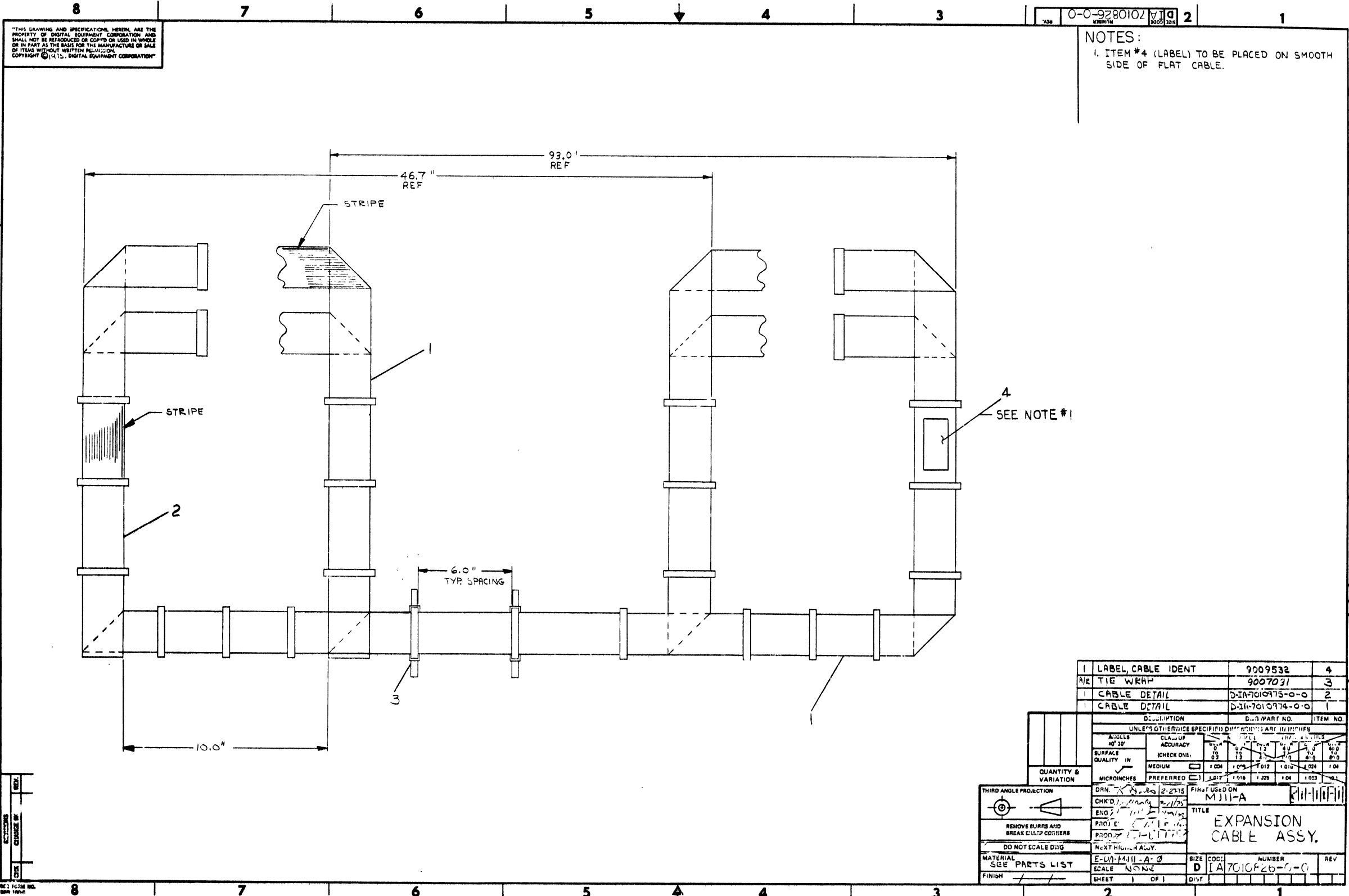
MATERIAL: SEE PARTS LIST

FINISH: ++

URN: 2 28 75
 DATE: 2/28/75
 TITLE: CABLES, INTERCONNECTING DATA/ADDRESS

SIZE CODE: E-UA-MJ11-A-0
 NUMBER: DAD 7010824-0-0
 REV: A

SHEET 1 OF 1



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NOTES:
1. ITEM #4 (LABEL) TO BE PLACED ON SMOOTH SIDE OF FLAT CABLE.

1 LABEL, CABLE IDENT	9009532	4
2 TIE WRAP	9007031	3
1 CABLE DETAIL	D-11-7010975-0-0	2
1 CABLE DETAIL	D-11-7010974-0-0	1

QUANTITY & VARIATION	DESCRIPTION	QTY	PART NO.	ITEM NO.
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
	ANGLES	CLASS	UP	ACCURACY
	10° 30'			
	SURFACE QUALITY	IN	CHECK ONE	
			<input type="checkbox"/> MEDIUM	
	MICRONOMES	PREFERRED	<input type="checkbox"/>	
			1.004	1.005
			1.012	1.014
			1.024	1.04

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

DRN: 2-2775

CHK'D: [Signature]

ENG: [Signature]

PROJ: [Signature]

PROD: [Signature]

Next Revision

SCALE NONE

SIZE D

CODE TA7010975-0-0

NUMBER

REV

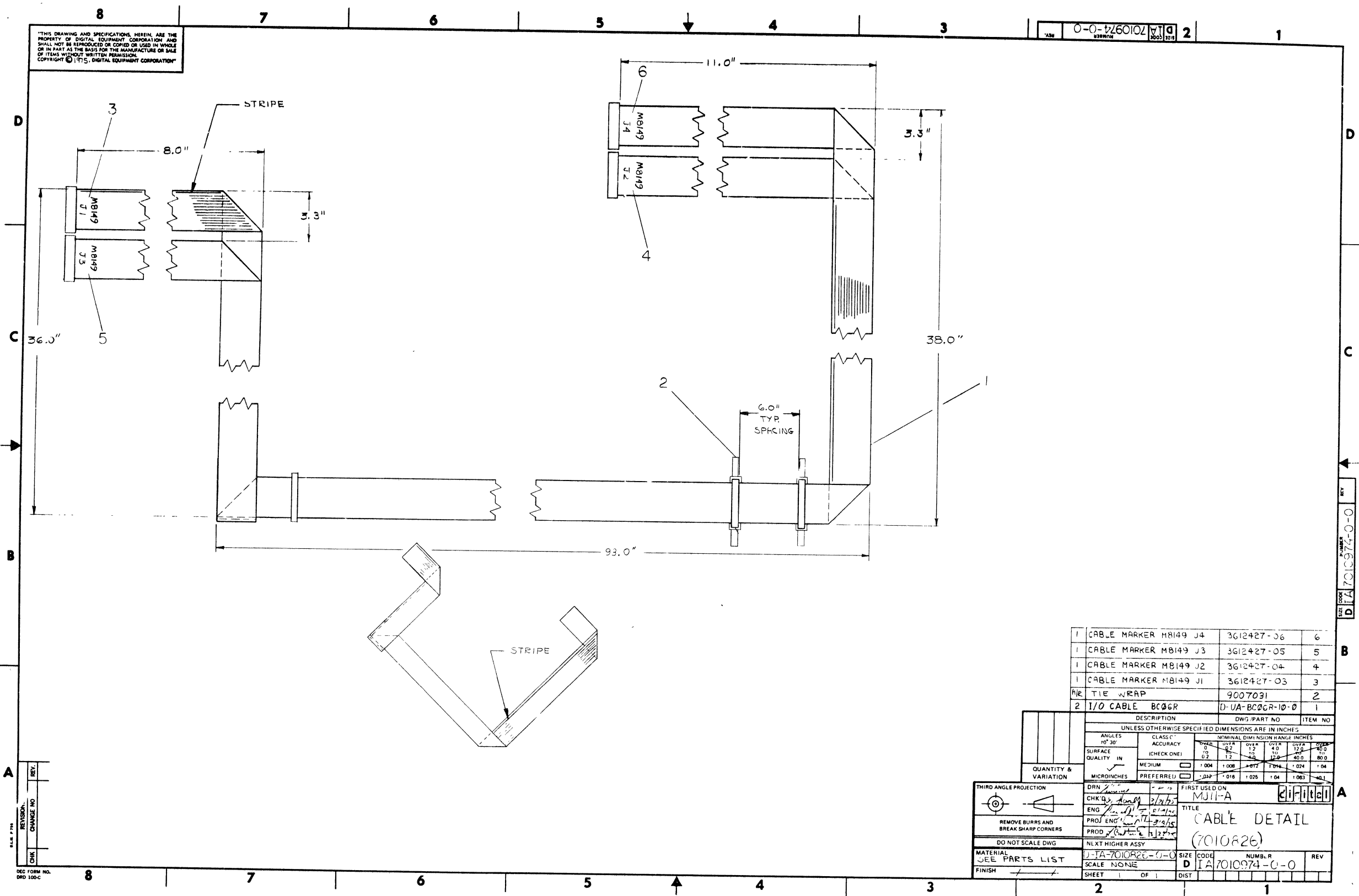
TITLE EXPANSION CABLE ASSY.

SHEET 1 OF 1

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0-0-7260102 2



1	CABLE MARKER M8149 J4	3612427-06	6
1	CABLE MARKER M8149 J3	3612427-05	5
1	CABLE MARKER M8149 J2	3612427-04	4
1	CABLE MARKER M8149 J1	3612427-03	3
1	TIE WRAP	9007031	2
2	I/O CABLE BC06R	0-UA-BC06R-10-0	1

THIRD ANGLE PROJECTION		DRN	FIRST USED ON
REMOVE BURRS AND BREAK SHARP CORNERS	CHKD	MJ11-A	
DO NOT SCALE DWG	ENG		
MATERIAL SEE PARTS LIST	PROJ ENG		
FINISH	PROD		
	NEXT HIGHER ASSY		
	SCALE NONE		
	SIZE		
	DIST		

ANGLES	CLASS C	MINIMAL DIMENSION RANGE INCHES				
NO 30	ACCURACY	0.001	0.002	0.005	0.010	0.015
SURFACE QUALITY	(CHECK ONE)	1.0	1.2	1.5	2.0	2.5
IN	MEDIUM	1.004	1.008	1.012	1.016	1.020
MICROINCHES	PREFERRED	1.004	1.008	1.012	1.016	1.020

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DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
PACKAGING INSTRUCTION	REV: _____ DATE: _____
TITLE CUSHIONED CUSTOMER SHIPPING PACKAGE (MJ11)	_____

MATERIAL REQUIREMENTS

Quantity	Purchasing Specification No.	Description
2	9905645	Full Telescope Cap
2	9905642	Foam Pad
2	9905643	Foam with Corrugated Side Wall Assembly
12 ft.	9905734-01	Plastic Strapping

PACKAGING INSTRUCTIONS

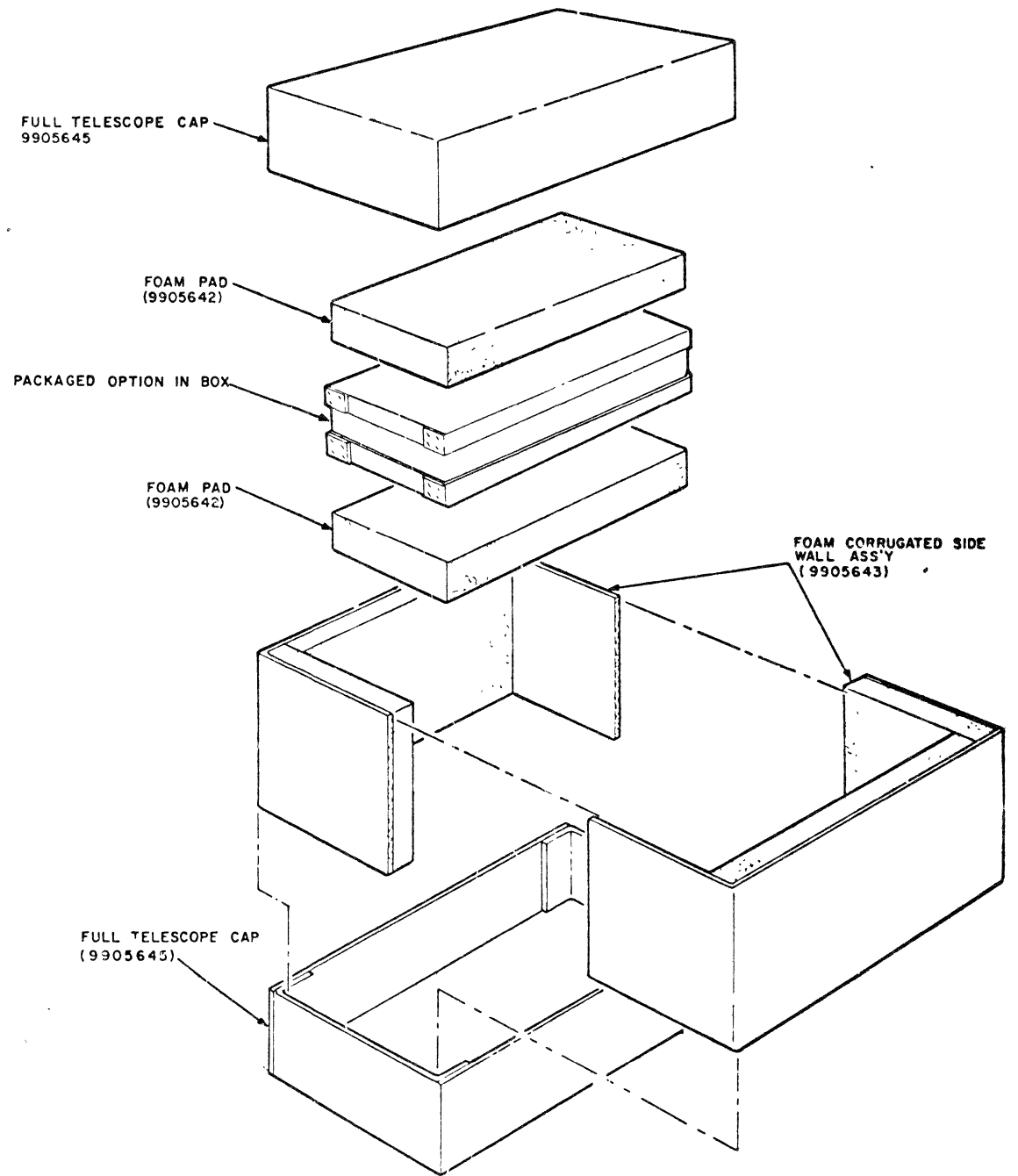
Step	Procedure
1	Set up both Full Telescope Caps (9905645). No taping or stapling is required.
2	Place one Full Telescope Cap on the floor and place both Foam with Corrugated Side Wall Assemblies (9905643) inside the cap.
3	Place one Foam Pad (9905642) inside the Foam with Corrugated Side Wall Assemblies, resting on the bottom of the Full Telescope Cap.
4	Place option (package in In-Plant Box, according to the specific Packaging Instructions for this option) inside the Foam with Corrugated Side Wall Assemblies, resting on the Foam Pad.
5	Place the second Foam Pad on top of the boxed option, inside the Foam with Corrugated Side Wall Assembly.
6	Place the second Full Telescope Cap on top of the assembly.
7	Strap in both directions, using plastic strapping.

NOTE
See A-SP-3700194-0-0 for Inter-Plant Packaging Instructions.

ENG <i>Ken M...</i>	APPD <i>11/21/75</i>	SIZE A	CODE SP	NUMBER 3700195-0-0	REV
------------------------	-------------------------	-----------	------------	-----------------------	-----

PACKAGING INSTRUCTION	REV: _____ DATE: _____
TITLE CUSHIONED CUSTOMER SHIPPING PACKAGE (MJ11)	_____

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NOTE
Make changes to the "C" size original only and rephotograph

ENG. <i>10/4/74</i>	APPD. <i>R. S. Blinn</i>	DATE <i>10/3/74</i>	SIZE A	CODE SP	NUMBER 3700195-0-0	REV
------------------------	-----------------------------	------------------------	-----------	------------	-----------------------	-----

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DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS							
PACKAGING INSTRUCTION				REV: _____	DATE: _____		
TITLE MJ11 INTER-PLANT PACKAGING				_____	_____		
MATERIAL REQUIREMENTS							
Quantity	Purchase Specification No.	Description					
2	9905744	Full Telescope Cap					
1	9905745	Taped Tube					
1	9905746	Scored Sheet					
1	9905644	Rear Protector					
1	9905335	Laminated Buildup					
10 ft.	9905734-01	Plastic Strapping					
PACKAGING INSTRUCTIONS							
Step	Procedure						
1	Set up two (2) Full Telescope Caps (9905744). One for the top and one for the bottom.						
2	Place MJ11 <i>upside down</i> in one of the Full Telescope Caps. Center it from front-to-back and side-to-side.						
3	Place Rear Protector (9905644) against MJ11. Place plug wire into slot and down between the two foam blocks (see Figure).						
4	Place Taped Tube (9905745) down and around the MJ11.						
5	Place Laminated Buildup (9905335) down in front of the MJ11. Place Scored Sheet (9905746) along the MJ11; first one side and then the other.						
6	Place second Full Telescope Cap on top of the assembly. Strap in both directions, using plastic strapping (9905734-01).						
NOTE							
For Cushioned Customer Shipping Package, refer to Packaging Instruction A-SP-3700195-0-0.							
ENG <i>Ken Mearns</i>	7/21/75	APPD <i>120</i>	7/21/75	SIZE A	CODE SP	NUMBER 3700194-0-0	REV

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PACKAGING INSTRUCTION				REV: _____	DATE: _____	
TITLE MJ11 INTERPLANT PACKAGING				_____	_____	
NOTE: Make changes to "C" size original only and rephotograph						
ENG. <i>Ken Mearns</i>	7/21/75	APPD <i>120</i>	7/21/75	SIZE A	CODE SP	NUMBER 3700194-0-0

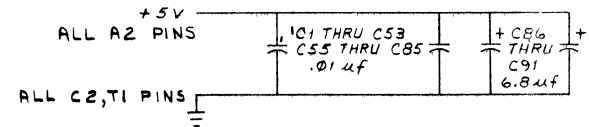
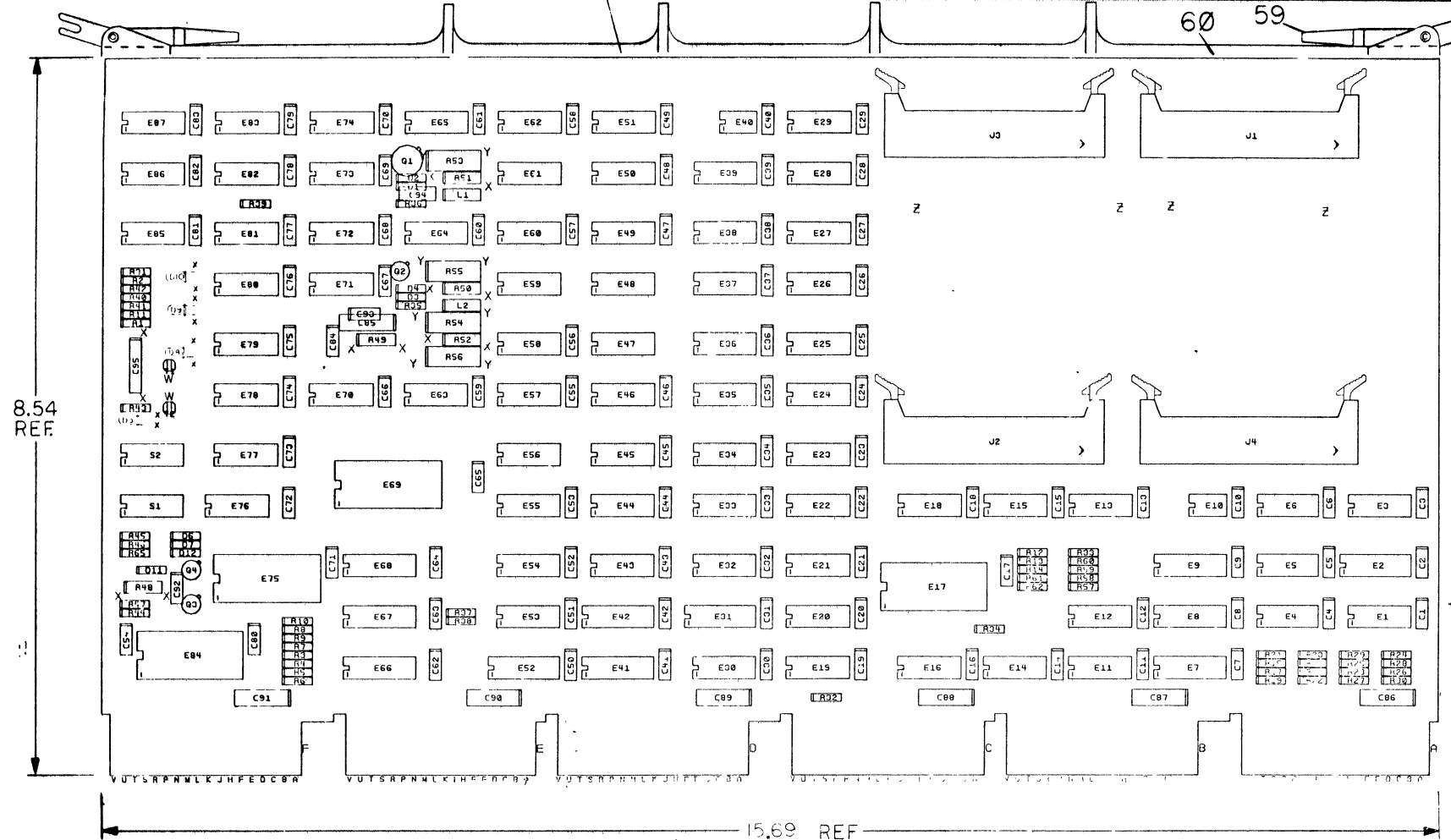
MINIMUM SPECIFICATIONS HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1974, DIGITAL EQUIPMENT CORPORATION.

NOTES:
1. PINS FS1, FR1, BD2, BE2, AND BF2 ARE FOR MODULE TEST ONLY

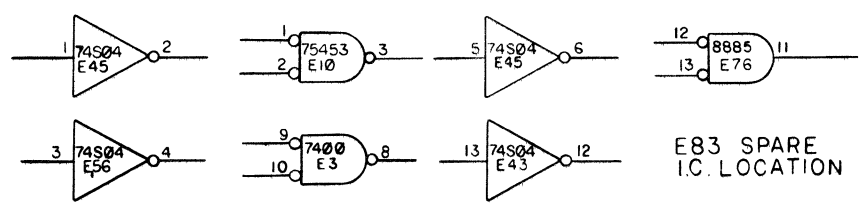
2	E86, E51	IC DEC 74S40	1910541	54
1	E87	IC DEC 74S133	1211983	55
1	E14	IC DEC 74S140	1910546	58
1	E2	IC DEC 74187	23-C65A2-01	57
2	TP1 TP2	SPLIT LUGS	9006735	58
1		HANDLE ASSEMBLY	1210711-2	59
12		EYELET (HANDLE)	9006732	60
1	C95	CAP .022UF 100V 10/	1002323	61
4		RIGHT LATCH	1209941-04	62
4		LEFT LATCH	1209941-03	63

* 1-0-2718MSD 2 1

REF	X Y COORDINATE HOLE LOCATION	K CO M8147 B-4	1
REF	ASSY DRILLING HOLE LAYOUT	D AM-M8147 B-5	2
REF	MODULE ECO HISTORY	B-MH-M8147 B-6	3
1	ETCHED CIRCUIT BOARD	5012313	4
84	C1 THRU C84	CAPACITOR 01uf 100V 20/	5
7	C85 THRU C91	CAPACITOR 6 8uf 35V 10/	6
1	C92	CAPACITOR 1000PF 100V 5/	7
2	C93, C94	CAPACITOR 270PF 100V 5/	8
7	D1, D2, D3, D4, D5, D6, D7, D12	DIODE DEC 777 SWITCHING DIODE	9
4	D9 THRU D10, D5	DIODE LIGHT EMITTING MV5054 1	10
1	D11	DIODE ZENER 1N 749A 3V	11
4	J1, J2, J3, J4	CONNECTOR 3M #3432 40 PIN	12
34	R1 THRU R34	RESISTOR 1/4W 1K 5%	13
3	R35, R36, R37	RESISTOR 1/4W 330 OHM 5%	14
1	R38	RESISTOR 1/4W 680 OHM 5%	15
1	R39	RESISTOR 1/4W 470 OHM 5%	16
4	R40 THRU R43	RESISTOR 1/4W 220 OHM 5%	17
1	R44	RESISTOR 1/4W 560 OHM 5%	18
3	R45, R46, R47	RESISTOR 1/4W 20K 5%	19
1	R48	RESISTOR 1/2W 750 OHM 5%	20
4	R49 THRU R52	RESISTOR 1/2W 470 OHM 5%	21
4	R53 THRU R56	RESISTOR 1W 120 OHM 5%	22
6	R57 THRU R62	RESISTOR 1/8W 1 1K OHM 1%	23
1	R65	RESISTOR 1/4W 2K 5%	24
3	Q1, Q2, Q3	TRANSISTOR DEC 3009B	25
1	Q4	TRANSISTOR DEC 6534D	26
2	L1, L2	INDUCTOR 100uH	27
4	E47, E48, E59, E61	DELAY LINE	28
2	S1, S2	SWITCH 7 POS	29
1	E10	IC DEC 75453	30
9	E22 THRU E29, E36	IC DEC 8640	31
1	E11	IC DEC 74H04	32
2	E3, E6	IC DEC 7400	33
1	E12	IC DEC 74H01-1	34
4	E34, E35, E37, E38	IC DEC 82562	35
2	E4, E87	IC DEC 74S74	36
1	E7A	IC DEC 74H00	37
4	E17, E69, E75, E84	IC DEC 74S181	38
1	E68	IC DEC 74S158	39
11	E13, E43, E45, E56, E57, E58, E60, E62, E65, E77, E49	IC DEC 74S04	40
12	E32, E33, E39, E44, E46, E54, E55, E63, E72, E73, E74, E79	IC DEC 74S64	41
1	E5	IC DEC 7404	42
2	E50, E70	IC DEC 74S10	43
1	E21	IC DEC 74S11	44
2	E80, E81	IC DEC 74S22	45
5	E41, E42, E52, E66, E31	IC DEC 7475	46
2	E1, E4	IC DEC 8242	47
4	E18, E30, E53, E71	IC DEC 74S00	48
1	E40	IC DEC 75451	49
2	E20, E82	IC DEC 7408	50
3	E19, E64, E76	IC DEC 8885	51
2	E15, E18	IC DEC 7475	52
3	E7, E8, E9	IC DEC 74S151	53



SPARES



DEC 75451	4	8
DEC 74187	8	16
DEC 74S181	12	24
DEC 74S158	8	16
DEC 74S151	8	16
DEC 74S133	8	16
DEC 8640	1	8
DEC 7475	12	5
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL MJ11

ETCH BOARD REV A

DRM: R. K. Reed DATE: 4 MAR 76
CHKD: G. L. G. DATE: 5-15-76
ENG: B. B. B. DATE: 12 JUL 76
DESIGNED BY: B. B. B. DATE: 12 JUL 76
DRAWN BY: R. K. Reed DATE: 12 JUL 76
NEXT HIGHER ASSY

digital EQUIPMENT CORPORATION

TITLE: MEMORY CONTROL & TIMING (MCT)

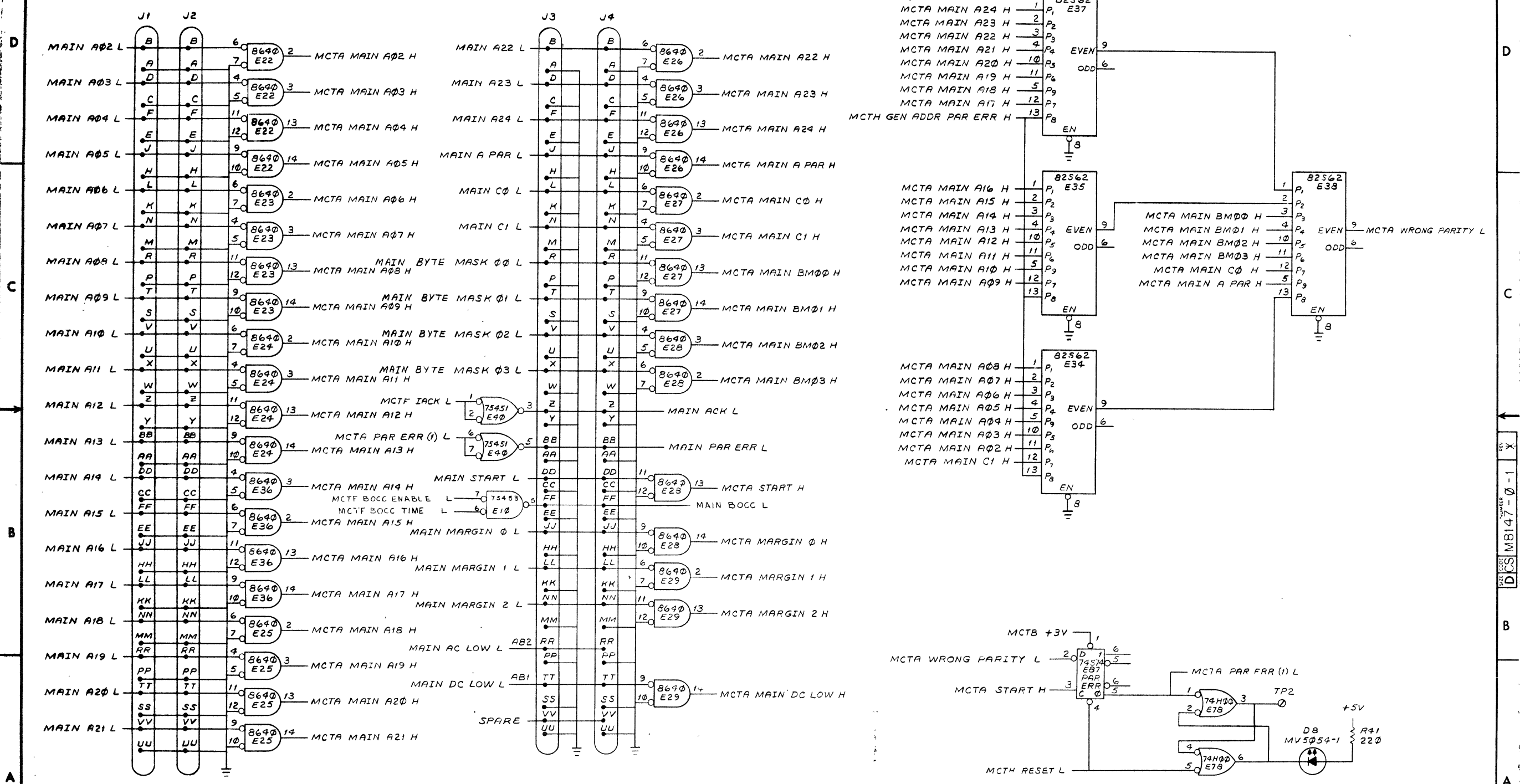
SIZE CODE: DCS M8147-0-1

SCALE: 1 OF 9

SEMICONDUCTOR CONVERSION CHART

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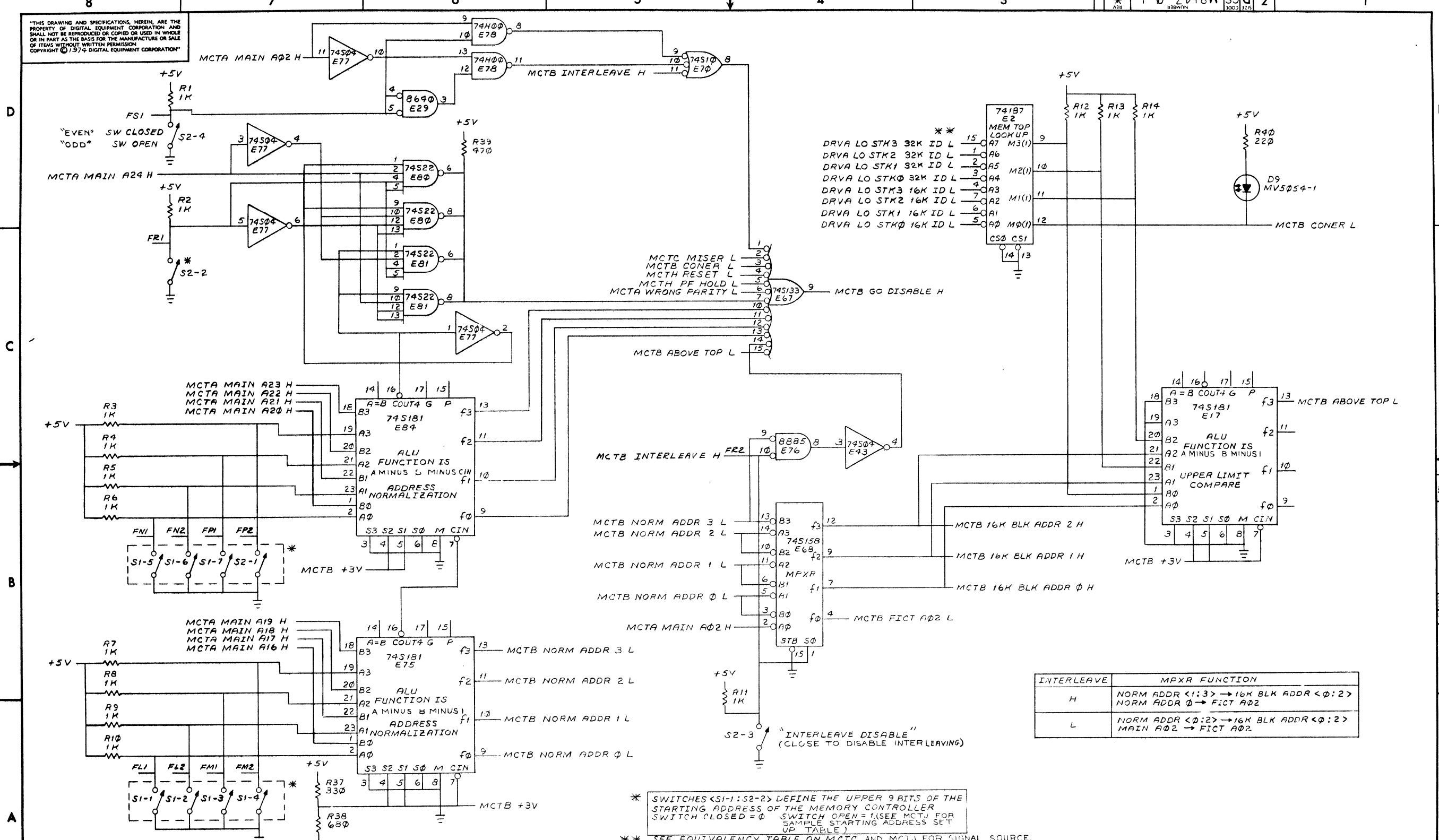
REVISIONS		
CHK	CHANGE NO.	REV.

MEMORY BUS INTERFACE AND ADDRESS PARITY CHECKER SLOT 13

TITLE	MEMORY CONTROL AND TIMING (MCTA)	SIZE CODE	D CS	NUMBER	M8147-0-1	REV.	*
SCALE	1/1	SHEET	2 OF 9	DIST.			

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1-0-7-18M SC DCS 2



INTERLEAVE	MPXR FUNCTION
H	NORM ADDR <1:3> → 16K BLK ADDR <0:2> NORM ADDR 0 → FICT ADDR
L	NORM ADDR <0:2> → 16K BLK ADDR <0:2> MAIN ADDR → FICT ADDR

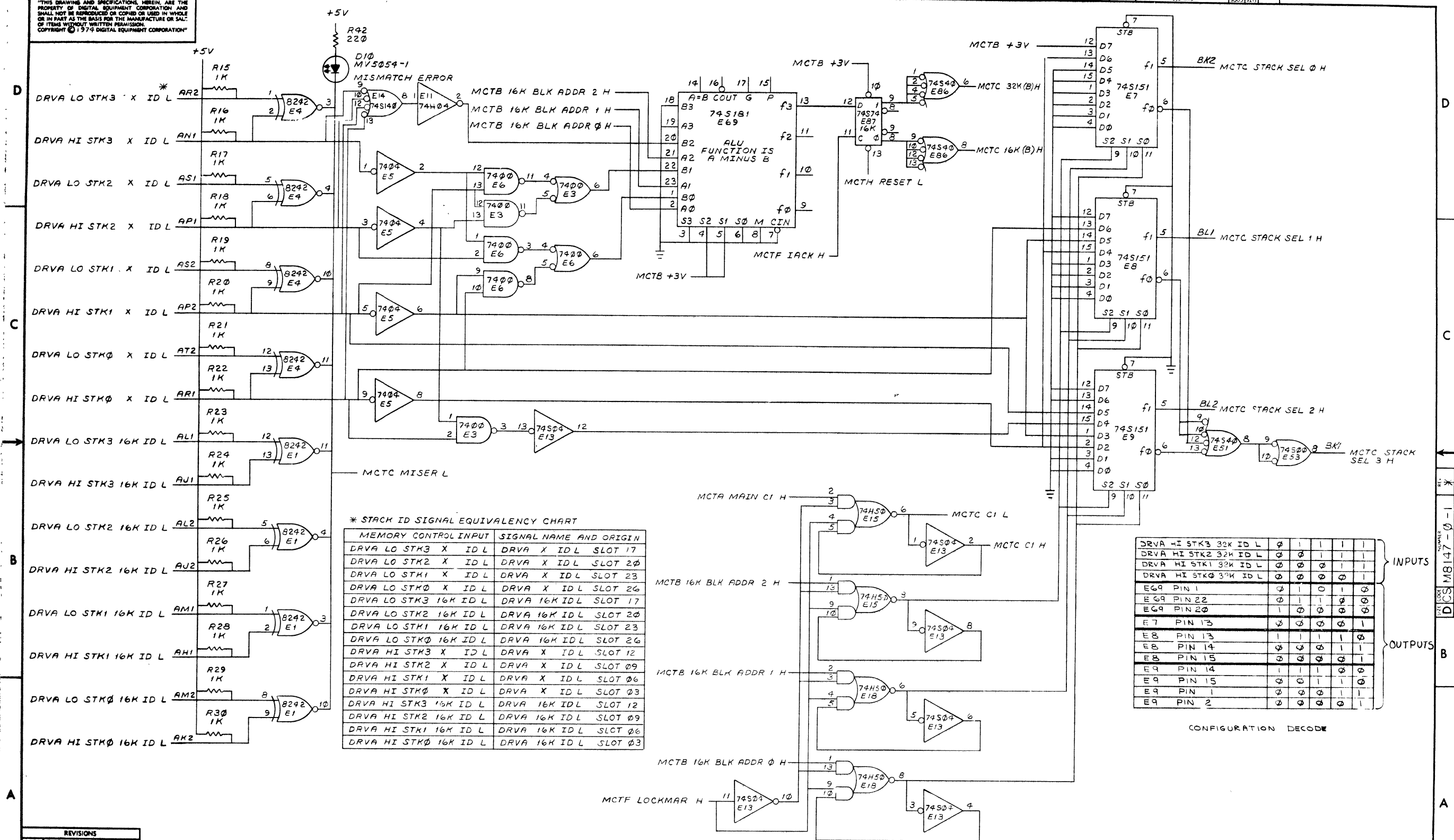
* SWITCHES <S1-1:S2-2> DEFINE THE UPPER 9 BITS OF THE STARTING ADDRESS OF THE MEMORY CONTROLLER. SWITCH CLOSED = 0, SWITCH OPEN = 1. (SEE MCTJ FOR SAMPLE STARTING ADDRESS SET UP TABLE.)
** SEE EQUIVALENCY TABLE ON MCTC AND MCTJ FOR SIGNAL SOURCE.

REVISIONS		
CHK	CHANGE NO.	REV.

ADDRESS DECODE		SLOT 13	
TITLE	MEMORY CONTROL AND TIMING (MCTB)	SIZE CODE	NUMBER
		DCS	M8147-0-1
SCALE	—#—	SHEET	3 OF 9
		DIST.	

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* STACK ID SIGNAL EQUIVALENCY CHART

MEMORY CONTROL INPUT	SIGNAL NAME AND ORIGIN
DRVA LO STK3 X ID L	DRVA X ID L SLOT 17
DRVA LO STK2 X ID L	DRVA X ID L SLOT 20
DRVA LO STK1 X ID L	DRVA X ID L SLOT 23
DRVA LO STK0 X ID L	DRVA X ID L SLOT 26
DRVA LO STK3 16K ID L	DRVA 16K ID L SLOT 17
DRVA LO STK2 16K ID L	DRVA 16K ID L SLOT 20
DRVA LO STK1 16K ID L	DRVA 16K ID L SLOT 23
DRVA LO STK0 16K ID L	DRVA 16K ID L SLOT 26
DRVA HI STK3 X ID L	DRVA X ID L SLOT 12
DRVA HI STK2 X ID L	DRVA X ID L SLOT 09
DRVA HI STK1 X ID L	DRVA X ID L SLOT 06
DRVA HI STK0 X ID L	DRVA X ID L SLOT 03
DRVA HI STK3 16K ID L	DRVA 16K ID L SLOT 12
DRVA HI STK2 16K ID L	DRVA 16K ID L SLOT 09
DRVA HI STK1 16K ID L	DRVA 16K ID L SLOT 06
DRVA HI STK0 16K ID L	DRVA 16K ID L SLOT 03

DRVA HI STK3 32K ID L	DRVA HI STK2 32K ID L	DRVA HI STK1 32K ID L	DRVA HI STK0 32K ID L	EG9 PIN 1	EG9 PIN 22	EG9 PIN 20	E7 PIN 13	E8 PIN 13	E8 PIN 14	E8 PIN 15	E9 PIN 14	E9 PIN 15	E9 PIN 1	E9 PIN 2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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REVISIONS

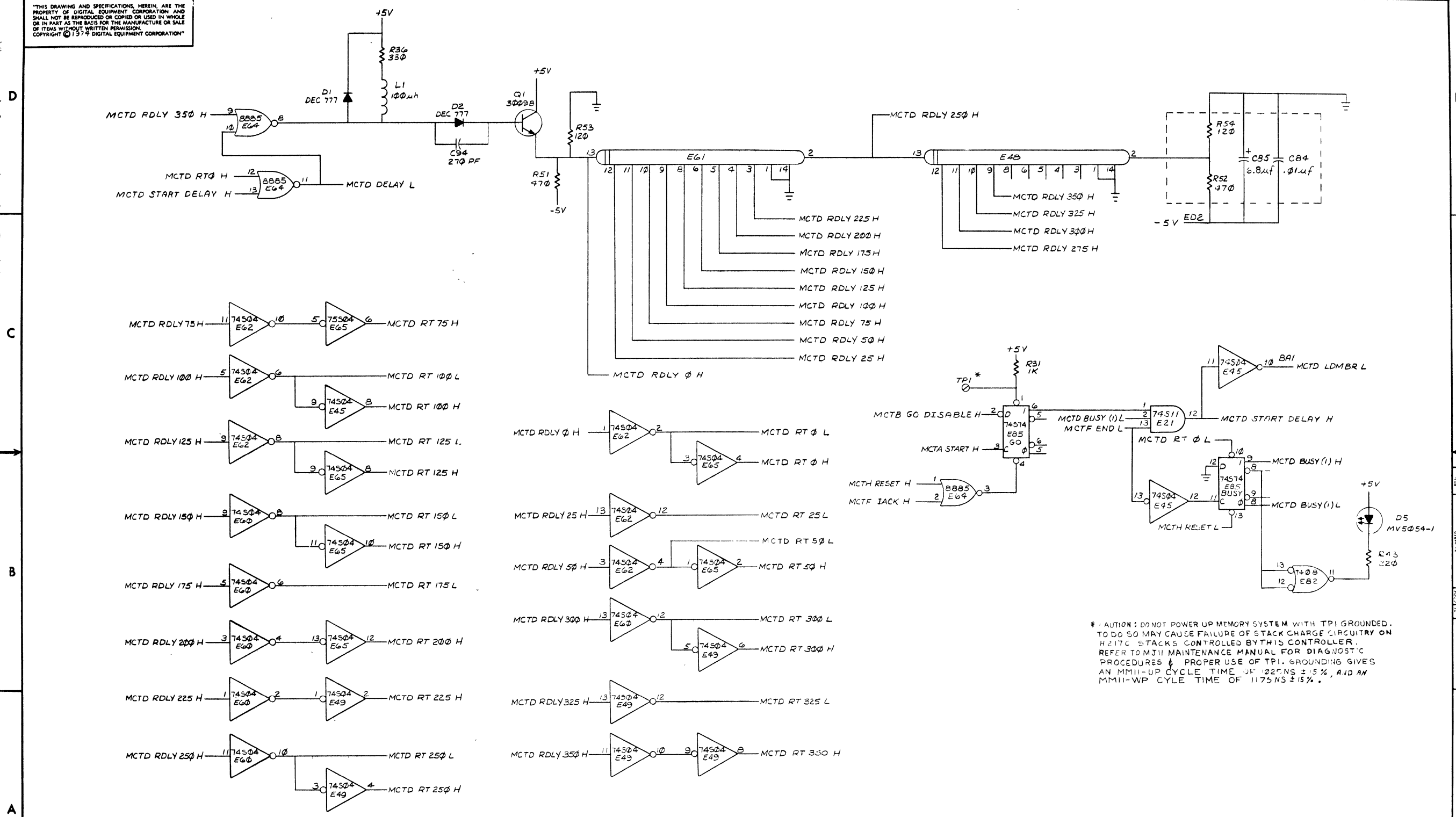
CHK	CHANGE NO.	REV.

STACK SELECT SLOT 13

TITLE	SIZE CODE	NUMBER	REV.
MEMORY CONTROL AND TIMING (MCT)	DCS	M8147-0-1	*

SCALE: --- SHEET: 4 OF 9 DIST: ---

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REVISIONS		
CHK	CHANGE NO.	REV.

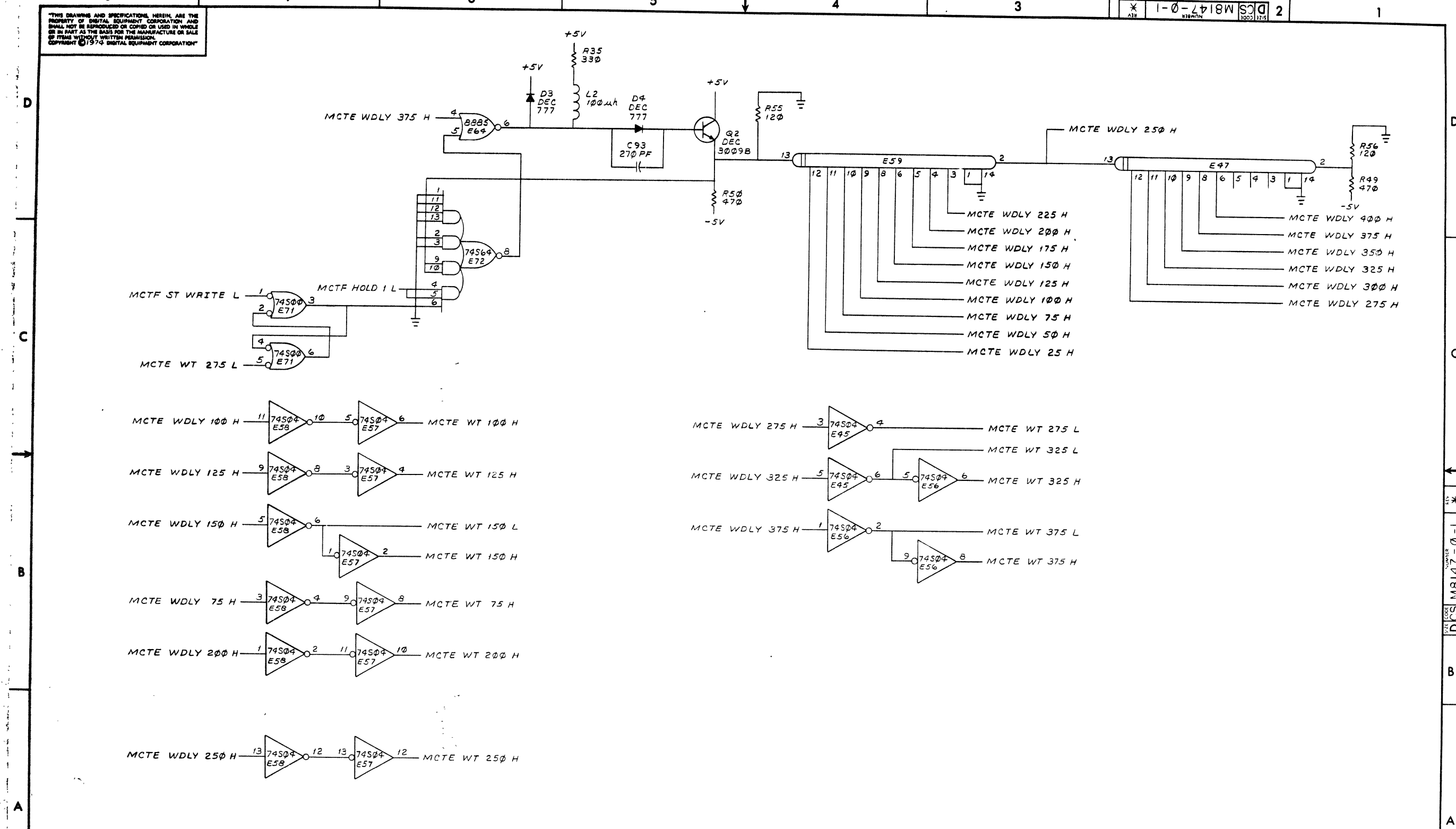
READ TIMING GENERATOR SLOT 13

TITLE	MEMORY CONTROL AND TIMING (MCTD)	SIZE CODE	D	CS	NUMBER	M8147-0-1	REV.	*
SCALE	1/1	SHEET	5	OF	9	DIST.		

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DCS M8147-0-1 2

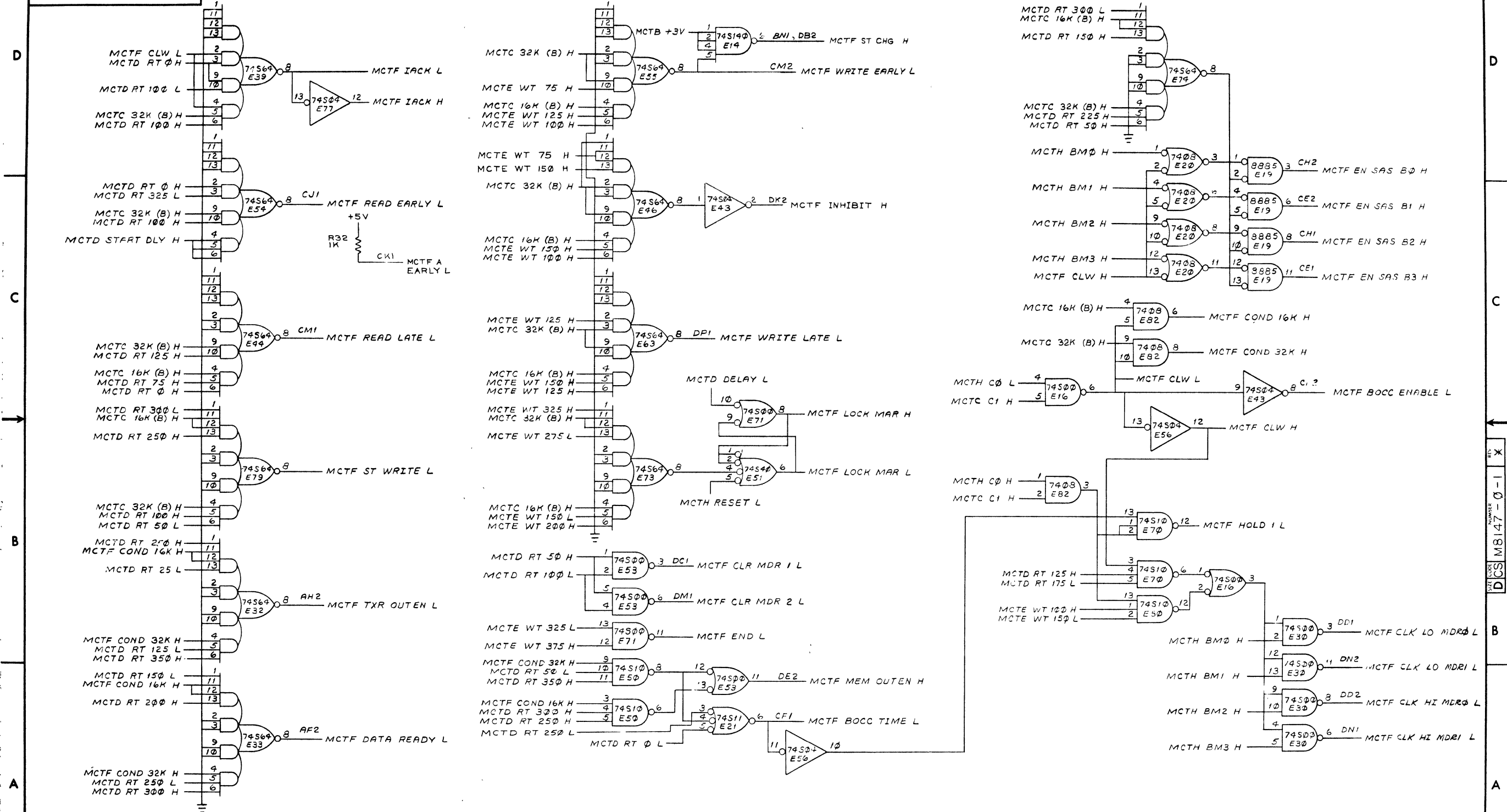


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MEMORY CONTROL AND TIMING (MCTE)		SIZE CODE DCS	NUMBER M8147-0-1	REV. *
SCALE	SHEET 6 OF 9	DIST	SHEET 6 OF 9	

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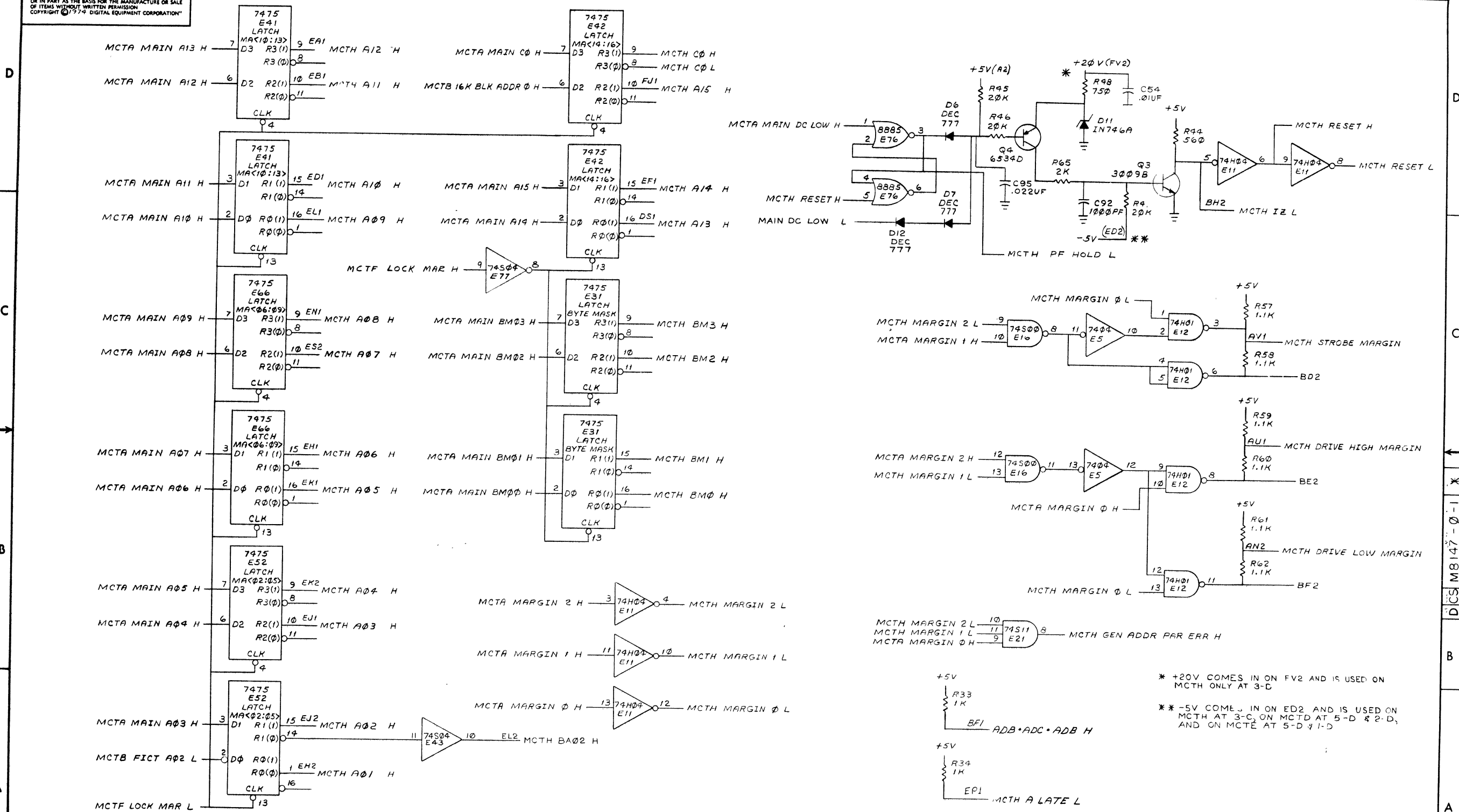
REVISIONS		
CHK	CHANGE NO.	REV.

CONTROL TIMING GENERATOR		SLOT 13	
TITLE	MEMORY CONTROL AND TIMING (MCTF)	SIZE CODE	NUMBER
		DCS	M8147-0-1
SCALE	7 OF 9	DIST.	

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1-0-18W SCS D 2



REVISIONS		
CHK	CHANGE NO	REV

TITLE MEMORY BUS ADDRESS LATCH		SLOT 13	
TIMING (MCTH)		SIZE CODE DCS	NUMBER M8147-0-1
SCALE	SHEET 8 OF 9	DIST	REV *

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		1-16K	2-16K	3-16K	4-16K	1-32K	2-32K	3-32K	4-32K	1-16K, THEN 1-32K	2-16K, THEN 1-32K	1-16K, THEN 1-32K	3-16K, THEN 2-32K	2-16K, THEN 1-32K	1-16K, THEN 3-32K
ROM INPUTS	DRVA LO STK 3 32K ID L	H	H	H	H	H	H	L	L	H	H	L	L	L	L
	DRVA LO STK 2 32K ID L	H	H	H	H	H	H	L	L	L	L	H	H	L	L
	DRVA LO STK 1 32K ID L	H	H	H	H	H	L	L	L	L	L	H	H	L	L
	DRVA LO STK 0 32K ID L	H	H	H	H	L	L	L	L	L	L	H	H	L	L
	DRVA LO STK 3 16K ID L	H	H	H	L	H	H	L	L	H	H	L	L	L	L
	DRVA LO STK 2 16K ID L	H	H	L	L	H	H	L	L	L	L	L	L	L	L
	DRVA LO STK 1 16K ID L	L	L	L	L	H	L	L	L	L	L	L	L	L	L
	DRVA LO STK 0 16K ID L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
PCM OUTPUTS	E2 PIN 9	L	H	L	H	H	H	H	L	H	L	L	L	H	L
	E2 PIN 10	L	L	H	H	L	H	L	H	H	L	L	L	L	H
	E2 PIN 11	L	L	L	L	L	L	H	H	L	L	H	H	H	H
	E2 PIN 12 (CON EX L)	H	H	H	H	H	H	H	H	H	H	H	H	H	H

NOTE: ALL OTHER COMBINATIONS OF ROM INPUTS RESULT IN ALL OUTPUT PINS LOW (TO CAUSE A CONFIGURATION ERROR). E2 SPECIFIES HOW MUCH MEMORY IS IN AN M111 MEMORY BOX CONTROLLED BY AN M8147 OR M8148

← THE ONLY CONFIGURATIONS ALLOWED IN AN M111 MEMORY BOX. (ALL 16Ks MUST BE IN LOWER STK POSITIONS THAN 32Ks. FOR 1-16K & 1-32K, 16K MUST BE STK 0 AND 32K MUST BE STK 1)

TRUTH TABLE FOR MEM TOP LOOKUP ROM [E2 - MCTB]

SAMPLE STARTING ADDRESS SETUP TABLE

S2-2	S2-1	S1-7	S1-6	S1-5	S1-4	S1-3	S1-2	S1-1	STARTING ADDRESS
0	0	0	0	0	0	0	0	0	0 (FOR 32K)
0	0	0	0	0	0	0	0	1	220,000 (2ND 32K)
0	0	0	0	0	0	0	1	0	400,000 (3RD 32K)
0	0	0	0	0	0	0	1	1	600,000 (4TH 32K)
0	0	0	0	0	0	1	0	0	1,000,000 (5TH 32K)
0	0	0	0	0	0	1	0	1	1,200,000 (6TH 32K)
0	0	0	0	0	0	1	1	0	1,400,000 (7TH 32K)
0	0	0	0	0	0	1	1	1	1,600,000 (8TH 32K)
0	0	0	0	0	1	0	0	0	2,000,000 (9TH 32K)

← BOUNDARY FOR BOX 0 (FULL OF MM11-UP STACKS)
 BOUNDARY FOR BOX 0 (FULL OF MM11-WP STACKS)

← BOUNDARY FOR BOX 1 (FULL OF MM11-UP STACKS)

← BOUNDARY FOR BOX 1 (FULL OF MM11-WP STACKS)
 BOUNDARY FOR BOX 2 (FULL OF MM11-UP STACKS)

ETC

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MEMORY CONTROL AND TIMING MCTJ		SIZE CODE DCS M8147-0-1	NUMBER 1	REV. *
SCALE	SHEET 9 OF 9	DIST.	SLOT 13	

390

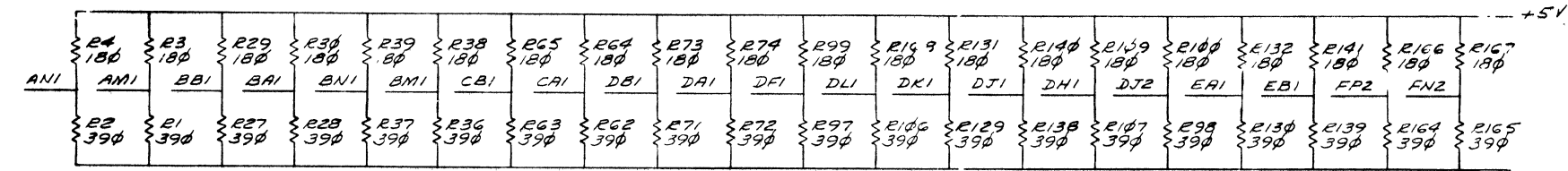
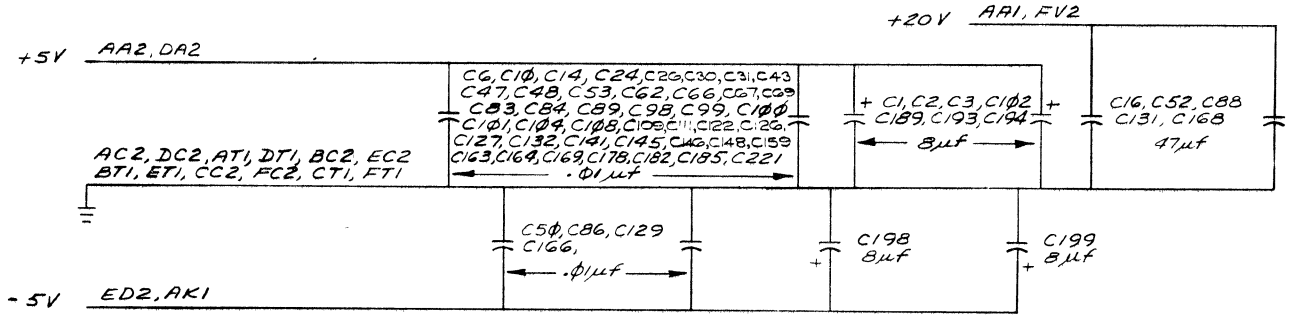
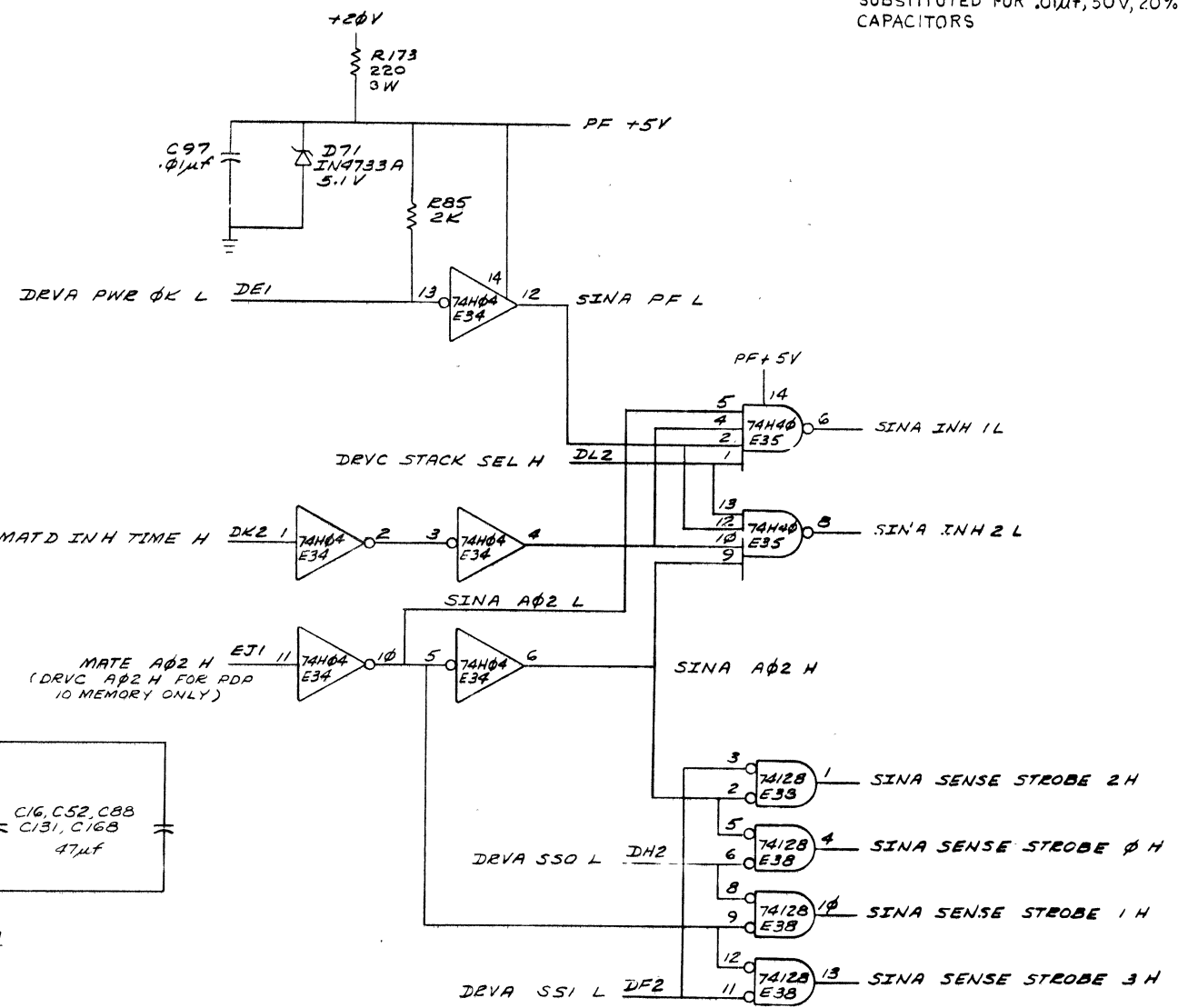
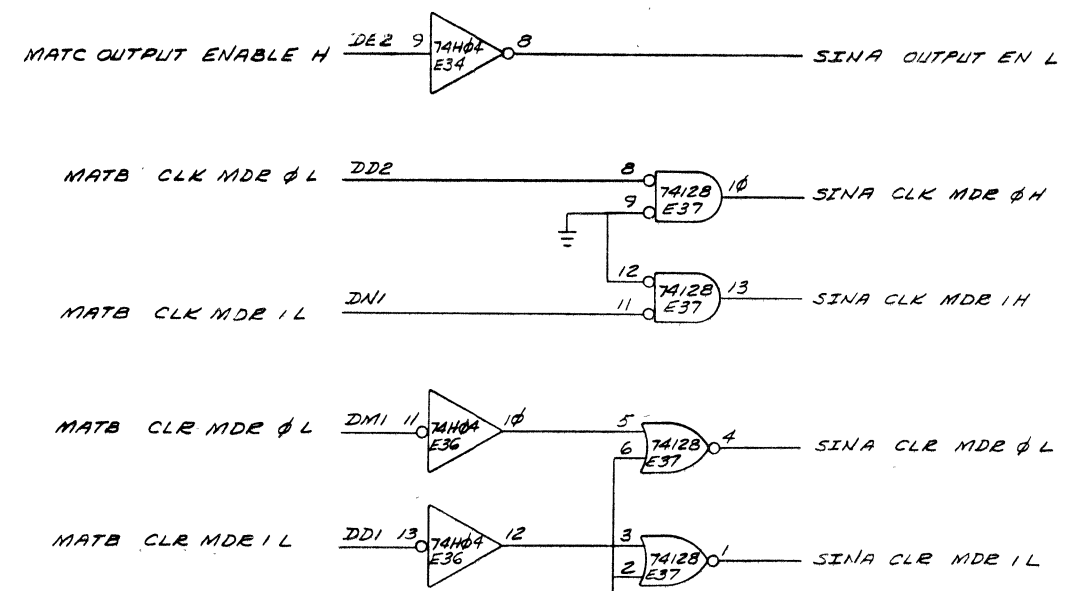
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IC PIN LOCATION

GND AND +5V ARE USUALLY PINS 14 RESPECTIVELY. EXCEPTIONS NOTED BELOW

IC TYPE	GND	+5V	-5V
IC DEC 7520	9	16	8
IC DEC 8641	8	16	-

NOTE:
* .01μf, 100V, 20% CAPACITORS MAY BE SUBSTITUTED FOR .01μf, 50V, 20% CAPACITORS

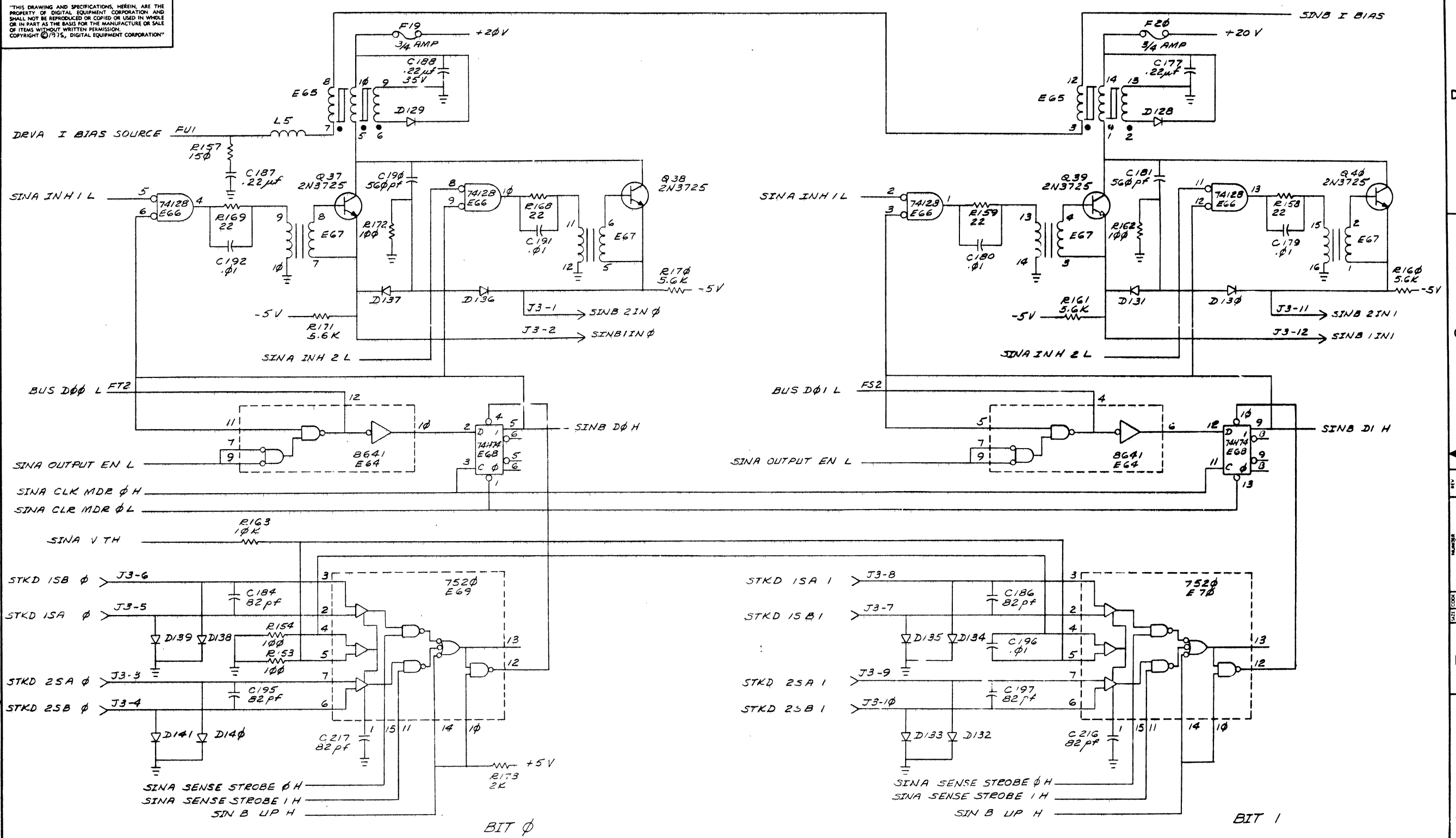


REVISIONS

NO.	DATE	BY	CHKD	REV.
1	11/17/75	D. SWELSER		C

DRN: [Signature]	FIRST USED BY: [Signature]
CHKD: [Signature]	TITLE: 32K SENSE/INHIBIT (SINA)
ENG: [Signature]	PROJECT: D-UA-G116-0-1
PROD: [Signature]	SCALE: 1 OF 11
NEXT HIGHER ASSY:	SHEET: 1 OF 11
DUA-G116-0-0	SIZE CODE: DCS G116-0-1
NUMBER: 1	REV: C

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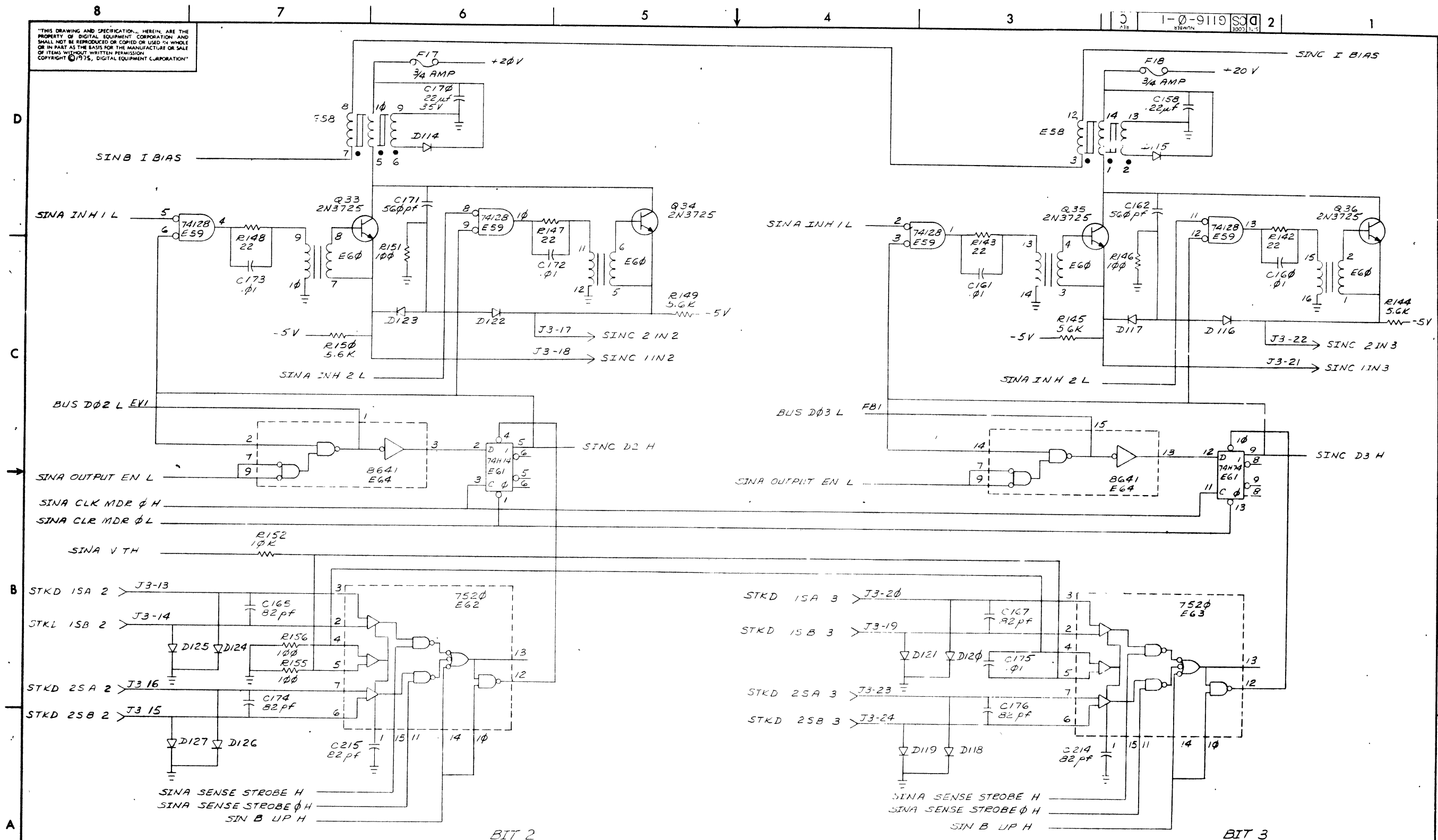
REVISIONS		
CHK	CHANGE NO	REV

TITLE	32K SENSE/INHIBIT (SINB)	SIZE CODE	D CS	NUMBER	G116-0-1	REV.	C
SCALE	1:1	SHEET	2	OF 11	Dist.		

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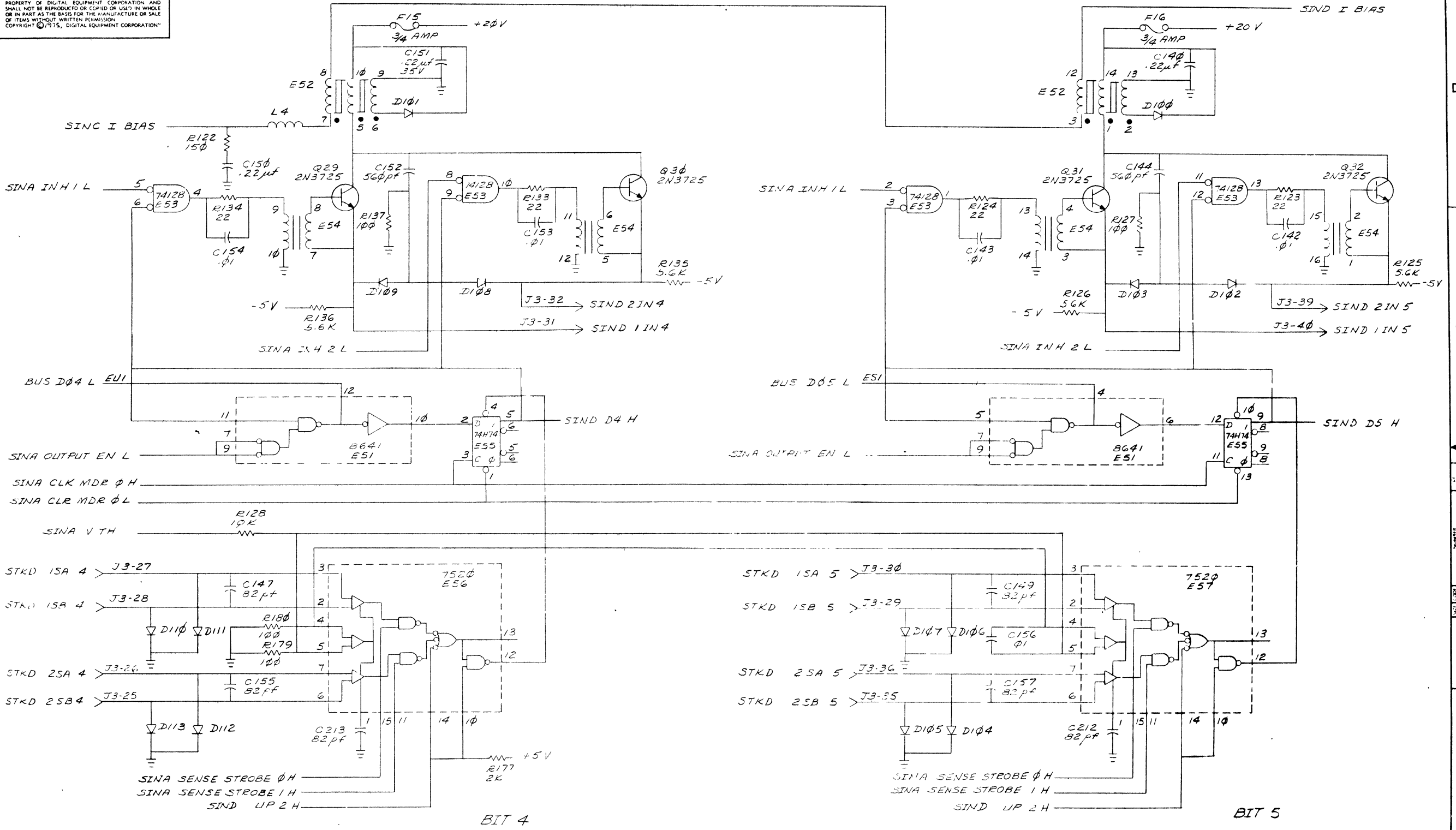
1-0-9119 SD 2



REVISIONS		
CHK	CHANGE NO	REV

TITLE: 32K SENSE/INHIBIT (SINC) SIZE CODE: DCS G116-0-1 NUMBER: 1 REV: C
 SCALE: SHEET 3 OF 11 DIST:

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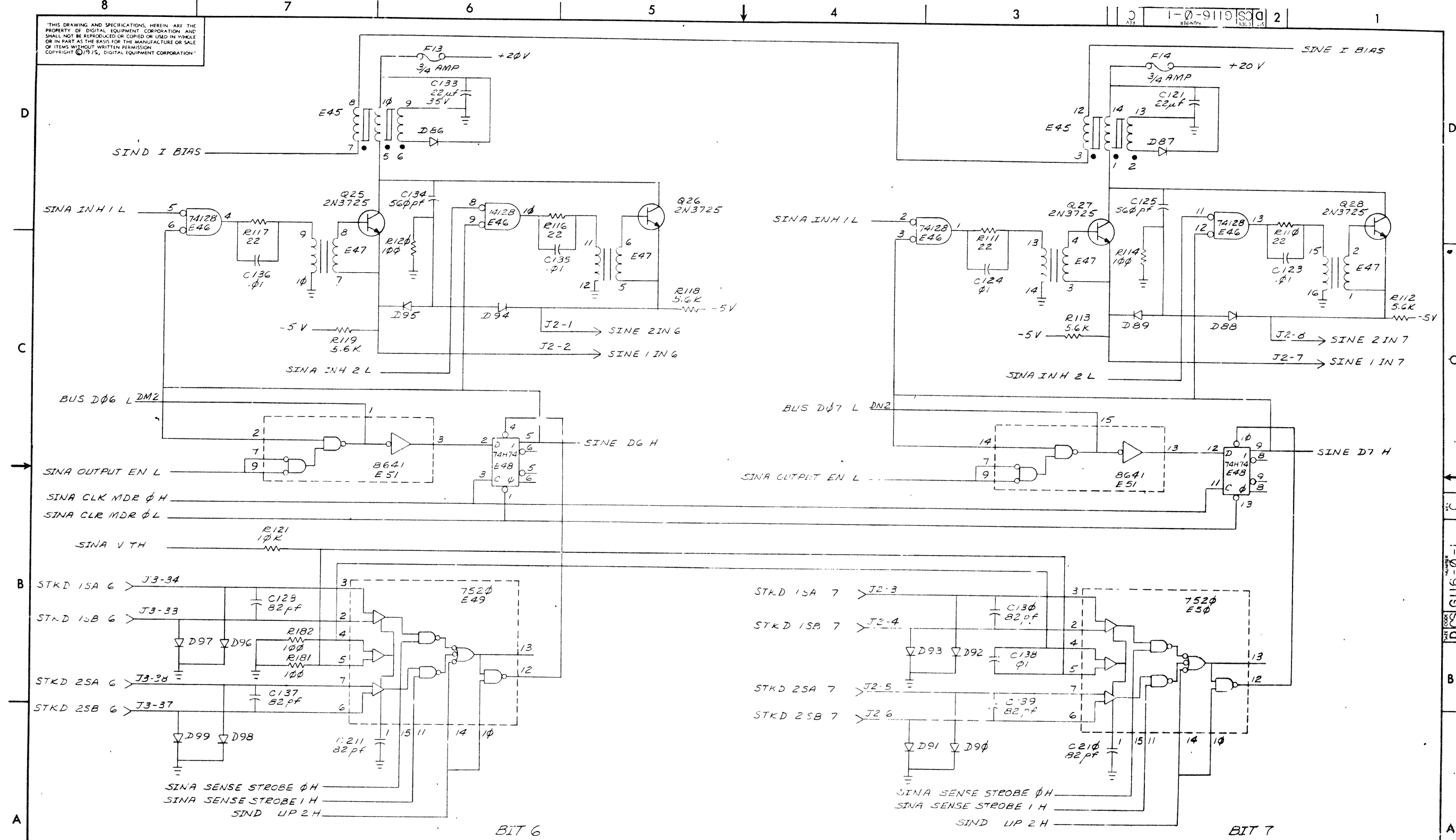


REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV.
32K SENSE/INHIBIT (SIND)	D CS	G116-0-1	C
SCALE	SHEET 4 OF 11	DIST	

DEC FORM NO. DRD 138
394

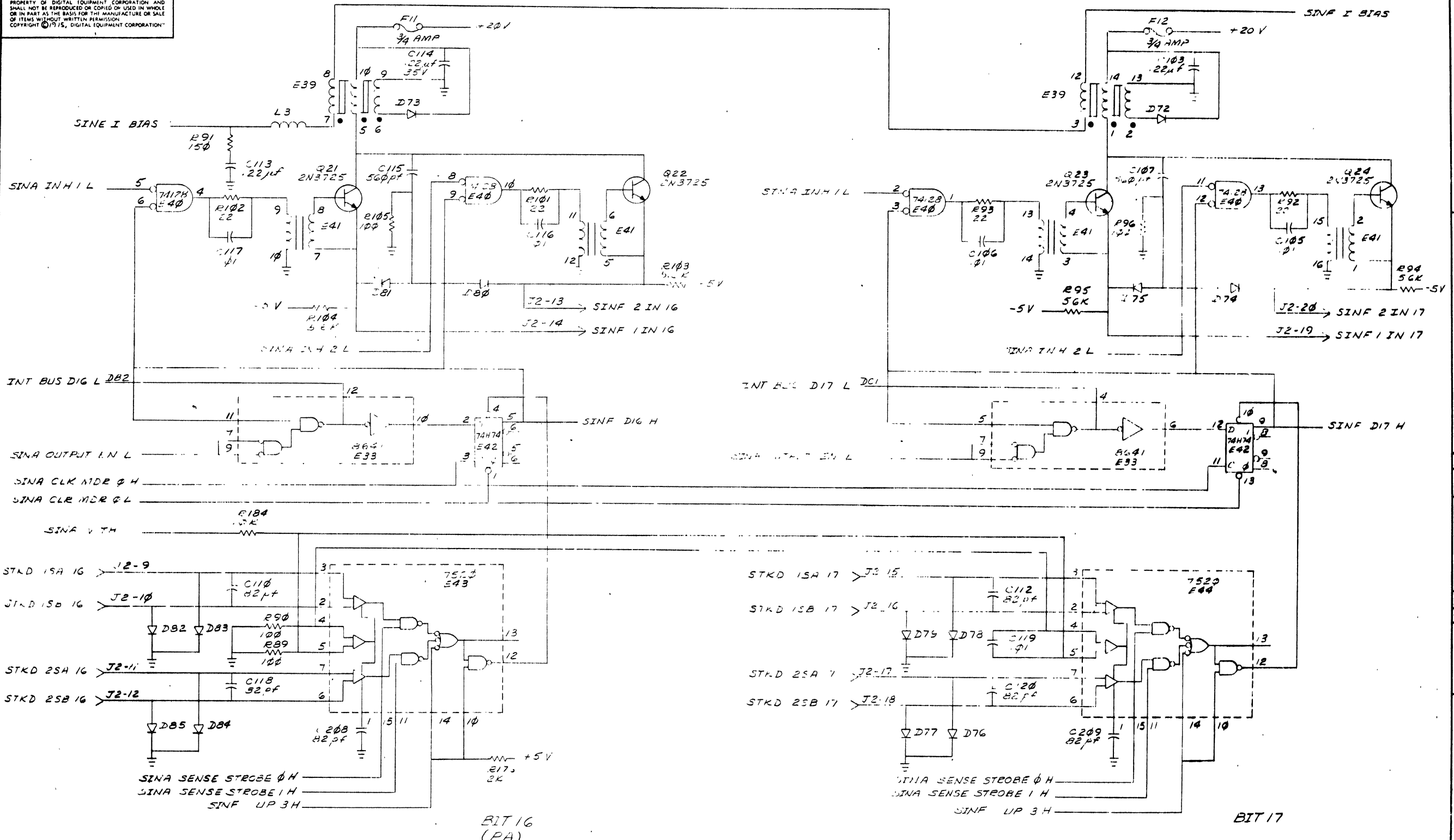
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REVISIONS		
CHK	CHANGE NO	REV

TITLE: 32K SENSE/INHIBIT (SINE) DCS G116-0-1
 SCALE: SHEET 5 OF 11
 NUMBER: G116-0-1
 REV: C

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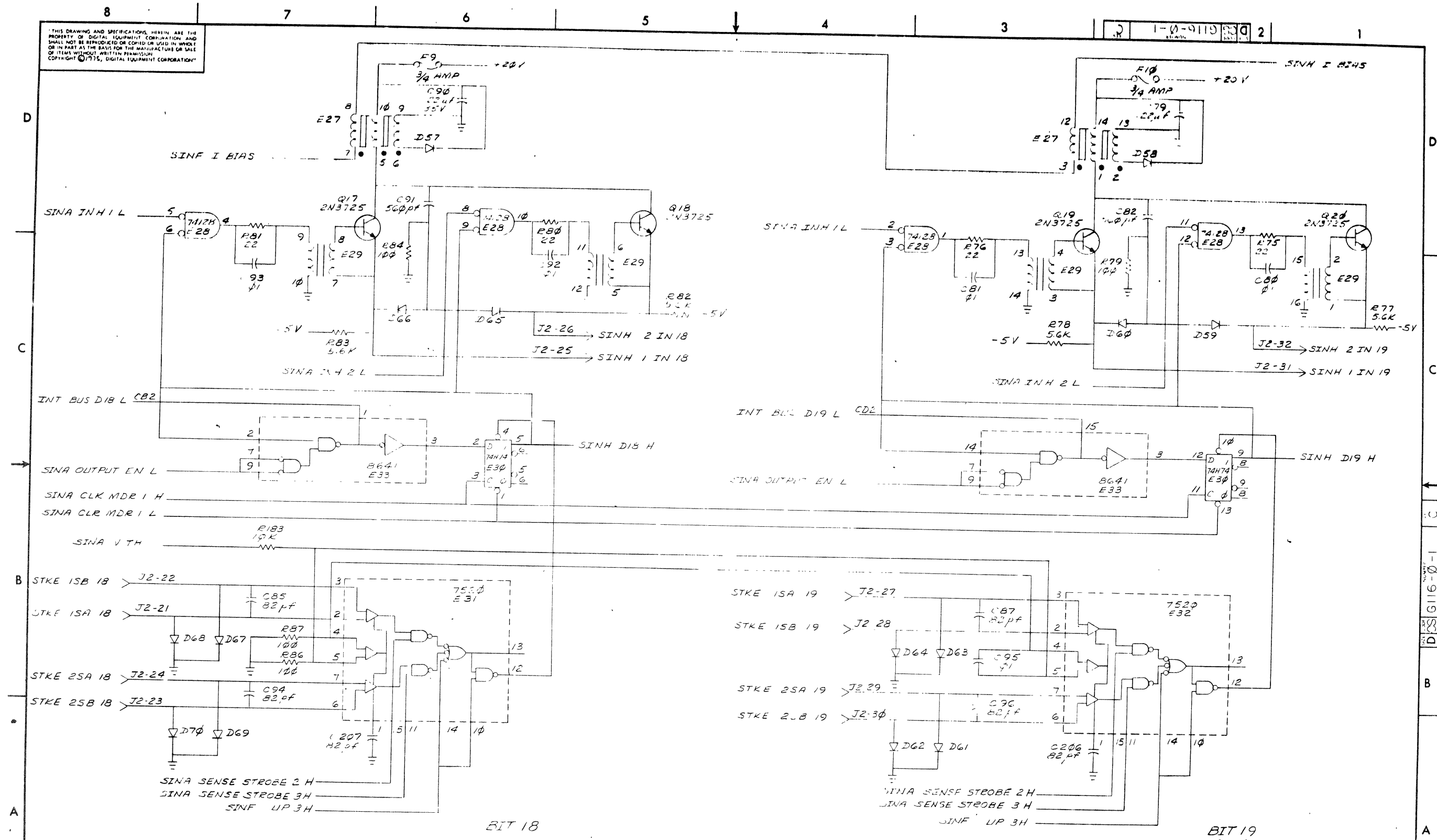
REVISIONS		
CHK	CHANGE NO	REV

TITLE	32K SENSE/INHIBIT (SINF)	SIZE CODE	D CS	NUMBER	GI16-0-1	REV.	C
SCALE		SHEET	6	OF	11	DIST	

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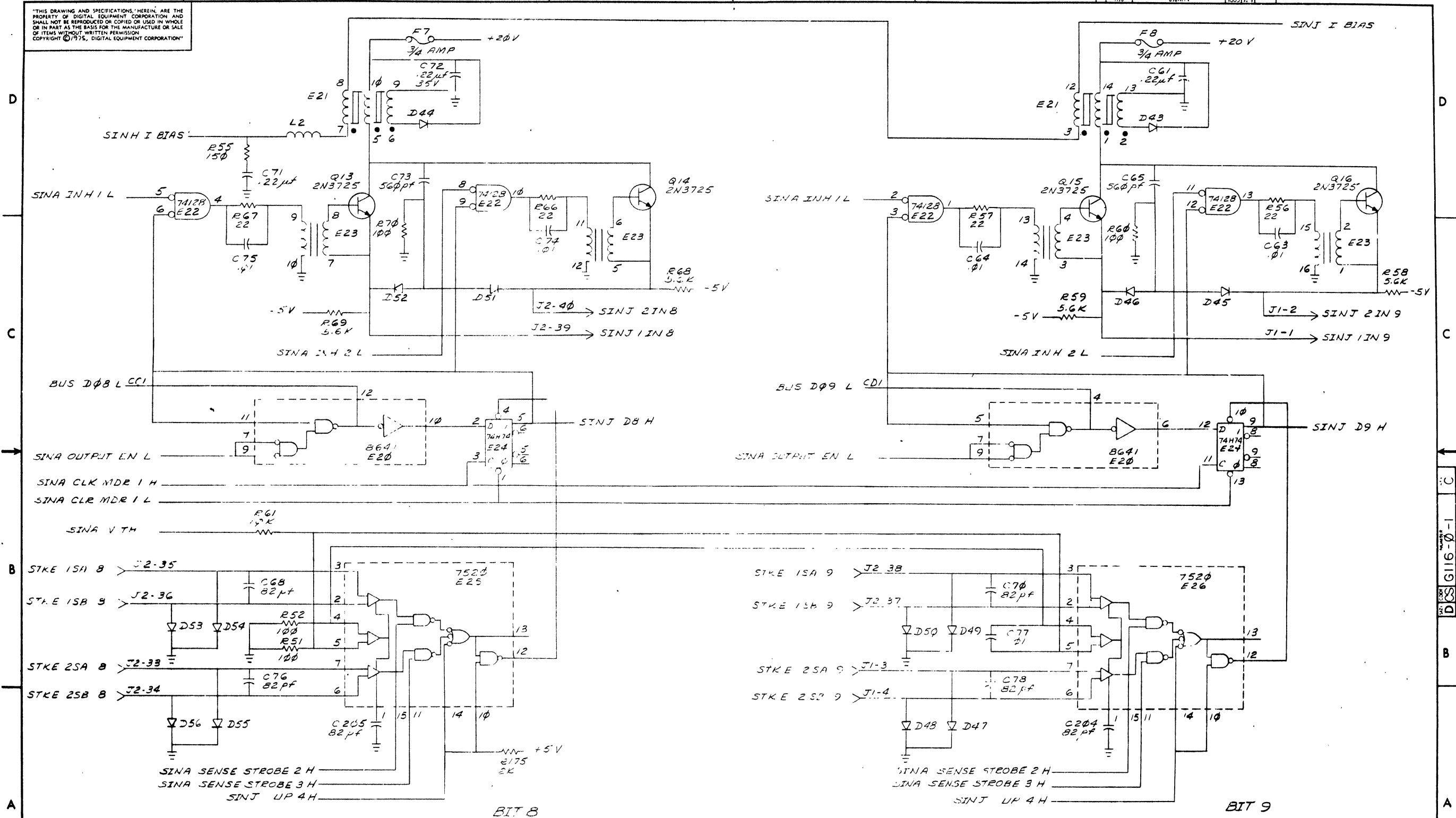
1-0-9119 2



REVISIONS		
CHK	CHANGE NO	REV

TITLE: 32K SENSE/INHIBIT (SINH) DCS G116-0-1 REV C
 SCALE: 1:1 SHEET 7 OF 11

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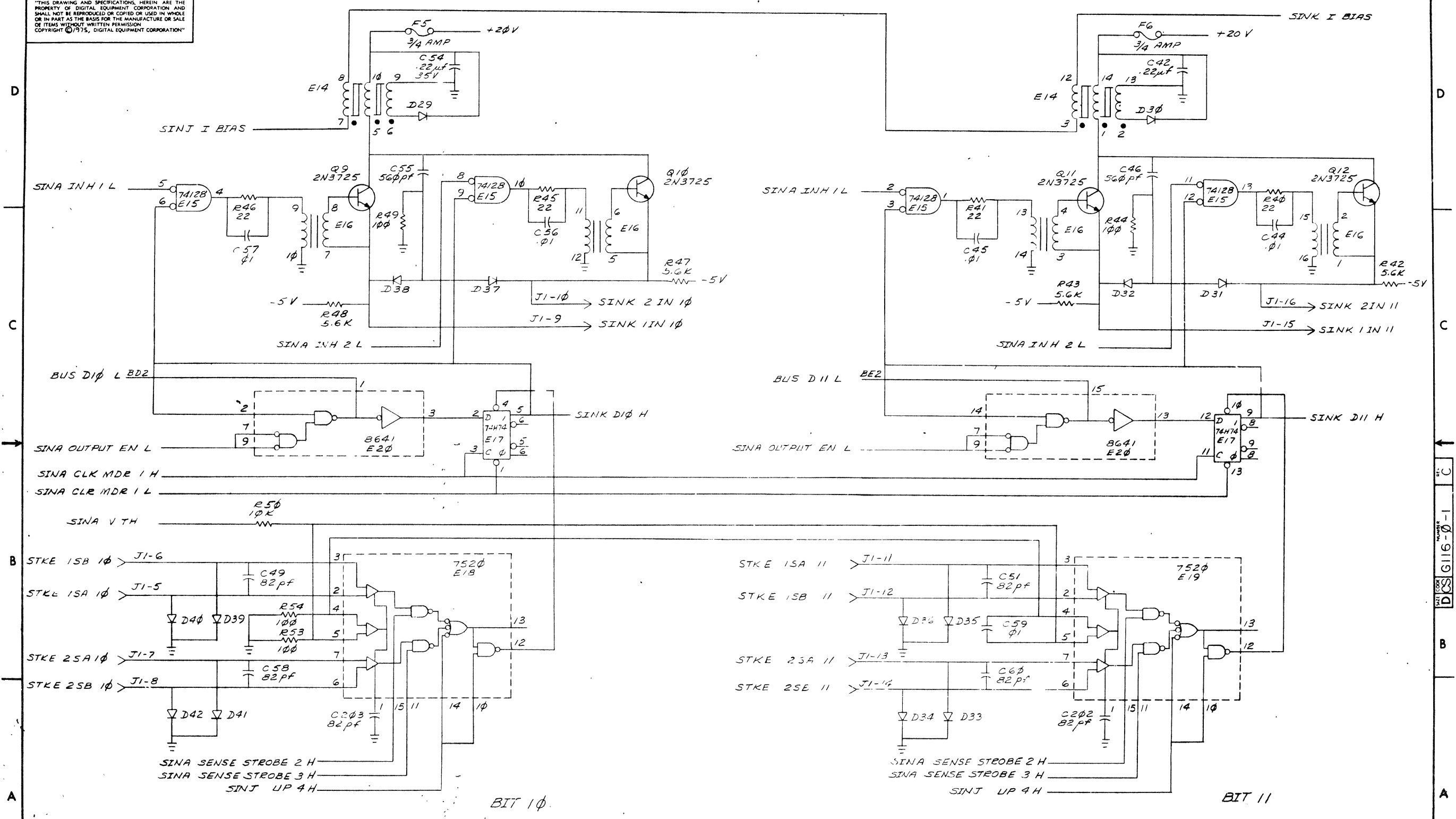


REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV.
32K SENSE/INHIBIT (SINJ)	D CS	GIIG-0-1	C
SCALE	SHEET	DIST	
	8 OF 11		

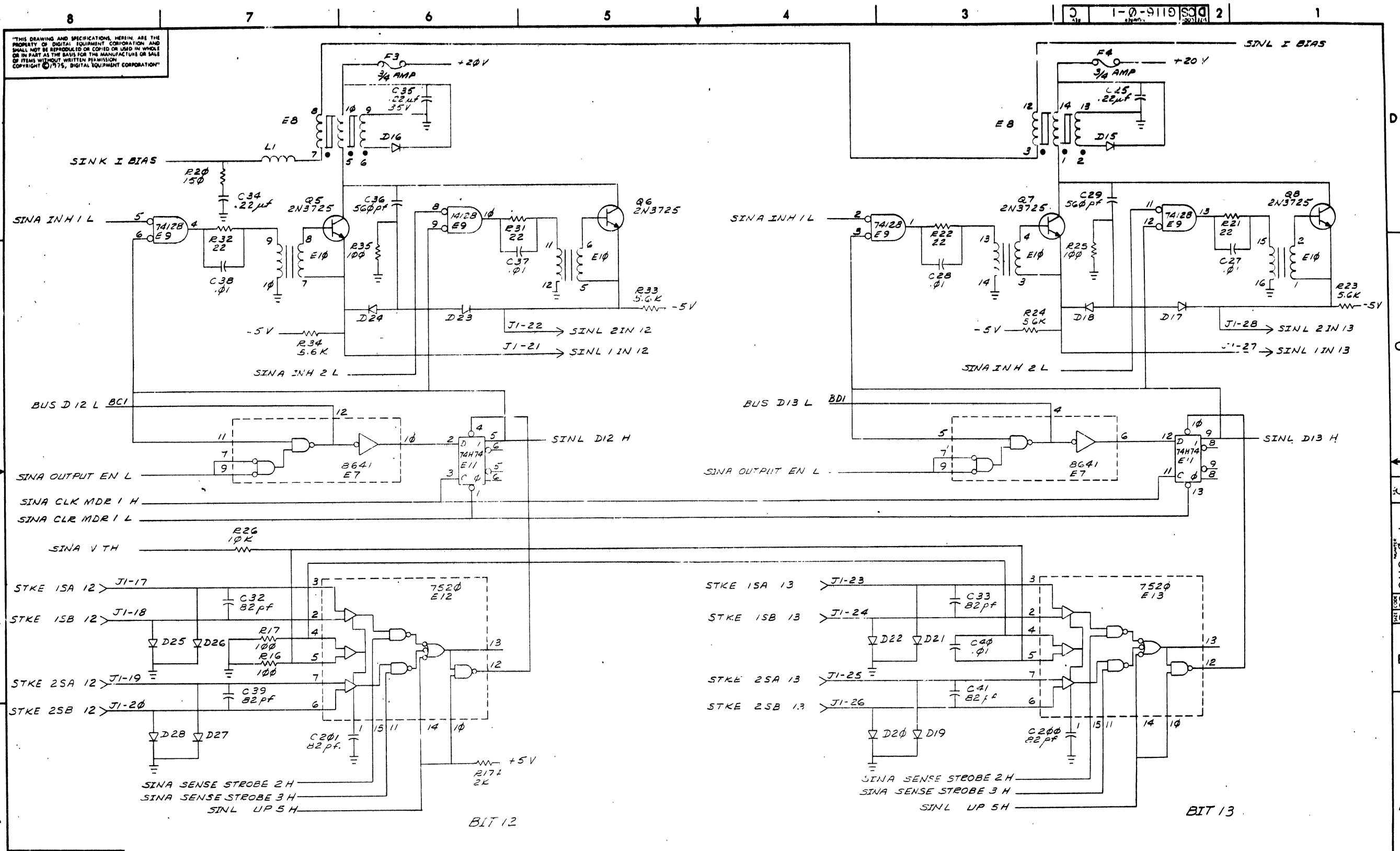
394

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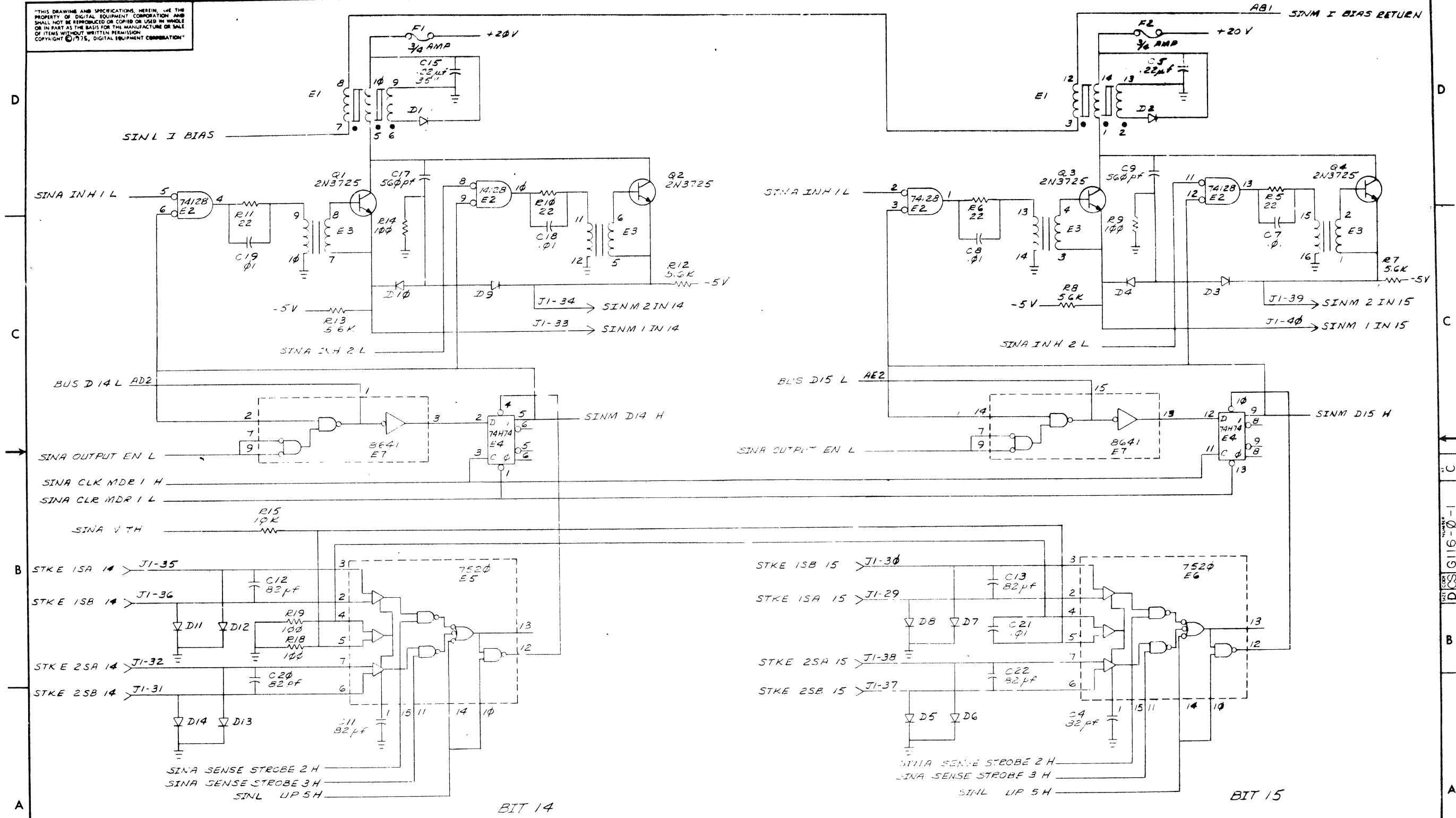
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Metadata table with columns: TITLE (32K SENSE/INHIBIT (SINK)), SIZE CODE (D CS), NUMBER (G116-0-1), REV. (C), SCALE, SHEET (9 OF 11), DIST.



REVISIONS			TITLE	SIZE/CODE	NUMBER	REV.
CHK	CHANGE NO	REV	32K SENSE/INHIBIT (SINL)	D CS	G116-0-1	C
			SCALE	SHEET 10 OF 11	DIST.	

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REVISIONS		
CHK	CHANGE NO	REV

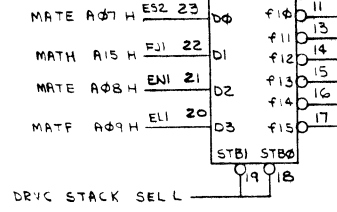
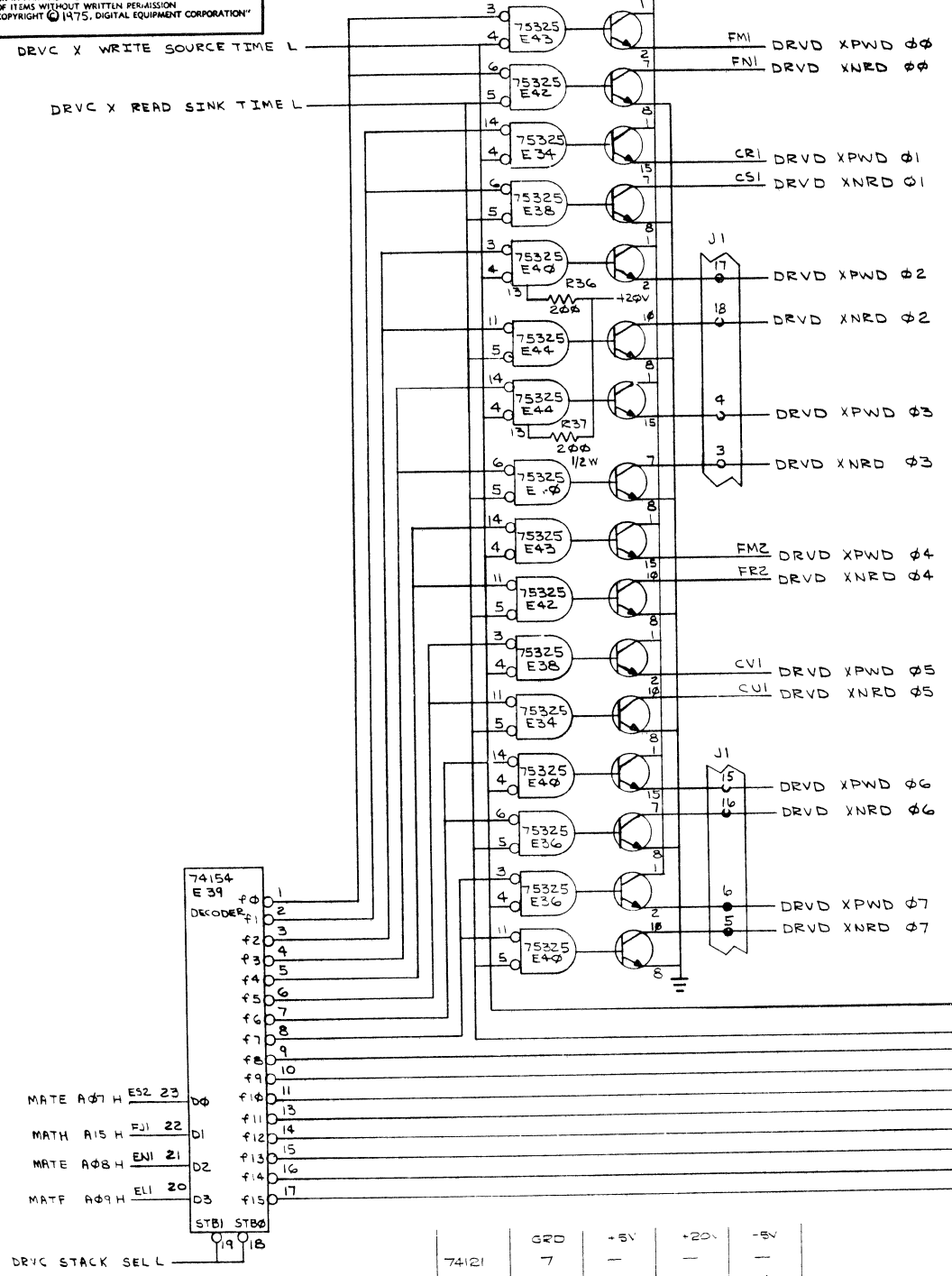
TITLE	32K SENSE/INHIBIT (SINM)	SIZE CODE	D CS	NUMBER	G116-0-1	REV.	C
SCALE	1:1	SHEET	11	OF	11	DIST	

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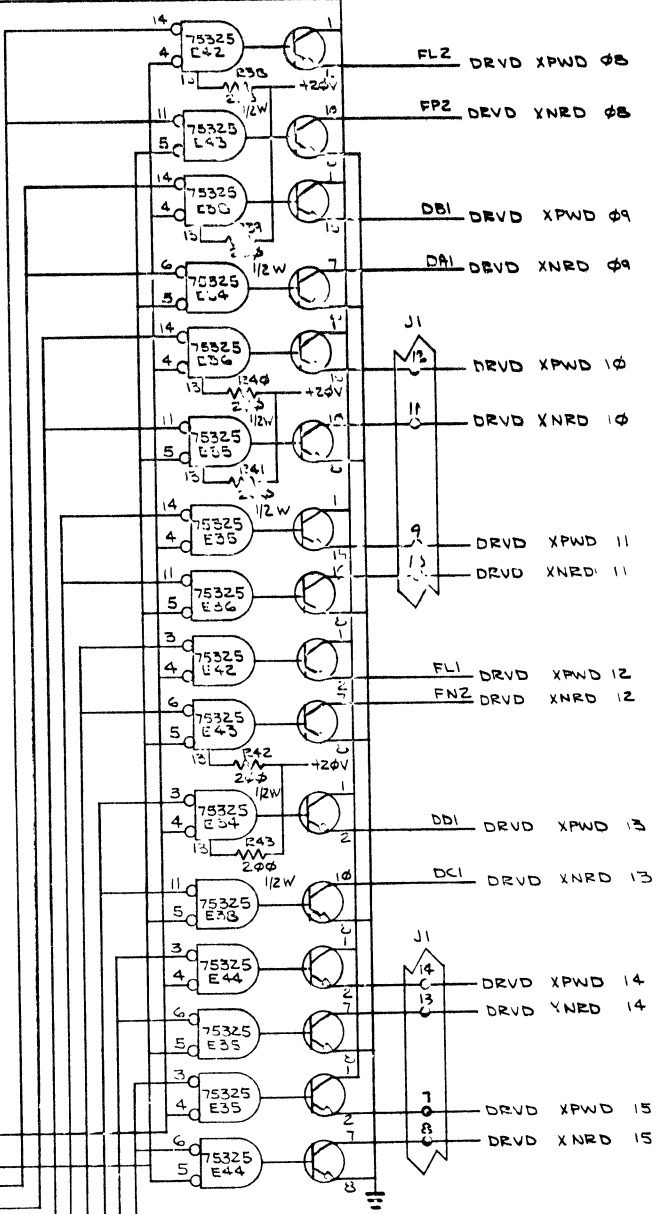
DRVC X WRITE CURRENT SOURCE

DRVC X WRITE SOURCE TIME L

DRVC X READ SINK TIME L



74121	741	75325	7442	74154
7	1	0	0	10
7	1	0	0	10
7	1	0	0	10
7	1	0	0	10
7	1	0	0	10

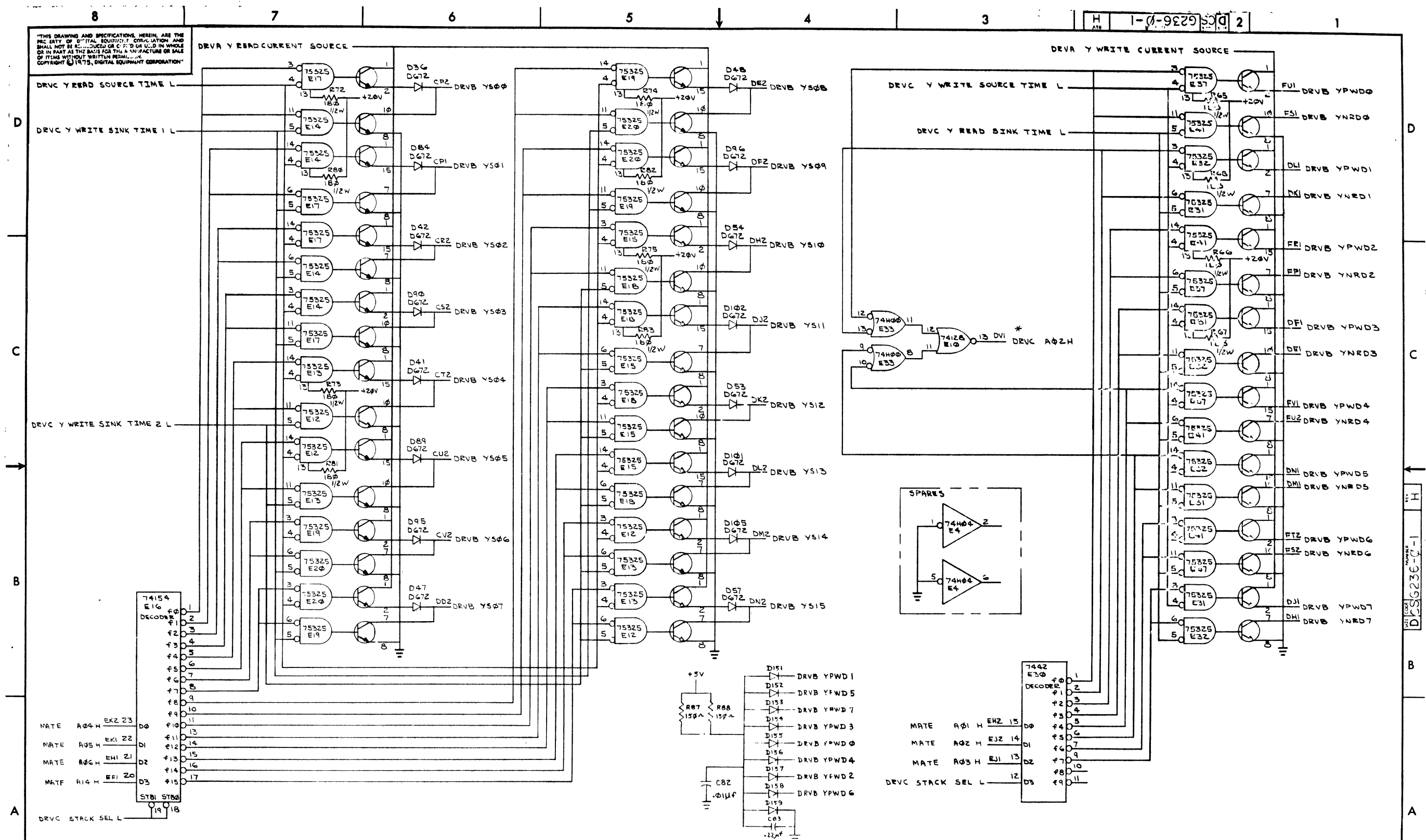


NOTES: SIGNALS MARKED THUS * ARE NOT APPLICABLE TO MFII-W & MFII-WP (3 PLACES)
 1. * MFII-W & MFII-WP (3 PLACES)
 2. * MFII-W & MFII-WP ARE TIED TO UNUSED TERMINATORS ON THE G116 MODULE, WHICH FORCES THEM TO +3V (5 PLACES).
 3. UNLESS OTHERWISE INDICATED, ALL DIODES ARE D672 ALL CAPACITORS ARE .01UF ALL RESISTORS ARE 1/4W ALL TRANSISTORS ARE DEC 3725

REV.	CHANGE N.	DATE	BY	CHK
1	0236-0001	28 MAR 76	D SMELSER	
2	0236-0002	10 APR 76	D SMELSER	
3	0236-0003	10 APR 76	D SMELSER	

DRN X	1017/75	FILED	DEC 31 1975
TITLE 32K X-Y DRIVE (DRVD)			
NUM 1A DLS 6235-0-1			

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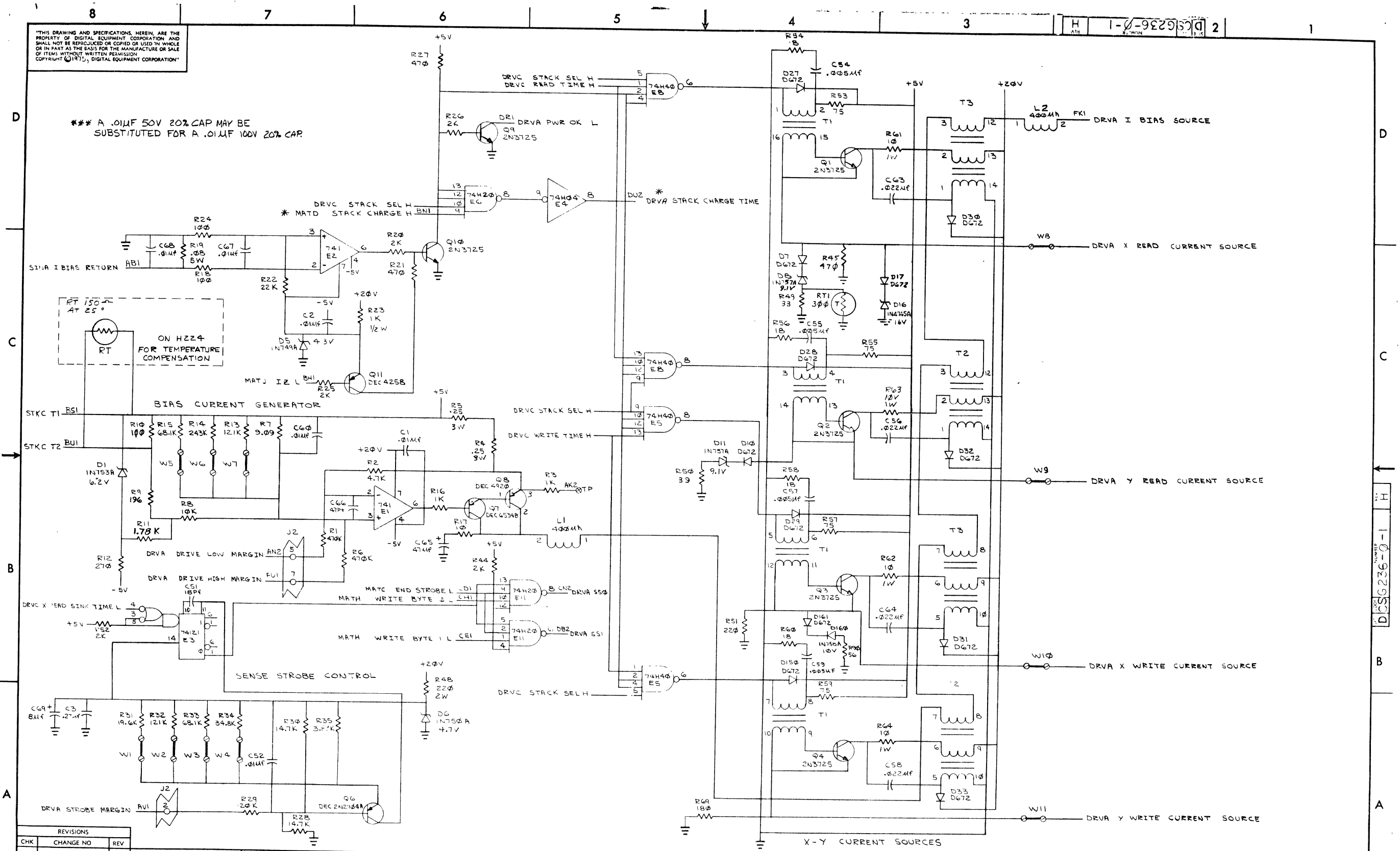


REVISIONS		
CHK	CHANGE NO	REV

TITLE	32K X-Y DRIVE	SIZE CODE	(DRVP) DCSG236-0-1	NUMBER		REV	H
SCALE		SHEET	3 OF 4	DIST			

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*** A .01µF 50V 20% CAP MAY BE SUBSTITUTED FOR A .01µF 100V 20% CAP



REVISIONS		
CHK	CHANGE NO	REV

DEC FORM NO DRD 138

404

TITLE	32K X-Y DRIVE (DRVA)	SIZE CODE	DCSG236-0-1	NUMBER	H
SCALE	1/1	SHEET	4 OF 4	DIST	

MASTER DRAWING LIST

NO.	TITLE	UNIT VARIATIONS												
		KM11-A												
KM11-0	MAINTENANCE PANEL	X												

USED ON OPTIONS			
K111			

REVISIONS	REV.	CHG. NO.	APP'D.	DATE	DRN	DATE	<div style="text-align: center; font-weight: bold; font-size: small;">datao EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS</div>
	A	MISC-86	<i>and</i>	8/71	PFYFFER	11-70	
					CHK'D	11-70	
					ENG	5-4-70	
					PROJ. ENG	5-4-70	
					PROD	5-5-70	
				FIRST USED ON		TITLE MAINTENANCE PANEL	
				K111			
				SIZE	CODE		
				SCALE	NONE	NUMBER	REV
				SHEET	1 OF 2	A ML	KM11-0 A
						LIST	

DRA 131
Dec 16- (325)-1048-N471

PRINT SET								DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE	OPTION NO.			
KM11-0															
X								A-PL-KM11-0-0		1	MAINTENANCE BOARDS				
X								D-BS-KM11-0-MB		3	MAINTENANCE BOARD (1&2) KM				
TITLE								MAINTENANCE PANEL		SHEET	2 OF 2	SIZE	CODE	NUMBER	REV.
										A	ML	KM11-0	A		

DRA 132
DEC 16 (325)-1048-N471

504

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REV. A NUMBER M9301-0-11 SIZE CODE B CS

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B

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FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
11/04				
PARTS LIST				
DRN. <i>to model</i>	DATE	 EQUIPMENT CORPORATION <small>MAYNARD, MASSACHUSETTS</small>		
CHK'D <i>J. Bloem</i>	DATE			
ENG. J. BLOEM	DATE			
PROJ. ENG. J. BLOEM	DATE			
PROD. R. PETERSON	DATE			
NEXT HIGHER ASSEMBLY		TITLE M9301 ROM LISTING		
B-EL-M9301-0-11				
SCALE <i>1:1</i>				
SHEET 1 OF 35	SIZE CODE	NUMBER	REV.	
	RCS	M9301-0-11	A	
	DIST.			

REVISIONS	CHANGE NO.	REV.
1	M9301-00007	*
ORIGINATED		
1	M9301-00009	A

DEC FORM NO DRB 109

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.TITLE BOOT
.REM &

OPERATIONAL NOTES

1. OVERVIEW
2. INTERNAL SWITCH SETTING
 - A. POWER UP AND CONSOLE BOOT SWITCHES
 - B. OPTIONS AND THE MICRO SWITCH SETTINGS
3. CONSOLE EMULATOR
4. BOOTSTRAPPING
5. DIAGNOSTIC TESTS
6. RESTARTING AT THE USER POWER FAIL ROUTINE
7. LOAD ADDRESS AND START PROCEDURE

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OPERATIONAL NOTES

1. OVERVIEW

THE M9301-YF IS DESIGNED TO PROVIDE BOOTSTRAPPING CAPABILITIES FOR ALL PDP-11 SYSTEMS WITH OR WITHOUT THE CONSOLE SWITCH REGISTER. IN ADDITION TO PROVIDING BOOTSTRAPPING FUNCTIONS FOR ALL MAJOR PDP-11 DEVICES, THE M9301-YF INCLUDES ROUTINES FOR CONSOLE EMULATION AND ALSO PROVIDES SOME BASIC CPU AND MEMORY GO-NOGO DIAGNOSTIC TESTS. THIS BOOTSTRAP HAS BEEN DESIGNED FOR MAXIMUM FLEXIBILITY OF OPERATION. ITS FUNCTIONS MAY BE INITIATED AUTOMATICALLY AT A POWER UP, OR BY DEPRESSING THE CONSOLE BOOT SWITCH, OR BY A LOAD ADDRESS AND START SEQUENCE, OR EVEN BY USING THE CONSOLE TTY WHILE RUNNING THE CONSOLE EMULATOR.

2. INTERNAL SWITCH SETTING

A SET OF EIGHT MICRO SWITCHES ARE LOCATED ON THE M9301 MODULE. THESE ARE USED BY THE ROUTINES TO DETERMINE WHAT ACTION IS TO BE TAKEN. THEY GIVE THE USER AUTOMATIC ACCESS TO ANY FUNCTION.

- A. POWER UP AND CONSOLE BOOT SWITCHES

THE PRIMARY ACTIVATING PROCESSES FOR THE M9301-YF PROGRAMS ARE EITHER A POWER UP SEQUENCE OR THE ENABLING OF THE CONSOLE BOOT SWITCH.

TO ACTIVATE THE M9301 ON A POWER UP, SWITCH 2 IN THE M9301 MICRO SWITCH REGISTER MUST BE IN THE ON POSITION. IF THIS SWITCH IS OFF THEN A NORMAL TRAP TO LOCATION 24 TO EXECUTE THE USER POWER UP ROUTINE WILL OCCUR. WHEN THIS SWITCH IS ON THE OTHER SWITCHES, 3 THROUGH 10, WILL DETERMINE WHAT ACTION THE M9301 WILL TAKE WHEN THE POWER UP OCCURS (SEE MICRO SWITCH SETTING BELOW).

IF THE SYSTEM INCLUDES A CONSOLE BOOT SWITCH THEN ANY TIME THAT SWITCH IS PRESSED THE M9301 WILL BE ACTIVATED (SOME PROCESSORS MAY HAVE TO BE HALTED FOR THIS SWITCH TO HAVE ANY EFFECT). THE PROCESS USED TO ENTER THE ROM IS A "FAKE" POWER DOWN FOLLOWED BY A POWER UP CAUSED BY PRESSING THE BOOT SWITCH (NOTE THAT THE POSITION OF MICRO SWITCH 2 DESCRIBED ABOVE IS IRRELEVANT TO THE OPERATION OF THIS BOOT SWITCH). THIS RESULTS IN A NORMAL POWER UP SEQUENCE IN THE CPU. PRIOR TO THE POWER UP SEQUENCE, THE M9301 ASSERTS 773000 ON THE UNIBUS ADDRESS LINES. THIS CAUSES THE NEW PC TO BE TAKEN FROM ROM LOCATION 773024 INSTEAD OF FROM LOCATION 200224. THE NEW PC WILL BE THE LOGICAL "OR" OF THE CONTENTS OF ROM LOCATION 773024 AND THE EIGHT MICRO SWITCHES

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ON THE M9301 MODULE (A SWITCH IN THE ON POSITION IS SEEN AS A ZERO; LIKEWISE A SWITCH IN THE OFF POSITION IS A ONE). IN THIS WAY ALL THE M9301 OPTIONS ARE ACCESSABLE BY MERELY GIVING EACH OPTION A DIFFERENT STARTING ADDRESS. NOTE HERE THAT MICRO SWITCH NUMBER 10 IS OR'ED WITH BIT 1 OF THE DATA IN ROM LOCATION 773024, MICRO SWITCH NUMBER NINE IS OR'ED WITH BIT 2 ETC., AND THAT IT IS UNNECESSARY TO PROVIDE A SWITCH WHICH IS OR'ED WITH DATA BIT 0 AS THIS COULD RESULT IN AN ODD ADDRESS WHEN GOING THROUGH THE TRAP TO LOCATION 773024 SEQUENCE.

2. OPTIONS AND THE MICRO SWITCH SETTINGS

BY APPROPRIATELY SETTING THE M9301-YF MICRO SWITCHES THE USER CAN AUTOMATICALLY START EITHER A BOOTSTRAP OPERATION OR ENTER THE CONSOLE EMULATOR SIMPLY BY PRESSING THE CONSOLE BOOT SWITCH, OR AFTER ANY POWER FAILURE, ALSO PROVIDED IS A MEANS FOR SPECIFYING ANY OF THESE FUNCTIONS WITH OR WITHOUT EXECUTION OF THE M9301-YF CPU AND MEMORY DIAGNOSTICS.

MICRO SWITCH SETTINGS AND THEIR OPTIONS ARE:

000	CONSOLE EMULATOR WITH ALL DIAGNOSTICS
002	CONSOLE EMULATOR WITHOUT ANY DIAGNOSTICS
644	ENTER USER POWER FAIL ROUTINE AS SPECIFIED IN VECTOR 24 AFTER RUNNING PRIMARY CPU DIAGNOSTICS.
646	ENTER USER POWER FAIL ROUTINE WITHOUT ANY DIAGNOSTICS
MOVING HEAD DISK PACK	
040	BOOT, RP02 OR RP03, WITH ALL DIAGNOSTICS
042	BOOT, RP02 OR RP03, WITHOUT ANY DIAGNOSTICS
MOVING HEAD DISK PACK, FORMAT 22, ECC INHIBIT	
224	BOOT, RP04 RP05 OR RP06 (ON RH11 OR RH70), WITH ALL DIAGNOSTICS.
226	BOOT, RP04 RP05 OR RP06, WITHOUT ANY DIAGNOSTICS
FIXED HEAD DISK	
440	BOOT, RS03 OR RS04 (ON RH11 OR RH70), WITH ALL DIAGNOSTICS
442	BOOT, RS03 OR RS04, WITHOUT ANY DIAGNOSTICS
MOVING HEAD CARTRIDGE DISK	
144	BOOT, RK05, WITH ALL DIAGNOSTICS

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146	BOOT, RK05, WITHOUT ANY DIAGNOSTICS
MOVING HEAD CARTRIDGE DISK	
602	BOOT, RK06, WITH ALL DIAGNOSTICS
664	BOOT, RK06, WITHOUT ANY DIAGNOSTICS
FLOPPY DISK	
514	BOOT, RX01, WITH ALL DIAGNOSTICS
546	BOOT, RX01, WITHOUT ANY DIAGNOSTICS
TAPE	
174	BOOT, TU56, WITH ALL DIAGNOSTICS
176	BOOT, TU56, WITHOUT ANY DIAGNOSTICS
MAGNETIC TAPE, 7 OR 9 TRACK, 800 BPI, ODD PARITY AND DUMP MODE	
474	BOOT, TU10, WITH ALL DIAGNOSTICS
476	BOOT, TU10, WITHOUT ANY DIAGNOSTICS
MAGNETIC TAPE, 9 TRACK, 800 BPI AND ODD PARITY	
054	BOOT, TU16 (RH11 OR RH70), WITH ALL DIAGNOSTICS
056	BOOT, TU16, WITHOUT ANY DIAGNOSTICS
TELETYPE PAPER TAPE READER	
364	BOOT, DL11, WITH ALL DIAGNOSTICS
366	BOOT, DL11, WITHOUT ANY DIAGNOSTICS
HIGH SPEED PAPER TAPE READER	
704	BOOT, PC11, WITH ALL DIAGNOSTICS
706	BOOT, PC11, WITHOUT ANY DIAGNOSTICS

THESE OCTAL NUMBERS SHOULD BE SHIFTED RIGHT ONE BIT AND PLACED IN MICRO SWITCHES 3 THROUGH 10. REMEMBER THAT A SWITCH IN THE ON POSITION IS A 0; LIKEWISE A SWITCH IN THE OFF POSITION IS A 1.

3. CONSOLE EMULATOR

THESE ROUTINES ARE ESSENTIAL TO ANY PROCESSOR WITHOUT A CONSOLE. THEY PROVIDE THE USER THE CONSOLE FUNCTIONS OF LOAD ADDRESS, EXAMINE, DEPOSIT, AND START. ALSO THE ABILITY TO EXECUTE A BOOTSTRAP FUNCTION WITH ANY OF THE ABOVE DEVICES IS GIVEN.

THE FIRST THING THAT WILL EXECUTED (IF 000 IS THE CONTENTS OF THE MICRO SWITCHES) ARE THE PRIMARY CPU DIAGNOSTICS.

THEN THE DISPLAY ROUTINE IS ENTERED. THIS ROUTINE WILL TYPE THE COMMENTS OF R0, R4, SP AND R5 (NOTE THE SEQUENCE!) ON THE TELETYPE AS FOUR 16 BIT OCTAL NUMBERS. PRESSING THE CONSOLE BOOT SWITCH CAUSES PDP-11 SYSTEMS (E.G.

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RDP-11/4'S) WITHOUT CONSOLE SWITCH REGISTERS TO COPY THE PC INTO R5 BEFORE THE POWER UP SEQUENCE STARTS.
A KEYBOARD DISPATCH ROUTINE IS THEN ENTERED TO INTERPRETE THE USERS COMMANDS. THIS ROUTINE TYPES A CARRIAGE RETURN AND A LINE FEED, THEN GIVES THE PROMPT 'S'. ALL COMMANDS ARE TWO CHARACTERS. IF THE USER TYPES AN ILLEGAL COMMAND IT WILL BE IGNORED AND THE KEYBOARD DISPATCH IS RESTARTED. LEGAL COMMANDS ARE:

L<SPC>NUMBER
LOAD ADDRESS::LOAD THE INTERNAL ADDRESS POINTER WITH 'NUMBER', A 16 BIT OCTAL NUMBER.

E<SPC>
EXAMINE::EXAMINE AND DISPLAY ON THE TELETYPE THE ADDRESS AND THE CONTENTS OF THAT ADDRESS IN THE INTERNAL ADDRESS POINTER (SEE LOAD ADDRESS). NOTE THAT IF THE PREVIOUS COMMAND WAS ALSO AN EXAMINE COMMAND THEN THE INTERNAL ADDRESS POINTER IS INCREMENTED BY 2.

D<SPC>NUMBER
DEPOSIT::DEPOSIT THE VALUE NUMBER INTO THE LOCATION POINTED TO BY THE INTERNAL ADDRESS POINTER (SEE LOAD ADDRESS). IF THE PREVIOUS COMMAND WAS ALSO DEPOSIT THEN THE POINTER IS INCREMENTED BY 2.

S<CR>
START::CAUSES A RESET INSTRUCTION TO BE EXECUTED AND A JMP TO THE LOCATION SPECIFIED IN THE INTERNAL ADDRESS POINTER.

DP#
BOOT RP02 OR RP03::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

LP#
BOOT RP04 RP05 OR RP06::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU

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AND MEMORY DIAGNOSTICS.

DS#
BOOT RS03 OR RS04::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

DK#
BOOT RK05::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

DM#
BOOT RK06::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

DX#
BOOT RX0::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # WHICH MUST BE 0 OR 1 (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

DT#
BOOT TMS6::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

MT#
BOOT TMS7::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE DRIVE NUMBER OPTIONALLY SPECIFIED BY # (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

MM#
BOOT TU16::LOAD AND EXECUTE THE MONITOR FROM THE DEVICE USING THE

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DRIVE NUMBER OPTIONALLY SPECIFIED BY * (DEFAULT 0) WITH OR WITHOUT FIRST RUNNING SECONDARY CPU AND MEMORY DIAGNOSTICS.

TT BOOT DL11::READ THE ABSOLUTE PAPER TAPE LOADER FROM THE TELETYPE PAPER TAPE READER WITH OR WITHOUT FIRST RUNNING THE SECONDARY CPU AND MEMORY DIAGNOSTICS.

PR BOOT PC11::READ THE ABSOLUTE PAPER TAPE LOADER FROM THE HIGH SPEED PAPER TAPE READER WITH OR WITHOUT FIRST EXECUTING SECONDARY CPU AND MEMORY DIAGNOSTICS.

4. BOOTSTRAPPING

THESE ROUTINES TO BOOTSTRAP A DEVICE TYPICALLY READ IN THE FIRST SECTOR, BLOCK OR 512 (DEC) WORDS, OFF THE DEVICE INTO LOCATION 0 THROUGH 512 (DEC) OF MEMORY. THE EXCEPTIONS TO THIS RULE ARE THE PAPER TAPE BOOT, THE FLEXIBLE DISK BOOT AND THE MAGNETIC TAPE BOOTS. THE PAPER TAPE BOOT IS UNIQUE IN THAT IT CAN DO NO ERROR CHECKING AND THAT THE SECONDARY BOOTSTRAP (THE ABSOLUTE LOADER, FOR EXAMPLE) IS READ INTO THE UPPER PART OF MEMORY. THE ACTUAL LOCATION LOADED BY THE PAPER TAPE BOOT ARE PARTIALLY DETERMINED BY THE SECONDARY BOOTSTRAP ITSELF AND BY THE *SIZE* ROUTINE WHICH DETERMINES THE HIGHEST AVAILABLE MEMORY ADDRESS WITHIN THE FIRST 28K. THE FLEXIBLE DISK (OR FLOPPY) READS SECTOR 1 ON TRACK 1 INTO LOCATIONS STARTING AT ZERO. THE MAGNETIC TAPE BOOTS READ THE SECOND BLOCK INTO LOCATIONS STARTING AT 4. IF NO ERRORS ARE DETECTED IN THE DEVICE, THE BOOTSTRAPS NORMALLY TRANSFER CONTROL TO LOCATION 0 IN ORDER TO EXECUTE THE SECONDARY BOOTSTRAP JUST LOADED. THE ONLY EXCEPTION TO THIS STARTING ADDRESS IS WITH THE PAPER TAPE BOOTS. THEY TRANSFER CONTROL TO LOCATION XXX374, WHERE XXX WAS DETERMINED INITIALLY BY THE SIZE ROUTINE TO BE AT THE TOP OF MEMORY; THIS IS WHERE THE ABSOLUTE LOADER WAS JUST LOADED.

IF A DEVICE ERROR IS DETECTED A RESET WILL BE EXECUTED AND THE BOOTSTRAP WILL TRY AGAIN. THE BOOTSTRAP WILL BE RETRIED INDEFINITELY UNTIL IT SUCCEEDS WITHOUT ERROR UNLESS THE USER (OPERATOR) INTERVENES. THE ADVANTAGE OF RETRYING THE BOOT IS THAT IF A PARTICULAR DEVICE BEING LOADED IS NOT ONLINE OR LOADED, SAY BECAUSE OF A POWER FAILURE RESTART, THE BOOT WILL GIVE THE DEVICE A CHANCE TO REFORM OR (FOR DISKS THIS IS ESSENTIAL), A MAGNETIC TAPE TRANSPORT WILL NOT AUTOMATICALLY RELOAD ITSELF AFTER A POWER FAILURE AND RESTART. THIS SITUATION REQUIRES USER

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INTERVENTION. THE USER MUST RELOAD THE MAGTAPE AND BRING IT BACK ONLINE AT WHICH TIME THE MAGTAPE BOOTSTRAP, WHICH WAS CONTINUALLY ATTEMPTING TO BOOT THE TAPE, WILL SUCCEED. NOTE THAT THE ONLY WAY TO BOOTSTRAP A DEVICE OF DRIVE (OR OF TRANSPORT) OTHER THAN DRIVE 0 IS BY ENTERING THE CONSOLE EMULATOR TO SPECIFY THAT DRIVE NUMBER DESIRED. OTHERWISE THE BOOTSTRAPS WILL DEFAULT TO DRIVE 0. THIS MEANS THAT ONLY DRIVE 0 OF A DEVICE CAN BE BOOTSTRAPPED WITHOUT OPERATOR INTERVENTION.

5. DIAGNOSTIC TESTS

THERE ARE THREE DIFFERENT TYPES OF TESTS INCLUDED IN THE M9301-YF:

- 1 PRIMARY CPU TESTS
- 2 SECONDARY CPU TESTS
- 3 MEMORY TEST

THE PRIMARY CPU TESTS ARE TESTS OF ALL UNARY AND DOUBLE OPERAND INSTRUCTIONS WITH ALL SOURCE MODES. THESE TESTS DO NOT MODIFY MEMORY. IF A FAILURE IS DETECTED A *BR * FRANCH DOT WILL BE EXECUTED.

THE SECONDARY CPU TESTS MODIFY MEMORY AND INVOLVE THE USE OF THE STACK POINTER. THESE TESTS INCLUDE TESTING OF THE JMP AND JSR INSTRUCTIONS AS WELL AS TESTS OF ALL DESTINATION MODES. IF A FAILURE IS DETECTED THESE TESTS, UNLIKE THE PRIMARY TESTS, WILL EXECUTE A HALT. THE USER MAY THEN CONSULT THIS LISTING TO DETERMINE THE FAULT CLASS FOR THE PARTICULAR LOCATION THE TEST HALTED.

FINALLY THE MEMORY TEST PERFORMS BOTH A DUAL ADDRESSING AND DATA CHECK OF ALL THE AVAILABLE MEMORY ON THE SYSTEM LESS THAN 28K. THIS TEST WILL LEAVE ALL OF MEMORY CLEAR. LIKE THE SECONDARY TESTS THE MEMORY TEST WILL HALT WHEN AN ERROR IS DETECTED. AT THE TIME THE MEMORY ERROR HALT IS EXECUTED R0 WILL CONTAIN THE ADDRESS AT WHICH THE FAILURE WAS DETECTED PLUS TWO; R4 WILL CONTAIN THE FAILING DATA PATTERN AND R6 WILL CONTAIN THE EXPECTED DATA PATTERN. TESTS AFTER A MEMORY FAILURE HAS OCCURRED THE USER CAN ENTER THE CONSOLE EMULATOR AND HAVE THIS INFORMATION PRINTED OUT TO HIM IMMEDIATELY BY THE DISPLAY ROUTINE (SEE ABOVE SECTION ON CONSOLE EMULATOR).

NOTE HERE THAT DIAGNOSTICS ARE RUN OR NOT RUN (OPTIONALLY) DEPENDING ON WHETHER BIT 1 IS CLEAR OR SET (RESPECTIVELY) IN EITHER:

- 1 THE INTERNAL MICRO SWITCHES DESCRIBED ABOVE (IF THE POWER UP OR CONSOLE BOOT SWITCH METHOD IS USED); OR
- 2 THE CONSOLE SWITCH REGISTER (IF THE LOAD ADDRESS AND START WITH OPTION CODE IN SWITCHES METHOD DESCRIBED BELOW IS USED).

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6. RESTARTING AT THE USER POWER FAIL ROUTINE

IF THE USER WISHES TO RESTART HIS OWN SOFTWARE ON A POWER UP HE MAY DO SO BY MERELY DISABLING THE POWER FAIL RESTART SWITCH IN THE MICRO SWITCHES (TURN SWITCH 2 OFF).

BUT THE USER CAN USE THE M9301-YF TO RUN DIAGNOSTICS (JUST THE PRIMARY CPU TESTS DESCRIBED ABOVE) BEFORE RUNNING HIS POWER UP ROUTINE. THIS WILL IN NO WAY DISTURB THE CONTENTS OF MEMORY AND WILL IN FACT VERIFY THE MACHINE'S BASIC INTEGRITY AFTER THE POWER DOWN AND UP SEQUENCE.

TO USE THIS OPTION PUT THE CODE 644 INTO THE MICRO SWITCHES AS DESCRIBED ABOVE. ALSO SWITCH 2 MUST BE OFF. THIS WILL RESULT IN THE RUNNING OF THE PRIMARY CPU DIAGNOSTICS AND THEN A SIMULATED TRAP THROUGH 24 WHICH WILL START THE USER'S SPECIFIED POWER UP ROUTINE.

IF THE CODE 646 IS PLACED IN THE INTERNAL SWITCHES THE SIMULATED TRAP THROUGH 24 IS EXECUTED WITHOUT RUNNING ANY DIAGNOSTICS.

7. LOAD ADDRESS AND START PROCEDURE

THE USER WHO WISHES TO INITIATE A FUNCTION OTHER THAN THE ONE WHICH HE HAS SPECIFIED IN THE MICRO SWITCHES CAN DO SO WITHOUT RESETTING THOSE MICRO SWITCHES. THIS INVOLVES A LOAD ADDRESS, PLACING AN OPTION CODE IN THE SWITCH REGISTER AND START PROCEDURE; THIS IT CAN BE DONE ONLY ON MACHINES WITH CONSOLE SWITCH REGISTERS.

THE USER MUST LOAD ADDRESS 173016 AND THEN BEFORE PRESSING THE START SWITCH HE MUST PLACE A DEVICE OR OPTION CODE IN THE SWITCH REGISTER. THESE OPTIONS AND CODES ARE:

- 165444 TO ENTER CONSOLE EMULATOR AFTER RUNNING ALL DIAGNOSTICS
- 165446 TO ENTER CONSOLE EMULATOR AFTER NOT RUNNING ANY DIAGNOSTICS
- 173440 TO BOOT THE RP02 OR RP03 WITH ALL DIAGNOSTICS
- 173442 TO BOOT THE RP02 OR RP03 WITH NO DIAGNOSTICS
- 173224 TO BOOT THE RP04 RP05 OR RP06 WITH ALL DIAGNOSTICS
- 173226 TO BOOT THE RP04 RP05 OR RP06 WITHOUT ANY DIAGNOSTICS
- 173442 TO BOOT THE RS03 OR RS04 WITH ALL DIAGNOSTICS
- 173442 TO BOOT THE RS03 OR RS04 WITHOUT ANY

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DIAGNOSTICS

- 173144 TO BOOT THE RK05 WITH ALL DIAGNOSTICS
- 173146 TO BOOT THE RK05 WITHOUT ANY DIAGNOSTICS
- 173662 TO BOOT THE RK06 WITH ALL DIAGNOSTICS
- 173664 TO BOOT THE RK06 WITHOUT ANY DIAGNOSTICS
- 173544 TO BOOT THE RX01 WITH ALL DIAGNOSTICS
- 173546 TO BOOT THE RX01 WITHOUT ANY DIAGNOSTICS
- 173174 TO BOOT THE TU56 WITH ALL DIAGNOSTICS
- 173176 TO BOOT THE TU56 WITHOUT ANY DIAGNOSTICS
- 173474 TO BOOT THE TU10 WITH ALL DIAGNOSTICS
- 173476 TO BOOT THE TU10 WITHOUT ANY DIAGNOSTICS
- 173054 TO BOOT THE TU16 WITH ALL DIAGNOSTICS
- 173056 TO BOOT THE TU16 WITHOUT ANY DIAGNOSTICS
- 173364 TO BOOT THE DL11 PAPER TAPE WITH ALL DIAGNOSTICS
- 173366 TO BOOT THE DL11 WITHOUT ANY DIAGNOSTICS
- 173704 TO BOOT THE PC11 PAPER TAPE WITH ALL DIAGNOSTICS
- 173706 TO BOOT THE PC11 WITHOUT ANY DIAGNOSTICS

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;ABS
PS=177776
SP=177570
TKS=177560
LKS=177562
JPS=177564
TFS=177566

;REGISTER DEFINITIONS:
R0=R0
R1=R1
R2=R2
R3=R3
R4=R4
R5=R5
R6=R6
R7=R7
SR=SR
TC=TC
CR=15
IF=12
T1(CP)=172522
T2(SOP)=177342
T3(SC)=177304
T4(3CP)=176714
T5(BCP)=177440
T6(ACR)=172440
T7(ICP)=176700
T8(4CP)=172040
T9(ICR)=177170
T10(CR)=177550
T11(CR)=177560

;=175000
;PROG:
; THIS IS A TABLE OF DATA USED IN BOTH THE PRIMARY AND THE SECONDARY
; CPU DIAGNOSTICS.
    
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;TABLE: ;ORP PCOT
;XOP PCOT
;TABLE: ;ORP 100002
;TABLE: ;ORP 177777
;TABLE: ;ORP 177777
;TABLE: ;ORP 160DATA
;TABLE: ;ORP T50DATA
;TABLE: ;ORP 50V
;TABLE: ;ORP 501

;SBIU PRIMARY CPU DIAGNOSTICS
;THE PRIMARY CPU DIAGNOSTICS ARE CALLED BY PLACING THE
;ADDRESS OF THE RETURN ADDRESS MINUS TWO IN R1, AND THEN
;POINTING TO TEST1. AFTER EXECUTION CONTROL IS PASSED TO THE ADDRESS
;IN R1 PLUS TWO. NOTE THAT R1 IS INCREMENTED BY FOUR DURING
;THIS PROCESS WHILE RETURN IS MADE TO ADDRESS IN R1 INCREMENTED
;BY TWO ONLY.

;RESULTS AFTER EXECUTION
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; REG NZVC
; --- ----
TEST1: CLR R3 ; 000000 0100
; INC R3 ; 000001 0000
; COI R3 ; 177776 1001
; ASR R3 ; 177777 1310
; ASL R3 ; 177776 1001
; FOR R3 ; 177777 1010
; LST R3 ; 177777 1000
; AFG R3 ; 000001 0001
; LFC R3 ; 000000 0101
; SRC R3 ; 177777 1001
; ROL R3 ; 177777 1001
; ADC R3 ; 000000 0101
; S*AB R3 ; 000000 0100
; RSE . ; ERROR IF NOT ZERO.

;TEST DOUBLE OPERAND INSTRUCTIONS, ALL SOURCE MODES, DEST MODE 0.
TEST2: MOV #FOOL,R2 ;SET UP ADDRESS.
; MOV (R2),R3 ;MOVE FROM TABLE DEFERRED.
; CMF (R2)+,R3 ;CHECK FOR CORRECT DATA.
; BNE . ;LOOP HERE IF NOT EQUAL.
; ADD #(R2)+,R3 ;ADD TO REGISTER.
; SUB #-(R2),R3 ;SUBTRACT SAME DATA FROM REGISTER.
; BIC -(R2),R3 ;SHOULD CLEAR REGISTER.
; BIS 12(R2),R3 ;SHOULD SET ALL REGISTER'S BITS.
; BII #14(R2),R3 ;SHOULD TEST NOT ZERO (Z=0).
; BFG . ;LOOP HERE ON ERROR.

;ORP TEST MODES 1, 2 AND 3.
TEST3: MOV PC,R3 ;SET UP ADDRESS FOR MODE 1 J*P.
    
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049 165112 000123 JMF11: JMP (R3)+ ;REVERSE AND MODE 3.
050 165114 010123 105124 MOV R0,R2,R3 ;SET UP ADDRESS OF ADDRESS FOR MODE 3 CMD.
051 165116 000103 JMF21: JMP (R3)+ ;REVERSE AND MODE 3.
052 165118 000103 JMF2A: JMP (R3) ;REVERSE MODE 3 CMD TO NEXT SLOT.
053 165120 105122 JMF2A: .WORD JMF2
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058 165126 105767 177652 ;SINGLE OPERAND, NON-MODIFYING IMMEDIATE, BYTE REFERENCING SLOT.
059 165132 001377 TEST4: TSTB TADATA ;TEST EACH BYTE.
060 165134 022222 BNE . ;LOOP ON ZERO, NOT ZERO.
061 165136 105722 CMP (R2)+,(R2)+ ;GET ADDRESS OF DATA IN R2.
062 165140 001377 TSTB (R2)+ ;EXAMINE DATA USING MODE 2.
063 165142 105712 BNE . ;LOOP IF NOT ZERO.
064 165144 100377 TSTB (R2) ;TEST ONE BYTE MODE 1.
065 BPL . ;LOOP IF POSITIVE.
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069 ;DOUBLE OPERAND, NON MODIFYING TEST, WITH SOURCE MODES 1 AND 4,
070 165146 005202 TES15: INC R2 ;SET UP R3 TO CONTAIN TADATA.
071 165150 010203 MOV R2,R3 ;AND R2 TO CONTAIN TADATA.
072 165152 005722 TST (R2)+
073 165154 021322 CMP (R3),(R2)+ ;EXECUTE SOURCE MODE 1, DEST MODE 2, CMP.
074 165156 001377 BVE . ;LOOP IF NOT EQUAL.
075 165160 034342 BIT -(R3),-(R2) ;BIT TEST.
076 165162 001777 BEQ . ;SHOULD NOT HAVE Z=1.
077
078 165164 000456 LSTIST: BR X1RTN
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084 165166 000413 ;SBTTL CONSOLE FUNCTIONS
085 165170 010015 ;SBTTL DEPOSITE
086 165172 000524 ;IF IS THE DEPOSITE EMULATOR.
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088 DE: BR GETNUM ;GET INPUT DATA.
089 MOV R0,(R5) ;PUT INPUT DATA IN MEMORY.
090 BR CONSEM ;RETURN FOR NEXT COMMAND.
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100 165174 000005 ST: ;SBTTL START
101 165176 000115 RESET ;ISSUE RESET TO THE SYSTEM.
102 JMP (R5) ;JMP TO DESIGNATED STARTING ADDRESS.
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118 165200 000406 LA: ;SBTTL LOAD ADDRESS
119 165202 010005 BR GETNUM ;GET INPUT DATA.
120 MOV R0,R5 ;LEAVE IT AS THE CURRENT ADDRESS
121 ;POINTER IN R5.
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718 165216 005000 ;SBTTL TTY HANDLERS
719 165220 005002 ;SBTTL OCTAL NUMBER INPUT ROUTINE
720 165222 010703 ;THIS ROUTINE IS CALLED BY PLACING THE RETURN ADDRESS MINUS TWO
721 165224 000453 ;IN R1 AND THEN BRANCHING TO CONSEM. THE ROUTINE WILL ATTEMPT TO
722 165226 120227 ;INPUT A STRING OF CHARACTERS FROM THE TELETYPE, TERMINATED BY CR,
723 165232 001433 ;AND ASSEMBLE THEM AS A 16 BIT OCTAL NUMBER IN R0. IF AN ILLEGAL
724 165234 162702 ;CHARACTER IS TYPED IN THE STRING, NOT AN
725 165236 062702 ;OCTAL DIGIT, THE CONSOLE EMULATOR WILL BE RESTARTED. THE PREVIOUS
726 165244 103357 ;COMMENTS OF R2 AND R3 ARE LOST. THE ROUTINE WILL RETURN WITH THE
727 165246 006300 ;OCTAL NUMBER IN R0, TO THE ADDRESS FORMED BY R1 PLUS TWO.
728 165250 006300 ;BUT NOTE THAT R1 WILL HAVE BEEN INCREMENTED BY FOUR UPON RETURN.
729 165254 000200 GETNUM: CLR R0 ;INITIALIZE R0.
730 165256 000200 20: CLR R2 ;INITIALIZE R2.
731 165258 000200 MOV R0,R3 ;SET CLR A CHARACTER.
732 165260 000200 BR CATCHR
733 165262 120227 CMPB R2,CCR ;IS IT CR?
734 165264 001433 BEO X1RTN ;IF YES RETURN WITH THE NUMBER IN R0.
735 165266 000200 SUB #0,R2 ;IS THE CHARACTER A LEGAL OCTAL DIGIT?
736 165268 000200 ADD R0,R2
737 165270 000200 ECC R0,CCR ;IF NOT TO RESTART THE CONSOLE EMULATOR,
738 165272 000200 ASL R0 ;OTHERWISE INCREMENT THE NUMBER.
739 165274 000200 ASL R0
740 165276 000200 ASL R0
741 165278 000200 LIS R2,R0
742 165280 000200 BR 20 ;LOOP BACK FOR NEXT CHARACTER.
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757 165316 010703
758 165320 000423
759 165322 022121
760 165324 000161 177776

```
MOV FC,R3  
ER PUTCHR  
X1RTN: CMP (R3)+,(R3)+ ;AND RETURN.  
JMP =2(R3)
```

.SBTTL CR, LF AND FILLER CHARACTER OUTPUT ROUTINE
;THIS ROUTINE IS CALLED TO TYPE A CARRIAGE RETURN, LINE FEED FOLLOWED
;BY 12 FILLER CHARACTERS, THE CALLER MUST BE RESPONSIBLE FOR PLACING THE RETURN
;ADDRESS MINUS TWO IN R1 AND EXECUTING BR 00000.
;THE PREVIOUS CONTENTS OF BOTH REGISTERS R2 AND R3 ARE LOST.
;WHEN FINISHED THIS SUBROUTINE WILL RETURN TO THE ADDRESS SPECIFIED
;IN R1 PLUS TWO, BUT R1 WILL BE INCREMENTED BY FOUR.

770 165330 012702
771 165332 014012
772 165334 010703
773 165336 000414
774 165340 001702
775 165342 001767
776 165344 105002
777 165346 152702
778 165352 000770

```
PUTCHR: MOV (FC)+,R2  
;KORD 10012  
18: MOV FC,R3  
BR PUTCHR  
ADD (PC),R2  
BLE X1RTN  
CLRB R2  
BISR #CR,R2  
BR 18
```

.SBTTL CHARACTER INPUT ROUTINE
;THIS ROUTINE IS CALLED TO BOTH INPUT AND ECHO A CHARACTER FROM
;THE TTY. THE CHARACTER IS SAVED IN THE LOW BYTE OF R2. THE
;HIGH BYTE OF R2 IS NOT MODIFIED. A CALL TO THIS
;SUBROUTINE IS MADE BY FIRST PLACING THE RETURN ADDRESS MINUS 2 IN R3
;AND THEN EXECUTING A BRANCH TO GETCHR. WHEN FINISHED
;A RETURN WILL BE MADE TO THE ADDRESS SPECIFIED IN R3 PLUS TWO, BUT
;R3 WILL HAVE BEEN INCREMENTED BY FOUR.

780 165354 105737 177560
781 165356 100375
782 165362 105002
783 165364 153702 177562

```
GETCHR: TSTB #TKS ;WAIT FOR KEYBOARD INPUT, READY.  
BPL GETCHR  
CLRB R2 ;CLEAR THE LOW BYTE OF R2.  
BISR #TKB,R2 ;PLACE THE CHARACTER IN THE LOW BYTE OF R2.  
;PROCEED ON TO PUTCHR IN ORDER TO  
;ECHO THE CHARACTER IN THE LOW BYTE  
;OF R2.
```

.SBTTL CHARACTER OUTPUT ROUTINE
;THIS SUBROUTINE IS CALLED TO PRINT A CHARACTER. THE CHARACTER
;MUST BE PLACED IN THE LOW ORDER BYTE OF R2. TO CALL THIS ROUTINE
;PLACE THE RETURN ADDRESS MINUS TWO IN R3 AND BRANCH TO
;PUTCHR. THE CONTENTS OF R2 ARE NOT MODIFIED. RETURN IS MADE
;TO THE ADDRESS SPECIFIED IN R3 PLUS TWO, BUT R3 IS LEFT INCREMENTED
;BY FOUR.

795 165370 105737 177560
796 165374 100375
797 165376 105237 177566
798 165402 102702 100220

```
PUTCHR: TSTR #TPS ;WAIT FOR PRINTER READY.  
BPL PUTCHR  
MOVB R2,#1PB ;WHEN READY PRINT THE CHARACTER.  
BICB #102200,R2 ;CLEAR ANY PARITY BITS THAT MAY BE SET.  
;THIS ROUTINE IS USED TO MAKE RETURNS FROM SUBROUTINES WHICH USE  
;R3 AS AN ADDRESS LINK. THOSE SUBROUTINES ARE CALLED
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815 165406 022323
816 165410 000161 177776

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;BY PLACING THE RETURN ADDRESS MINUS 2 IN R3, WHEN THE SUBROUTINE  
;IS FINISHED PROCESSING IT WILL BRANCH TO X3RTN, X3RTN  
;WILL INCREMENT R3 BY FOUR BUT RETURN TO THE ADDRESS SPECIFIED IN R3  
;PLUS TWO.  
X3RTN: CMP (R3)+,(R3)+ ;INCREMENT R3 BY 4.  
JMP =2(R3) ;RETURN TO THE ADDRESS WHICH WAS  
;ORIGINALLY IN R3 PLUS TWO.
```

.SBTTL REGISTER DISPLAY ROUTINE
;THIS IS THE FIRST PART OF THE CONSOLE EMULATOR THAT IS EXECUTED.
;IT WILL PRINT THE CONTENTS OF R0, R4, R5 AND R6 (IN THAT ORDER) AS
;FOUR SIXTEEN BIT OCTAL NUMBERS ON THE TTY. NOTE THAT ON SOME ELEVEN
;SYSTEMS (E.G. THE 11/04) WHEN THE BOOT SWITCH IS DEPRESSED AND
;THE PROCESS OF BOOTING INITIATED THE PC WILL BE PLACED INTO R5.

820 165414 010701
821 165416 000744
822 165420 010701
823 165422 000716
824 165424 010400
825 165426 000714
826 165430 010600
827 165432 010701
828 165434 000711
829 165436 010500
830 165440 000707
831 165442 010605

```
RSPLY: MOV PC,R1 ;PRINT CR, LF AND FILLER CHARACTERS.  
BR PUTCHR  
MOV PC,R1 ;PRINT R0.  
BR PUTNUM  
MOV R4,R0 ;PRINT R4.  
BR PUTNUM  
OUT: MOV SP,R0 ;PRINT R6.  
MOV PC,R1  
BR PUTNUM  
MOV R5,R0 ;PRINT R5.  
BR PUTNUM  
MOV SP,R5
```

.SBTTL COMMAND INTERPRETER AND DISPATCH ROUTINE FOR CONSOLE

841 165444 010701
842 165446 000730
843 165450 112702 000244
844 165454 010703
845 165456 000744

```
CONSEV: MOV FC,R1 ;PRINT CR, LF AND FILLER CHARACTERS.  
BR PUTCHR ;CALLER MUST BE RESPONSIBLE FOR PLACING THE  
;COMMAND PROMPT CHARACTER.  
MOVB #CR,R2  
MOV FC,R3  
BR PUTCHR
```

847 165460 010700
848 165462 022734
849 165464 000302
850 165466 000732
851 165470 012703 173740

```
READ: CLR R0 ;INITIALIZE A COUNTER FOR DECODING COMMANDS.  
BR GETCHR ;GET THE FIRST CHARACTER OF A COMMAND.  
;R0  
BR GETCHR ;GET THE SECOND CHARACTER OF THE COMMAND.  
MOV #0,R0 ;R0 POINTS TO A TABLE FILLED WITH ALL VALID ASCII  
;COMMANDS, NOTE ALL ARE TWO CHARACTERS LONG.
```

853 165474 022223
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855
856 165476 001404
857 165480 005200
858 165482 005713
859
860 165484 100373
861 165486 000756

```
DECODE: CMP R2,(R3)+ ;SEE IF THE COMMAND ENTERED MATCHES ANY VALID  
;COMMANDS IN THIS TABLE  
;IF A MATCH IS FOUND GO PROCESS IT.  
;IF NO MATCH FOUND INCREMENT THE COUNTER.  
;IF THE COUNTER IS THE SAME AS THE NUMBER OF VALID COMMANDS  
;IT IS REACHED BY A RECURSIVE ENTRY.  
;IF NOT FOUND CONTINUE LOOKING FOR A MATCH.  
;IF FOUND FOR THE COMMAND AND INVALED GO  
;PROCESS THE COMMAND INPUT PROCESS  
;GOING BACK AND PRINTING THE PROMPT.
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865 165510 012701 172400 MATCH: MOV #NBOOT/2,R1 ;WHEN A VALID COMMAND IS DECODED COME
866 ;HERE AND USE THE COUNTER, R0,
867 ;TO INDEX A TABLE CONTAINING POINTERS
868 ;TO THE ROUTINES WHICH WILL EXECUTE
869 ;THE FUNCTION ASSOCIATED WITH THE
870 ;COMMAND WHICH WAS TYPED.
871 165514 156001 173721 DISB VECTOR(R0),R1 ;COMPUTE THE STARTING ADDRESS OF THE ROUTINE.
872 165520 006301 R1
873 165522 020104 CMP R1,R4 ;R4 IS USED TO CONTAIN THE LAST COMMAND,
874 ;SO THIS COMMAND WHICH WAS PROCESSED,
875 ;SEE IF THE USER HAS TYPED THE SAME
876 ;COMMAND THREE IN A ROW.
877 165524 001001 BNE DSPTCH ;IF NOT GO DISPATCH THE COMMAND.
878 165526 005725 ISTI (R5)+ ;OTHERWISE INCREMENT R5 BY 2.
879 ;R5 IS USED IN THE CONSOLE EMULATOR
880 ;AS THE ADDRESS POINTER, WHENEVER
881 ;THE USER TYPES A LOAD ADDRESS, THE
882 ;ADDRESS TYPED IS SAVED IN R5.
883 ;IT IS INCREMENTED WHEN THE USER
884 ;TYPES THE SAME COMMAND IN SUCCESSION
885 ;SO THAT THE CONSOLE FUNCTIONS
886 ;OF EXAMINE AND DEPOSIT ARE MORE ACCURATELY
887 ;EMULATED.
888
889 165530 010104 DSPTCH: MOV R1,R4 ;SAVE THE CURRENT COMMAND IN R4.
890 165532 020027 000012 CMP R0,#10. ;SEE IF THIS COMMAND IS A DEVICE BOOT.
891 165530 003401 BLE 25 ;IF YES, THEN GO TO 25 TO CHECK THE
892 ;STATUS OF THE RUN-DIAGNOSTICS
893 ;INDICATORS.
894 165540 000114 JMP (R4) ;IF THE COMMAND WAS NOT A BOOT COMMAND THEN
895 ;IT WAS A CONSOLE COMMAND
896 ;(EITHER EXAMINE, DEPOSIT, LOAD
897 ;ADDRESS OR START), GO TO THE ROUTINE
898 ;WHICH WILL EXECUTE THE SPECIFIED
899 ;FUNCTION.
900 165542 062704 020000 25: ADD #6000,R4 ;THE COMMAND WAS A BOOT COMMAND SO ADD 6000 (OCTAL)
901 ;TO THE ADDRESS IN ORDER TO GET TO
902 ;THE CODE IN THE OTHER HALF OF THIS ROM,
903
904 165540 010701 MOV PC,R1 ;GET A UNIT (OR DRIVE) NUMBER IF THE USER
905 165550 001022 BR GETNUM ;SPECIFIES ONE.
906 165552 012011 173346 MOV #CMN4SST-2,R1 ;PLACE THE STARTING ADDRESS MINUS TWO
907 ;OF THE CODE WHICH INITIATES
908 ;THE BOOTSTRAP ROUTINES
909 ;IN R1.
910 165556 105737 173024 TSTB @#INTSW ;IF THE LOWORDER BYTE OF THE MICRO
911 ;SWITCHES READS AS ZERO, RUN
912 ;THE SECONDARY CPU AND MEMORY TESTS
913 ;BEFORE BOOTING.
914 165562 001257 LINK: BNE X1RTN ;OTHERWISE GO TO THE BOOTSTRAP WITHOUT
915 ;HAVING RUN THESE TESTS.
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.SBTTL SECONDARY CPU DIAGNOSTICS

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919 ;THESE ARE THE MEMORY MODIFYING TESTS. THEY ARE RUN AS SUBROUTINE
920 ;WHICH IS CALLED BY PLACING THE RETURN ADDRESS IN THE CALLING
921 ;ROUTINE MINUS TWO IN R1, THE PREVIOUS CONTENTS OF R2,
922 ;R3, R5 AND R6 ARE LOST, IF ANY OF THESE TESTS DETECTS AN ERROR
923 ;A HALT WILL BE EXECUTED. THE USER CAN THEN CONSULT THIS LISTING
924 ;FOR FURTHER INFORMATION ABOUT THE FAULT. ISSUING A
925 ;CONTINUE FUNCTION WILL NOT BE MEANINGFUL AFTER
926 ;ANY OF THESE TESTS DETECTS AN ERROR AND HALTS. NOTE THAT
927 ;IF THE MEMORY TEST DETECTS A FAILURE AND HALTS CERTAIN
928 ;IMPORTANT PARAMETERS USED IN THAT TEST WILL BE SAVED IN THE
929 ;REGISTERS. THESE REGISTERS ARE INCLUDED IN THOSE WHICH ARE
930 ;DISPLAYED WHEN THE CONSOLE EMULATOR PORTION OF THIS ROM
931 ;IS INITIATED. SO THAT IF A MEMORY ERROR IS DETECTED THE USER
932 ;CAN START THE CONSOLE EMULATOR TO EASILY ACCESS THIS MEMORY
933 ;FOR DATA. CAUTION SHOULD BE OBSERVED WHEN SELECTING THESE
934 ;TESTS TO BE RUN. THEY WILL DESTROY THE PREVIOUS CONTENTS
935 ;OF ANY MAIN MEMORY AVAILABLE UP TO 256 WORDS.
936
937 ;DOUBLE OPERAND, MODIFYING INSTRUCTIONS, BYTE REFERENCE TEST.
938
939 165564 012705 165510 TEST6: MOV #T6DATA,R5 ;SET UP TEST DATA ADDRESS.
940 165570 012702 000500 MOV #500,R2 ;SET UP TEST ADDRESS.
941 165574 011503 MOV (R5),R3 ;SET UP CMP OPERAND FOR TEST.
942 165576 005012 CLR (R2) ;CLR PC.
943 165600 112512 MOVB (R5)+,(R2) ;COUNTDOWN TO 500.
944 165602 005022 INC R2 ;COUNTDOWN TO UPPER BYTE, 501.
945 165604 112512 MOVB (R5)+,(R2) ;COUNTDOWN TO 500.
946 165606 005302 DEC R2 ;COUNTDOWN TO LOWER BYTE, 500.
947 165610 023512 CMP (R5)+,(R2) ;CHECK FOR ALL ONES.
948 165612 001015 BNE ZERRR
949 165614 005022 INC R2
950 165616 143522 BICB (R5)+,(R2)+ ;SHOW COUNTER UP TO ODD BYTE.
951 165620 024542 CMP (R5)+,(R2) ;COMPARE HIGH BYTE OF LOCATION 500.
952 165622 143522 BICB (R5)+,(R2)+ ;SHOW COUNTERS BACK.
953 165624 001010 BNE ZERRR ;COMPARE LOW BYTE OF LOCATION 500.
954 165626 010502 MOV R0,R2 ;CHECK FOR NOT ZERO.
955 165630 016505 177772 MOV #0,R5 ;GET COUNTERED ADDRESS OF 500 INTO R2.
956 165634 110532 MOVB (R5)+,(R2)+ ;GET TEST DATA.
957 165636 150572 000000 FICB (R5)+,(R2) ;COUNTDOWN TO 500.
958 165642 020352 CMP R0,(R2) ;GET LOWER BITS.
959 165644 001407 BNE ZERRR ;CHECK FOR ALL ONES, 177777.
960 165646 000000 T6ERR: HALT. ;IF NO ERROR GO TO NEXT TEST.
961
962
963
964
965 ;JSP TEST WITH MODES 1 AND 6.
966
967 165652 005723 TSTJSP: ISTI (R0)+ ;R3 SHOULD POINT TO ZERO WORD AT T7ERR.
968 165654 001011 BNE T7ERR ;IF NOT THEN HALT ON ERROR.
969 165656 001007 CMP (R0),R5 ;R2 SHOULD POINT TO 177777.
970 165658 000000 BNE T7ERR ;IF NOT THEN HALT ON ERROR.
971 165660 000000 RTS R3
972 165664 011206 TEST7: MOV (R2),CP ;SET UP STACK TO START AT 502.
  
```

11
 014


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073 165666 012702 165650      MOV      #TSTJCR,R3      ;SET UP ADDRESS FOR JCR.
074 165672 005726              TST      (R3)           ;MOVE R3 UP ONE WORD.
075 165674 014312              JCR      R3,(R2)       ;EXECUTE JCR TO TSTJCR.
076 165676 000000              HALT                    ;
077 165700 004362 000004      JCR      R3,(R2)       ;EXECUTE JCR TO TSTJCR.
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097 165704 010723      MEMIST: MOV      PC,R3
098 165706 000415      BR        SIZE        ;GO SIZE MEMORY (UNDER 20K WORDS).
099 165710 005023      CLR      R3           ;R3 IS A POINTER USED TO READ AND WRITE MEMORY.
100
101 165712 010313      2S:      MOV      R3,(R3)      ;WRITE THE CONTENTS OF R3 INTO THE LOCATION
102
103 165714 005723      TST      (R3)+        ;ADDRESS BY R3.
104 165716 020305      CMP      R3,R5        ;INCREMENT R3 BY 2.
105
106
107 165720 010774      BLOS    2S           ;R5 CONTAINS THE LAST AVAILABLE MEMORY
108 165722 005023      CLR      R3           ;ADDRESS UNDER 20K WORDS. SEE IF
109 165724 005413      NEG     (R3)         ;THE END OF MEMORY HAS BEEN REACHED.
110 165726 000313      ADD     R3,(R3)      ;LOOP UNTIL DONE.
111 165730 005723      TST      (R3)+        ;RETURN R3 TO LOCATION 0.
112
113 165732 000316      BRE     MEMERR       ;NEGATE THE LOCATION REFERENCED BY R3.
114 165734 020305      C4P     R3,R5        ;ADD THE CONTENTS OF R3.
115
116 165736 010772      BLOS    4S           ;INCREMENT THE POINTER, R3, BY 2; AND SEE IF THE
117
118
119 165740 000710      BNE     MEMERR       ;RESULT OF THE ADDITION WAS 0.
120
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142
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144
145
146
147
148 165774 014304      MEMERR: MOV     =(R3),R4
149 165776 010303      MOV     R3,R3
150 165778 020006      CLR     SP
151 165780 000000      HALT
152

```

;THIS ROUTINE PERFORMS BOTH A DATA ADDRESSING TEST AND A FUNDAMENTARY
;DATA INTEGRITY TEST OF MAIN MEMORY / UNDER 20K WORDS.
;FIRST EVERY LOCATION IS WRITTEN WITH ITS OWN ADDRESS STARTING
;FROM LOCATION 0 AND WORKING UP, THEN AFTER EVERY LOCATION HAS
;BEEN WRITTEN WITH ITS OWN ADDRESS, THE ROUTINE RETURNS TO LOCATION
;2 AND NEGATES ITS CONTENTS, THEN THE
;ADDRESS OF THE LOCATION WHICH WAS JUST NEGATED IS ADDED TO
;THAT LOCATION, THE RESULT SHOULD BE ZERO, THE PROCESS IS CONTINUED
;FROM 2 TO THE TOP OF MEMORY, IF NO ERRORS ARE DETECTED MEMORY
;WILL BE LEFT FILLED WITH ZEROS, IF AN ERROR IS DETECTED THEN:
; 1 THE ADDRESS BEING TESTED IS LEFT IN R3
; 2 THE EXPECTED DATA FROM THAT LOCATION IS IN R5
; 3 THE FAILING DATA IS IN R3
; 4 FINALLY THE HALT AT LOCATION 165776 IN THIS
; ROM IS EXECUTED.

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134
135 165742 012705 165700      SIZE: MOV      #16000,R5      ;R3 WILL HAVE BEEN INCREMENTED BY 4.
136 165744 005037 165706      CLR      #6              ;THE METHOD USED FOR SIZING MEMORY IS:
137 165746 012737 165708      MOV      #10,0#4         ; 1 SET R5 TO 16000
138 165748 012706 000502      MOV      #502,SP        ; 2 SET UP VECTOR 4 AND THE STACK (060502)
139 165750 005745      TST     =(R5)           ; 3 REFERENCE +(R5), NOTE AUTODECREMENT,
140 165752 000607      BR      X3RIN          ; 4 IF THE REFERENCE TIMES OUT (TRAFF TO 4)
141
142
143
144
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152

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;IF A MEMORY ERROR IS DETECTED COME HERE TO SAVE IMPORTANT
;PARAMETERS IN THE REGISTERS AND HALT.

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1054      173000      .#173000
1055      .SBTTL      BOOTSTRAP ROUTINES
1056
1057      173000      IDBOOT:
1058
1059      .SBTTL      STARTING ADDRESS OF CONSOLE EMULATOR
1060      .SBTTL      DIAGNOSTICS SELECTED: 173000
1061      173000 010701      STRT1: MOV      FC,R1
1062
1063      .SBTTL      DIAGNOSTICS RESELECTED: 173002
1064      173002 100555      STRT2: BHI      BTCT1    ;GO EXECUTE PRIMARY CPU DIAGNOSTIC
1065      .SBTTL      ;RODS ONLY IF EXECUTION STARTED AT
1066      .SBTTL      ;173000.
1067
1068      173004 000137 165414      STRT3: JMP      @DSPLY    ;GO START CONSOLE EMULATOR.
1069
1070      .SBTTL      TU10, RK06, RP04 AND RP01 FUNCTION CODE TABLES
1071      ;NOTE THAT THESE TABLES HAVE BEEN DESIGNED TO OVERLAP ONE ANOTHER.
1072      ;ANY ATTEMPT TO MODIFY THESE TABLES, WITHOUT A CLEAR UNDERSTANDING OF
1073      ;HOW THEY ARE USED, SHOULD NOT BE MADE.
1074      173010 060017      TU10FN: .WORD   000017    ;THIS IS THE TU 10 COMMAND
1075      .SBTTL      ;FOR FORWARD AND 000 EPI,
1076      .SBTTL      ;9 CHANNEL DENSITY.
1077      173012 011      .BYTE   011    ;TU10 SPACE FORWARD COMMAND.
1078      173013 003      .BYTE   003    ;TU10 READ COMMAND.
1079      173014 021      RK06FN: .BYTE   021    ;RK06 READ COMMAND.
1080      173014 021      RP04FN: .BYTE   021    ;RP04 READ IN RESET COMMAND.
1081      173015 071      RS04FN: .BYTE   071    ;RP04 READ COMMAND.
1082      .SBTTL      ;RK04 READ COMMAND.
1083
1084      .SBTTL      LOAD ADDRESS AND START ROUTINE
1085      173016 013704 173776      SRS1:  MOV      @FSWR,R4    ;USE THE REAL SWITCH REGISTER
1086      173022 000542      BR       CMN25ST    ;IN PLACE OF THE MICRO SWITCHES.
1087
1088      ;THIS LOCATION, 173024, IS THE PHYSICAL LOCATION OF THE M9301'S
1089      ;MICRO SWITCHES. NOTE THAT THE SWITCHES, WHEN ENABLED (ON), WILL APPEAR
1090      ;AS A W IN THE LOW ORDER BITS 1 THROUGH 8 OF THIS LOCATION.
1091      ;THIS LOCATION IS USED BY MOST PDP11 PROCESSORS TO INITIATE
1092      ;THE BOOT AUTOMATICALLY ON POWER UP OR WHEN A BOOT SWITCH IS DEPRESSED.
1093      ;EXCEPTION TO THIS IS THE 11/70, WHICH MAY GO TO LOCATION 173224.
1094      ;THESE SWITCH WILL NEVERTHELESS HAVE THE SAME FUNCTIONAL APPLICATION
1095      ;WHETHER THE M9301 IS ON AN 11/70 OR ANY OTHER PROCESSOR
1096      ;IN THE PDP11 FAMILY.
1097      173024 173776      MISA:  .WORD   173776    ;PC OF TRAP VECTOR,
1098      173026 000340      .WORD   000340    ;PS4 OF TRAP VECTOR.
1099
1100      ;THIS CODE IS USED TO BACK UP POINTERS AFTER AN ATTEMPT TO BOOTSTRAP
1101      ;A DEVICE HAS FAILED. THE BOOTSTRAP WILL BE RETRIED UNTIL NO ERRORS
1102      ;ARE DETECTED.
1103      173030 024444      AGAIN: CMP      -(R4),-(R4)
1104      173032 005744      TST      -(R4)
1105      173034 000005      BESET
    
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1108      173036 000544      BR       CMN46ST
1109
1110      .SBTTL      RP02 AND RP03 BOOTSTRAP CODE
1111      .SBTTL      DIAGNOSTICS SELECTED: 173040
1112      ;THIS IS THE STARTING ADDRESS OF THE RP02, RP03 BOOTSTRAP
1113      ;WITH DIAGNOSTICS SELECTED: 173040.
1114      173040 120000      RP02A: CMR      R0,R0
1115      .SBTTL      DIAGNOSTICS RESELECTED: 173042
1116      ;THIS IS THE STARTING ADDRESS OF THE RP02, RP03 BOOTSTRAP WITH DIAGNOSTICS
1117      173042 000532      RP02B: BR       CMN10ST
1118      173044 170714      .WORD   RP03CN    ;RP02, RP03 COMMAND AND STATUS REGISTER,
1119      173046 173776      .WORD   RP03FN    ;POINTER TO THE RP02, RP03 FUNCTION CODE TABLE.
1120      173048 000311      RP03C: MOV      R3,(R1)    ;LOAD THE UNIT NUMBER INTO THE COMMAND
1121      .SBTTL      ;REGISTER, RIGHT JUSTIFIED IN THE HIGH BYTE.
1122      .SBTTL      ;GO TO THE COMMON DISK AND TAPE DRIVER.
1123      173052 000501      BR       CMNSGO
1124
1125      .SBTTL      TU16 BOOTSTRAP CODE
1126      .SBTTL      DIAGNOSTICS SELECTED: 173054
1127      173054 120000      TU16A: CMR      R0,R0
1128      .SBTTL      DIAGNOSTICS RESELECTED: 173056
1129      173056 000522      TU16B: BR       CMN10ST
1130      173060 170714      .WORD   TU16CN    ;COMMAND REGISTER ADDRESS FOR THE TU16.
1131      173062 173464      .WORD   TU16FN    ;POINTER TO THE TU16 FUNCTION CODE TABLE.
1132      173064 010003      TU16C: MOV      R0,R3    ;FOR UNIT NUMBER, RIGHT JUSTIFIED, INTO R3.
1133      173066 052003      .WORD   @R3+R3    ;FOR THE UNIT NUMBER, WITH UNIT NUMBER.
1134      173070 010361 000032      BIS      @R3+R3    ;SECOND COLUMN AND DRIVE NUMBER.
1135      173074 032761 010012 15:  BIT      @R3+R3,12(R1)    ;SEE IF THE MEDIUM IS ON LINE.
1136      173102 001774      REQ      10    ;IF NOT, THEN
1137      173104 112211      MOV      (R0)+,(R1)    ;SECOND COLUMN COMMAND,
1138      173106 105761 000012 25:  TSTR      12(R1)    ;WAIT FOR DRIVE READY.
1139      173112 120375      EPI      25
1140      173114 112211      MOV      (R0)+,(R1)    ;SECOND COLUMN CLEAR COMMAND,
1141      173116 105761 000012 35:  TSTR      12(R1)    ;WAIT FOR DRIVE READY.
1142      173122 105375      EPI      35
1143      173124 012761 177777 002006      MOV      @R3+R3    ;SEND CRED COUNT TO END RECORD,
1144      173132 112211      MOV      @R3+R3    ;SEND END CLACK FORWARD COMMAND,
1145
1146      173134 105761 000012 45:  TSTR      12(R1)    ;WAIT FOR DRIVE READY.
1147      173140 120375      EPI      45
1148      173142 000442      BR       CMN00C
1149
1150      .SBTTL      RK05 BOOTSTRAP CODE
1151      .SBTTL      DIAGNOSTICS SELECTED: 173144
1152      ;THIS IS THE STARTING ADDRESS OF THE RK05 CODE WITH DIAGNOSTICS SELECTED: 173144.
1153      173144 120000      RK05A: CMR      R0,R0
1154      .SBTTL      DIAGNOSTICS RESELECTED: 173146
1155      173146 000466      RK05B: BR       CMN10ST
1156      173150 170714      .WORD   RK05CN    ;ADDRESS OF THE RK05 COMMAND REGISTER,
1157      173152 173776      .WORD   RK05FN    ;POINTER TO THE RK05 FUNCTION CODE TABLE,
1158      173154 000003      RK05C: RCL      R3    ;SHIFT UNIT NUMBER INTO BITS 15, 14 AND 13.
    
```

0 3 4

1162 173156 006303 ACL R3
1163 173160 006303 ACL R3
1164 173164 006303 ACL R3
1165 173164 006303 ACL R3
1166 173166 010361 000006 MOV R0,6(R1) ;LOAD UNIT NUMBER,
1167 173172 000431 ER CANCEL ;GO TO THE COMMON DISK AND TAPE DRIVER,
1168
1169
1170
1171 173174 120000 .SBTTL TUS5 BOOTSTRAP CODE
1172 .SBTTL DIAGNOSTICS SELECTED: 173174
1173 173176 000452 TUS56A: CXPB R0,R0
1174 173200 173342 .SBTTL DIAGNOSTICS DESELECTED: 173176
1175 173202 173716 TUS56B: BR CMN10ST
1176 173204 010311 .WORD TUS56C ;ADDRESS OF COMMAND REGISTER FOR TUS56,
1177 173206 052211 .WORD TUS56H ;POINTER TO TUS56 COMMAND CODE TABLE,
1178 173210 045711 TUS56C: MOV R3,(R1) ;LOAD THE UNIT NUMBER, RIGHT JUSTIFIED IN HIGH BYTE,
1179 173212 040376 1S: RTS (R2)+,(R1) ;FOR REWIND COMMAND INTO COMMAND REGISTER,
TST (R1) ;WAIT UNTIL BIT 15 OF COMMAND REGISTER IS SET,
BPL 1S ;THIS CODE IS ACTUALLY WAITING FOR THE
;ANTICIPATED "END ZONE" ERROR,
;IF AN ERROR WAS "END ZONE",
;IF NOT THEN GO START OVER, AND REWIND,
;GO TO PART OF PROGRAM UNDER THE TUS56 SHARES
;TO RELOAD THE UNIT NUMBER AND
;THEN PASS CONTROL TO THE COMMON
;DISK AND TAPE DRIVER,
1180
1181 173214 005761 177776 TST =2(R1)
1182 173220 120303 BPL AGAIN
1183 173222 040712 BR RP03C
1184
1185
1186
1187
1188
1189
1190
1191 173224 120000 .SBTTL RP04, RP05 AND RP06 BOOTSTRAP CODE
1192 .SBTTL DIAGNOSTICS SELECTED: 173224
1193 173226 000436 RP04A: CXPB R0,R0
1194 173230 176700 .SBTTL DIAGNOSTICS DESELECTED: 173226
1195 173232 173414 RP04B: BR CMN10ST
1196 .WORD RP04CR ;COMMAND REGISTER FOR THE RP04, RP05 OR RP06,
1197 173234 010361 .WORD RP04EN ;POINTER TO THE COMMAND CODE
1198 173236 112211 RP04C: MOV R0,10(R1) ;TABLE FOR THE RP04, RP05 OR RP06,
1199 173240 112211 MOV R2+(R1) ;LOAD UNIT NUMBER,
1200 173242 012701 MOV #010000,32(R1) ;ISSUE READ IN PRESET COMMAND,
;SET CNT22 AND ECC INHIBIT BITS,
;FALL THROUGH TO THE COMMON DISK
;AND TAPE DRIVER,
1201
1202
1203
1204
1205
1206 173250 010161 177776 000416 1S: MOV 16(R1),16(R1) ;JUST WRITE THE ATTENTION SUMMARY REGISTER
1207 ;INTO ITSELF, THEN FALL THROUGH
1208 ;TO THE COMMON DISK AND TAPE DRIVER,
1209
1210
1211
1212
1213
1214
1215 .SBTTL COMMON DISK AND TAPE DRIVER
;THIS ROUTINE IS CALLED BY ALL THE DISK AND TAPE BOOTSTRAPS (EXCLUDING
;THE RX01) TO:
; 1 LOAD THE WORD COUNT
; 2 ISSUE THE READ COMMAND

1216 : 3 CHECK FOR DEVICE ERRORS
1217 : 4 AND START THE PROGRAM READ OFF THE DEVICE
1218 173256 012761 177776 000416 C 500: MOV #512,2(R1) ;LOAD THE WORD COUNT, 512 (DECIMAL),
1219 173260 011103 MOV (R1),R3
1220 173266 042703 BIC #377,R3
1221 173272 152203 HISB (R2)+,R3
1222 173274 010311 MOV R3,(R1)
1223 173276 105711 1S: TSTB (R1) ;WAIT FOR READY,
1224 173300 100376 BPL 1S
1225 173302 045711 IST (R1) ;SEE IF AN ERROR OCCURRED,
1226 173304 100376 BPL CLRCS ;IF NO ERRORS OCCURRED GO START THE BOOTTED CODE,
1227 173306 105712 TSTB (R2) ;OTHERWISE, IF AN ERROR OCCURRED, SEE IF
;THE DEVICE HAS A 1010, FRAME COUNT ERRORS
;ARE ACCEPTABLE WHEN BOOTTING A TU10!
;IF IT WAS NOT A 1010 THEN THE BOOTSTRAP
;WAS UNSUCCESSFUL, SO GO TRY IT AGAIN.
;YES, THE DEVICE HAS A 1010, BUT WAS THE ERROR
;A FRAME COUNT ERROR?
;IF NOT THEN GO TRY IT AGAIN,
;OTHERWISE THE BOOTSTRAP WAS SUCCESSFUL,
;CLEAR FUNCTION CODE IN THE DEVICE'S COMMAND REGISTER,
1228
1229
1230 173310 001247 NEGFI: BNE AGAIN
1231
1232 173312 021261 000414 CMP (R2),10(R1)
1233
1234 173316 001244 BNE AGAIN
1235
1236 173320 105011 CIPCS: CLRB (R1)
1237
1238
1239 173322 005007 START: CLR PC ;THE CODE JUST BOOTED IN STARTS A LOCATION 0,
1240
1241
1242
1243
1244
1245 .SBTTL COMMON BOOTSTRAP SETUP AND DISPATCHER
;THIS ROUTINE IS CALLED TO:
; 1 DETERMINE WHETHER OR NOT THE DIAGNOSTICS HAVE BEEN
; SELECTED,
; 2 IF SELECTED, HAVE BEEN SELECTED THEY ARE RUN,
; 3 THREE POINTERS TO POINT TO THE
; COMMAND REGISTER
; ANOTHER TO THE COMMAND CODE TABLE
; AND ANOTHER TO THE DEVICE BOOTSTRAP CODE
; OF THE DEVICE TO BE USED.
; 4 THE VALUES OF THE UNIT NUMBER ARE LEFT IN R0 AN R3,
; AND THESE COUNTERS ARE SET TO ZERO (ONLY OTHER RIGHT
; COUNTERS IN THE REGISTER ARE DECREMENTED).
; NOTE THAT THIS ROUTINE HAS MANY ENTRY POINTS, DEPENDENT ON THE
; SOURCE OF THE CALL FOR A BOOT FUNCTION:
; 1 CANCEL
; ENTER HERE TO BOOTSTRAP INITIATED FROM THE
; POWER SW/11 AUTOMATIC BOOT OR BOOT SWITCH,
; CANCEL
; 2
; ENTER HERE IF FUNCTION IS INITIATED FROM THE
; CONSOLE SWITCH RELEASER,
; CANCEL
; 3
; ENTER HERE IF BOOTSTRAPPING IS THE RESULT OF A
; CONSOLE SWITCH COMMAND. I.E. GO TO HERE FROM
; THE CONSOLE SWITCH, NOTE THAT THE CHECK FOR
; DIAGNOSTIC SELECTION IS SKIPPED IN THIS CASE
; SINCE THAT HAS ALREADY BEEN ATTENDED TO IN THE

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1270
1271 173324 013704 173024
1272 173330 005714
1273
1274
1275
1276
1277 173332 100005
1278 173334 016701
1279 173336 000547
1280 173340 000137
1281 173344 005724 165564
1282 173346 005000
1283 173350 010003
1284 173352 000303
1285 173354 005724
1286 173356 012401
1287 173360 012402
1288 173362 000114
1289
1290
1291
1292
1293
1294 173364 120000
1295
1296 173366 000756
1297 173370 177560
1298 173372 173776
1299
1300
1301 173374 012703 173402
1302 173400 000137 165742
1303
1304
1305
1306 173404 010115
1307
1308
1309 173406 142205
1310
1311
1312
1313
1314
1315 173410 010515
1316 173412 011503
1317
1318
1319
1320
1321 173414 005211
1322 173416 105711
1323 173420 100376

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CONSOLE EMULATOR,
CMN16ST: NOV @INTEN,R4 ;PICK UP CONTENTS OF MICRO SWITCHES,
CMN26ST: TST (R4) ;WERE DIAGNOSTICS SELECTED?
;IF THE CONTENTS OF THE LOCATION
;ADDRESSED BY R4 IS NEGATIVE
;THE DIAGNOSTICS WERE SELECTED,
;OTHERWISE THEY WERE DESELECTED,
;GO IMMEDIATE UNDER EXECUTION.

BPL CMN26ST
MOV PC,R1
BTST1: BR JTEST1 ;GO RUN THE PRIMARY CPU DIAGNOSTICS,
JMP @TEST6 ;GO RUN THE SECONDARY CPU AND MEMORY DIAGNOSTICS.
TST (R4)+

CMN36ST: CLR R0 ;DEFAULT THE DRIVE TO UNIT 01
CMN46ST: MOV R0,R3 ;ESTABLISH THE UNIT NUMBER RIGHT
;JUSTIFIED IN THE HIGH DATE OF R3.

SWAB R3
TST (R4)+
MOV (R4)+,R1 ;GET THE DEVICE'S COMMAND REGISTER ADDRESS INTO R1.
MOV (R4)+,R2 ;GET A POINTER TO THE DEVICE'S COMMAND CODE TABLE IN R2.
JMP (R4) ;R4 NOW POINTS TO THE STARTING ADDRESS OF
;THE DEVICE'S BOOTSTRAPPING CODE.

.SBTTL DL11 BOOTSTRAP CODE
.SBTTL DIAGNOSTICS SELECTED: 173364
DL11A: CMPB R0,R0
.SBTTL DIAGNOSTICS DESELECTED: 173366
DL11B: BR CMN16ST
.WORD DL11CP
.WORD DL11FN
;NOTE THAT THIS ROUTINE IS SHARED BY BOTH PAPER TAPE READERS,
;DL11 AND PC11:
DL11C: MOV #PTRN=2,R3 ;FIRST GO SIZE MEMORY.
JMP @SIZE ;THE SIZE ROUTINE WILL LEAVE THE
;ADDRESS OF THE HIGHEST MEMORY
;LOCATION (LESS THAN 28K WORDS)
;IN R5, SO R5 = XXX776.
PTRN: MOV R1,(R5) ;PUT THE CONTROL REGISTER OF
;THE READER IN THE HIGHEST MEMORY
;LOCATION.
BICB (R2)+,R5 ;THEN DROP R5 DOWN TO POINT TO XXX752,
;LOCATION XXX752 IS THE LOAD POINTER,
;THAT IS IT IS A POINTER TO THE
;BYTE CURRENTLY BEING DEPOSITED IN
;MEMORY WITH THE DATA READ OFF THE PAPER
;TAPE (THE ABSOLUTE LOADER).
;AND STORE R5 IN LOCATION (R5).
2S: MOV (R5),(R5) ;COPY THE LOAD POINTER, THE
;CONTENTS OF LOCATION XXX752, THIS IS
;INITIALLY THE NUMBER XXX752 BUT IT IS
;MODIFIED DURING THE PROCESS OF LOADING
;THE ABSOLUTE LOADER.
3S: INC (R1) ;START THE READER.
ISTR (R1) ;WAIT FOR BYTE READY.
BPL 3S

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1324 173422 116113 000002
1325 173426 005215
1326 173430 121203
1327
1328 173432 001367
1329 173434 005223
1330 173436 000143
1331
1332
1333
1334
1335
1336 173440 120000
1337
1338 173442 000730
1339 173444 172000
1340 173446 173015
1341 173450 110061
1342 173454 000675
1343
1344
1345
1346
1347
1348
1349
1350 173456 007
1351 173457 003
1352 173460 027
1353 173461 023
1354 173462 100040
1355
1356
1357 173464 001000
1358 173466 007
1359 173467 011
1360 173470 031
1361 173471 071
1362 173472 001000
1363
1364
1365
1366 173474 120000
1367
1368 173476 000712
1369 173478 173522
1370 173480 173016
1371 173484 000311
1372
1373 173486 006061 177776
1374 173488 100375
1375 173490 002211
1376
1377

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MOV R2,(R1),(R3) ;PICK UP AND STORE THE BYTE OF DATA READ,
INC (R5) ;INCREMENT THE LOAD POINTER.
CMPB (R2),R3 ;THE LAST WRITTEN IS XXX775.
;SO LOOK FOR LOAD COMPLETE.
BNE 2S ;IF NOT DONE LOOP BACK FOR THE NEXT BYTE.
BICB (R3)+ ;GET TO THE EVEN BYTE BOUNDARY.
JMP -(R3) ;JMP TO THE LAST WORD LOADED.
;THIS WAS A BRANCH INSTRUCTION WHICH
;INITIATES THE PROGRAM JUST LOADED.

.SBTTL RS03 AND RS04 BOOTSTRAP CODE
.SBTTL DIAGNOSTICS SELECTED: 173440
RS04A: CMPB R0,R0
.SBTTL DIAGNOSTICS DESELECTED: 173442
RS04B: BR CMN16ST
.WORD RS04CR
.WORD RS04FN
RS04C: MOV R0,(R1)
BR CMNSAC

.SBTTL RS01 AND TU15 FUNCTION CODE TABLES
;RS01 FUNCTION CODES:
RS01FN: .BYTE 007 ;READ RECTOR, DRIVE 0.
.BYTE 003 ;UNIT NUMBER COMMAND, DRIVE 0.
.BYTE 027 ;READ SELECT COMMAND, DRIVE 1.
.BYTE 023 ;PAPER BUFFER COMMAND, DRIVE 1.
.WORD 100040 ;WAITERS USED TO CHECK FOR ERROR OR DONE.

;TU16 FUNCTION CODES:
TU16FN: .WORD 001000 ;DESIGNATED 003 DPI AND FORMAT,
.BYTE 007 ;PAPER BUFFER COMMAND,
.BYTE 011 ;DRIVE SELECT COMMAND,
.BYTE 031 ;PAPER BUFFER COMMAND,
.BYTE 071 ;READ COMMANDS,
.WORD 001000 ;WAITERS TO TEST FRAME ERROR BIT.

.SBTTL TU10 BOOTSTRAP CODE
.SBTTL DIAGNOSTICS SELECTED: 173474
TU10A: CMPB R0,R0
.SBTTL DIAGNOSTICS DESELECTED: 173476
TU10B: BR CMN16ST
.WORD TU10CR
.WORD TU10FN
TU10C: MOV R0,(R1)
;TU10 COMMAND AND STATUS REGISTER,
;POINTER TO TU10 FUNCTION CODE TABLE.
;LOAD UNIT NUMBER RIGHT JUSTIFIED
;IN THE HIGH DATE.
1S: NOR =2(R1) ;CHECK IF THE SELECTED DRIVE IS ON LINE,
ECC 10 ;IF NOT
2S: DIS (R2)+,(R1) ;FORM RECTOR COMMAND INTO COMMAND REGISTER,
;THIS COMMAND ALSO SETS 003 DPI
;AND 9 CHANNEL LENGTH.

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1378 173516 105711          36:  TSTB  (R1)          ;WAIT FOR REWIND COMPLETION,
1379 173520 100376          BPL   36
1380 173522 112761 177777 000002  MOV   #=1,2(R1)      ;SET RECORD COUNTER TO SKIP ONE RECORD,
1381 173530 112211          MOVB  (R2)+,(R1)    ;TU10: LOAD SPACE FORWARD COMMAND,
1382
1383
;THIS CODE IS SHARED BY THE TU10 AND THE RK06:
1384 173532          FIDY:
1385 173532 105711          45:  TSTB  (R1)          ;WAIT FOR READY OR ERROR,
1386 173534 100376          BPL   45
1387 173536 105711          IST   (R1)          ;DID ANY ERRORS OCCUR,
1388 173540 100663          BMI   BAGAIN       ;IF YES BACK UP AND TRY AGAIN.
1389 173542 100665          BR    CMNSGO       ;IF NO ERRORS GO TO THE COMMON DISK
1390
1391
1392
1393
1394 173544 120000          .SBTTL          RX01 BOOTSTRAP CODE
1395          .SBTTL          DIAGNOSTICS SELECTED: 173544
1396 173546 100666          RX01A:  C*PB  R0,R0
1397 173550 177170          .SBTTL          DIAGNOSTICS DESELECTED: 173546
1398 173552 173456          BR    CMN16ST
1399 173554 112213          .WORD  RX01CR
1400 173556 131700          .WORD  RX01FN
1401 173560 101401          RX01C:  MOV   (R2)+,R3
1402 173562 111203          BITB  (PC),R0
1403
1404
1405
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417 173564 105772          15:  TST   (R2)+
1418 173566 131211          15:  BITH  (R2),(R1)
1419 173570 101776          BVC   125
1420 173572 111311          MOVB  R3,(R1)
1421 173574 111105          25:  MOVB  (R1),R5
1422 173576 100376          BPL   25
1423 173580 112761 177777 000002  MOVB  #R0,2(R1)
1424
1425
1426 173586 110603          BGRB  R3
1427 173588 102771          RVS   25
1428
1429
1430
1431

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1432
1433 173612 101211          35:  BIT   (R2),(R1)
1434 173614 101776          BFC   35
1435 173616 100634          BMI   HAGAIN
1436 173620 100303          SWAB  R3
1437
1438
1439
1440
1441 173622 110311          MOVB  R3,(R1)
1442 173624 100603          CLR   R3
1443
1444
1445 173626 105711          45:  TSTB  (R1)
1446 173630 100376          BPL   45
1447 173632 116123 177777 000002  MOVB  2(R1),(R3)+
1448
1449 173636 105703          TSTB  R3
1450
1451 173640 100372          BPL   46
1452 173642 100627          BR    START
1453
1454
1455
1456
1457 173644 1010701          .SBTTL          AUTORESTART ON POWER FAIL ROUTINE
1458          .SBTTL          DIAGNOSTICS SELECTED: 173644
1459          ALFFP:  MOV   PC,R1
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469 173646 100403          .SBTTL          DIAGNOSTICS DESELECTED: 173646
1470 173650 112706 177777 000024  BMI   JTEST1
1471          MOV   #24,SP
1472
1473
1474
1475 173654 100002          RTI
1476 173656 100137 105722  JTEST1:  JMP   #JTEST1
1477
1478
1479
1480 173662 120000          .SBTTL          RK06 BOOTSTRAP CODE
1481          .SBTTL          DIAGNOSTICS SELECTED: 173662
1482 173664 100617          RX06A:  C*PB  R0,R0
1483 173666 177440          .SBTTL          DIAGNOSTICS DESELECTED: 173664
1484 173670 173014          BR    CMN16ST
1485 173672 100661 000010  .WORD  RK06CR
1486          .WORD  RK06FN
1487          MOV   R0,10(R1)

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1486
1487 173676 012711 000003      MOV      #3,(R1)      ;GO TO THE CODE THE RK06 SHARES WITH
1488 173702 000713      BR       RDY         ;DO RK06 PACK ACK
1489
1490                      .SBTTL      PC11 BOOTSTRAP CODE
1491                      .SBTTL      PC11 BOOTSTRAP CODE
1492 173704 120000      PC11A:  CMPB      R0,R0      ;DIAGNOSTICS SELECTED: 173704
1493                      .SBTTL      PC11 BOOTSTRAP CODE
1494 173706 000606      PC11B:  BR       CMN10ST     ;DIAGNOSTICS DESELECTED: 173706
1495 173710 177550      .WORD   PC11CR      ;THE PC11 CONTROL AND STATUS REGISTER,
1496 173712 173776      .WORD   PC11FN      ;POINTER TO THE PC11 FUNCTION CODE TABLE,
1497                      ;THE PC11 BOOTSTRAP IS IDENTICAL TO THE DL11 PAPER TAPE BOOTSTRAP
1498                      ;CODE SO THAT IT WILL ONLY APPEAR IN ONE PLACE, AT THE DL11 ROUTINE.
1499                      ;ONLY ONE DIFFERENCE EXISTS, THEY HAVE DIFFERENCE CONTROL
1500                      ;REGISTER ADDRESSES ON THE UNIBUS.
1501 173714 000627      PC11C:  BR       DL11C
1502
1503                      .SBTTL      TU56, RK05 AND RP03 FUNCTION CODE TABLE
1504 173716 024003      TU56FN: .WORD   004003     ;TU56 REWIND COMMAND.
1505 173720      RK05FN:
1506 173722 005      RP03FN: .BYTE   005         ;TU56 READ COMMAND,
1507                      ;RK05 READ COMMAND,
1508                      ;RP03 READ COMMAND.
1509
1510
1511                      .SBTTL      CONSOLE EMULATOR FUNCTION ADDRESS TABLE
1512 173721 173      VFC10R: .BYTE   <DL11B=IBOOT>/2
1513 173722 027      .BYTE   <TU16B=IBOOT>/2
1514 173723 221      .BYTE   <RS04B=IBOOT>/2
1515 173724 113      .BYTE   <RP04B=IBOOT>/2
1516 173725 063      .BYTE   <RK05B=IBOOT>/2
1517 173726 077      .BYTE   <TU56B=IBOOT>/2
1518 173727 237      .BYTE   <TU10B=IBOOT>/2
1519 173730 021      .BYTE   <RP03B=IBOOT>/2
1520 173731 332      .BYTE   <RK06B=IBOOT>/2
1521 173732 343      .BYTE   <PC11B=IBOOT>/2
1522 173733 263      .BYTE   <RX01B=IBOOT>/2
1523
1524 173734 076      .BYTE   <ST=HBOOT>/2
1525 173735 104      .BYTE   <EX=HBOOT>/2
1526 173736 073      .BYTE   <DE=HBOOT>/2
1527 173737 100      .BYTE   <LA=HBOOT>/2
1528
1529                      .EVEN
1530
1531                      .SBTTL      CONSOLE EMULATOR VALID COMMAND TABLE
1532 173740 052124      CMDTAB: .ASCII  *TI*
1533 173742 240515      .ASCII  *MM*
1534 173744 042123      .ASCII  *SD*
1535 173746 042102      .ASCII  *BD*
1536 173750 042113      .ASCII  *KD*
1537 173752 042124      .ASCII  *TD*
1538 173754 046524      .ASCII  *M*
1539 173756 042120      .ASCII  *PD*

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1540 173760 042115      .ASCII  *WD*
1541 173762 050122      .ASCII  *RP*
1542 173764 042130      .ASCII  *XD*
1543
1544 173766 051415      .ASCII  <CR>*S*
1545 173770 042440      .ASCII  *F*
1546 173772 042040      .ASCII  *D*
1547 173774 000440      .ASCII  *L*
1548
1549                      .SBTTL      DL11 AND PC11 FUNCTION CODE TABLE
1550 173776 024      DL11FN:
1551 173776 024      PC11FN: .BYTE   024         ;PATTERN USED TO COMPUTE THE LOAD POINTER,
1552 173777 375      .BYTE   375         ;FOR DETECTING END OF ABSOLUTE LOADER.
1553
1554                      .END

```

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AGAIN	173030	1105*	1182	1230	1234										
AUTPFC	173644	1457*													
BAGAIN	173310	1230*	1388	1435											
BTEST1	173336	1064	1279*												
CLRCS	173320	1226	1236*												
CMOHL	173740	851	1532*												
CMNSAC	173250	1148	1206*	1342											
CMNSGO	173256	1123	1167	1218*	1389										
CMN16S	173324	1118	1129	1158	1173	1193	1271*	1296	1338	1368	1396	1482	1494		
CMN2SS	173330	1087	1272*												
CMN3SS	173346	1277	1282*												
CMN4SS	173350	906	1108	1283*											
CONSEM	165444	686	697	841*	861										
CR	= 000015	572*	722	777	1544										
DE	165166	684*	1520												
DECODE	165474	854*	866												
DL11A	173364	1294*													
DL11B	173366	1296*	1512												
DL11C	173374	1304*	1511												
DL11CR	173560	504*	1297												
DL11F	173776	1298	1550*												
DSPLY	165414	620*	1068												
DSPTCH	165530	677	889*												
ENDTST	165740	1019*													
EX	165210	700*	1525												
GETCHR	165354	721	789*	791	848	850									
GETUM	165216	684	693	718*	904										
HRUDT	165400	584*	685	1524	1525	1526	1527								
IRUDT	173000	1057*	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522		
INLSV	173024	91	1099*	1271											
JMP1	165112	640*													
JMP2	165122	652*	653												
JMP2A	165124	654*	653*												
JTFS11	173056	1270	1469	1476*											
KRUDT	165200	680*	726												
LA	165200	693*	1527												
LF	= 000012	573*													
LTRN	165002	914*	1019												
LSTST	165164	675*													
MATCH	165010	650*	655*												
MEMBER	165770	1013	1048*												
MENTST	165700	997*													
OUT	165430	702	832*												
PC	= 000007	570*	638	720	741	746	748	757	770	772	774	826	828	833	
		841	844	903	997	1061	1239*	1278	1400	1457					
PC11A	173700	1492*													
PC11B	173706	1494*	1521												
PC11C	173714	1501*													
PC11CR	173550	583*	1495												
PC11F	173776	1496	1551*												
POUT	165400	595*	596	635											
PSV	= 173776	553*													
PRINT	173700	1301	1306*												
PUTCHR	165470	747	756	773	805*	806	845								

PUTCHR	165330	770*	827	812											
PUTUM	165200	741*	829	831	834	836									
RDY	173532	1304*	1488												
READ	165160	807*													
RKNSA	173144	1156*													
RKNSB	173146	1158*	1515												
RKNSC	173154	1161*													
RKNSCH	173164	576*	1159												
RKNSD	173720	1160*	1505*												
RKNSA	173002	1480*													
RKNSB	173004	1482*	1520												
RKNSC	173072	1485*													
RKNSCH	173040	578*	1483												
RKNSD	173014	1079*	1084												
RP13A	173000	1115*													
RP13B	173002	1118*	1519												
RP13C	173004	1121*	1383												
RP13CP	173014	577*	1119												
RP13F	173720	1120*	1506*												
RP14A	173224	1191*													
RP14B	173226	1193*	1515												
RP14C	173234	1197*													
RP14CR	176700	580*	1194												
RP14F	173014	1080*	1195												
RS14A	173440	1336*													
RS14B	173442	1338*	1514												
RS14C	173450	1341*													
RSYACR	172000	581*	1339												
RSYAFB	173015	1082*	1340												
RX11A	173544	1394*													
RX11B	173546	1396*	1522												
RX11C	173554	1399*													
RX11CR	177170	582*	1397												
RX11F	173450	1350*	1398												
R0	= 000000	561*	665	694	718*	727*	728*	729*	730*	744*	751*	830*	832*	835*	
		847*	857*	671	890	1049*	1115	1127	1132	1156	1171	1191	1197	1282*	
R1	= 000001	1283	1291	1336	1341	1366	1394	1400	1480	1485	1492				
		562*	759	761	826*	828*	833*	841*	865*	871*	872*	873	889	903*	
		906*	1061*	1121*	1134*	1135	1137*	1138	1140*	1141	1143*	1144*	1146	1166*	
		1176*	1177*	1178	1181	1197*	1198*	1199*	1206*	1218*	1219	1222*	1223	1225	
		1237	1236*	1278*	1286*	1306	1321*	1322	1324	1341*	1371*	1373*	1375*	1378	
		1307*	1361*	1385	1387	1418	1420*	1421	1423*	1433	1441*	1445	1447	1457*	
R2	= 000002	1485*	1487*												
		563*	635*	636	637	639	640	641	642	643	660	661	663	670*	
		671	672	673	675	719*	722	724*	725*	730	741*	745*	748*	753*	
		756*	770*	774*	776*	777*	791*	792*	807	808*	843*	849*	854	940*	
		942*	943*	944*	945*	946*	947	949*	950*	951	952*	954*	956*	957*	
		958	972	973*	975	977	1033	1137	1140	1144	1177	1198	1221	1227	
		1232	1287*	1305	1326	1375	1381	1399	1402	1417	1418	1433			
R3	= 000003	564*	617*	618*	619*	620*	621*	622*	623	624*	625*	626*	627*	628*	
		629*	636*	637	639*	640*	641*	642*	643	648*	649	650*	651	652	
		671*	673	675	720*	746*	757*	772*	815	816	844*	851*	854	858	
		941*	958	965	969*	975*	977*	997*	999*	1001*	1003	1004	1008*	1009*	
		1010*	1011	1014	1048	1049	1121	1132*	1133*	1134	1161*	1162*	1163*	1164*	

R4	1165*	1166	1176	1219*	1220*	1221*	1222	1283*	1284*	1301*	1316*	1324*	1326
R5	1329*	1330	1371	1399*	1402*	1420	1426*	1436*	1441	1442*	1447*	1449	
R6	565*	696*	830	873	889*	894	980*	1048*	1086*	1105	1106	1271*	1272
R7	1261	1285	1286	1287	1288								
SIZE	546*	685*	690	694*	700	701*	835	837*	878	939*	941	943	945
SP	947	950	951	952	954	955*	956	957	967	1004	1014	1035*	1039
SI	1306*	1309*	1315*	1316	1325*	1421*							
START	567*												
START1	568*												
START2	99*	1035*	1302										
START3	569*	720*	832	837	967	972*	974	1030*	1050*	1470*			
SKR	649*	1524											
SKRST	1239*	1452											
TEST1	1061*												
TEST2	1064*												
TEST3	1068*												
TEST4	554*	1086											
TEST5	1096*												
TEST6	617*	1476											
TEST7	635*												
TKA	644*												
TKS	654*												
TPB	670*												
TPS	939*	1280											
TSLSR	959	972*											
TU10A	550*	792											
TU10B	555*	749											
TU10C	558*	827*											
TU10D	557*	805											
TU10E	965*	973											
TU10F	1300*												
TU10G	1309*	1518											
TU10H	1371*												
TU10I	574*	1369											
TU10J	1074*	1370											
TU10K	1127*												
TU10L	1127*	1513											
TU10M	1132*												
TU10N	579*	1130											
TU10O	1131	1357*											
TU10P	1171*												
TU10Q	1173*	1517											
TU10R	1176*												
TU10S	575*	1174											
TU10T	1175	1514*											
TU10U	577*	858											
TU10V	592*	801											
TU10W	599*	801	939										
TU10X	602*												
TU10Y	940*	953	960*										
TU10Z	906	908	976*										
VECTO	671	1512*											
X100	674	723	759*	775	914								
X300	815*	1040											

	174*	500*	630	638	644	659	662	664	674	676	1054*
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REV. A NUMBER M9301-0-12 SIZE CODE BCS


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B

B

A

A

FIRST USED CN OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
DRN. D. ZWICKER		DATE 4-MAR-77	 DIGITAL EQUIPMENT CORPORATION <small>MAYNARD, MASSACHUSETTS</small>	
CHK'D <i>B. Pawluc</i>		DATE 8-MAR-77		
ENG.	DATE			
PROJ. ENG.	DATE			
PROD.	DATE			
NEXT HIGHER ASSEMBLY			TITLE 512 X 4 ROM/PROM PATTERN SPEC 23332A9	
_____ H _____				
SCALE _____ H _____				
SHEET 1 OF 26		SIZE CODE BCS	NUMBER M9301-0-12	REV. A
DIST.				

REV. A	CHANGE NO. M9301-00010
ORIGINATED	
CHK 1	

DEC FORM NO. DRB 109

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147	TEST1	THIS TEST VERIFIES THE UNCONDITIONAL BRANCH
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203	TEST4	TEST "ROR", MODE "0", AND "BVC", "BHS", "BFI", "BNE"
222	TEST5	TEST "BHI", "BLT", AND "BLOS"
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260	TEST7	TEST REGISTER DATA PATH
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752		THIS IS THE START OF THE TC11/T056 BOOT STRAP (DECTAPE, TC11-G)
784		THIS IS THE START OF THE TM11/T014 BOOT STRAP (MAGNETIC TAPE, TM11)
792		CODE TO CLEAN UP WORLD AND TRY BOOTSTRAP AGAIN
798		THIS IS THE START OF THE RP11/RP03 BOOT STRAP (DISK PACK, RP11-C)
795		THIS IS THE START OF THE COMMON READ CODE
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.REN X

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DQM9A-A-D
PRODUCT NAME: PDP11/60, PDP11/70 ROM
BOOTSTKAAP/TEST PROGRAM
PROGRAM DATE: JANUARY 1977
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: JIM KAPADIA

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139 165000
147
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(2) 165000
148
149 165000
150
151 165000 000401
152 165002 000000
153
161
(2)
(3)
(3)
(3)
(3)
(3)
(2) 165004
162
163 165004 005006
164 165006 100403
165 165010 102402
166 165012 101001
167 165014 101401
168 165016 000000
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(2) 165020
183 165020 005306
184 165022 100004
185 165024 001403
186 165026 002002
187 165030 003001
188 165032 003401
189 165034 000000

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. * BASE1
;*****
;SBTTL TEST1 THIS TEST VERIFIES THE UNCONDITIONAL BRANCH
;*
;* THE REGISTERS AND CONDITION CODES ARE ALL UNDEFINED WHEN
;* THIS TEST IS ENTERED AND THEY SHOULD REMAIN THAT WAY UPON
;* THE COMPLETION OF THIS TEST.
;*****
TST1:
UIAG:
BR TST2 ; * BRANCH ALWAYS
HALT

;*****
;SBTTL TEST2 TEST "CLR", MODE "0", AND "BMI","BVS","BHI","BLOS"
;*
;* THE REGISTERS AND CONDITION CODES ARE ALL UNDEFINED WHEN
;* THIS TEST IS ENTERED. UPON COMPLETION OF THIS TEST THE "SP"
;* (R6) SHOULD BE ZERO AND ONLY THE "Z" FLIP-FLOP WILL BE SET.
;*****
TST2:
CLR SP ;N=0,Z=1,V=0,C=0,SP=000000
BHI 15 ; V BRANCH IF N=1
BVS 15 ; V BRANCH IF V=1
BHI 15 ; V BRANCH IF Z AND C ARE BOTH 0
BLOS TST3 ; * BRANCH IF (Z XOR C)=1
181: HALT

;*****
;SBTTL TEST3 TEST "DEC", MODE "0", AND "BPL","BEQ","BGE","BGT","BLE"
;*
;* UPON ENTERING THIS TEST THE CONDITION CODES ARE:
;* N = 0, Z = 1, V = 0, AND C = 0.
;* THE REGISTERS ARE: R0 = ?, R1 = ? R2 = ?
;* R3 = ? R4 = ? R5 = ? SP = 000000
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES WILL BE:
;* N = 1, Z = 0, V = 0, AND C = 0
;* THE REGISTERS AFFECTED BY THE TEST ARE:
;* SP = 177777
;*****
TST3:
DEC SP ;N=1,Z=0,V=0,C=0,SP=177777
BPL 15 ; V BRANCH IF N=0
BEQ 15 ; V BRANCH IF Z=1
BGE 15 ; V BRANCH IF (N XOR V)=0
BGT 15 ; V BRANCH IF Z AND (N XOR V) ARE BOTH 0
BLE TST4 ; * BRANCH IF (Z OR (N XOR V))=1
182: HALT
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(2) 165036
204 165036 006006
205 165040 102003
206 165042 103002
207 165044 101001
208 165046 001001
209 165050 000000
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(2) 165052
223 165052 000264
224 165054 101003
225 165056 000270
226 165060 002401
227 165062 101401
228 165064 000000
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(1) 165066
242 165066 000244

```
TEST3 TEST "DEC", MODE "0", AND "BPL","BEQ","BGE","BGT","BLE"
;*****
;SBTTL TEST4 TEST "ROR", MODE "0", AND "BVC","BHIS","BHI","BNE"
;*
;* UPON ENTERING THIS TEST THE CONDITION CODES ARE:
;* N = 1, Z = 0, V = 0, AND C = 0.
;* THE REGISTERS ARE: R0 = ?, R1 = ? R2 = ?
;* R3 = ? R4 = ? R5 = ? SP = 177777
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES WILL BE:
;* N = 0, Z = 0, V = 1, AND C = 1
;* THE REGISTERS AFFECTED BY THE TEST ARE:
;* SP = 077777
;*****
TST4:
ROR SP ;N=0,Z=0,V=1,C=1,SP=077777
BVC 15 ; V BRANCH IF V=0
BHIS 15 ; V BRANCH IF C=0
BHI 15 ; V BRANCH IF C AND Z ARE BOTH 0
BNE TST5 ; * BRANCH IF Z=0
183: HALT

;*****
;SBTTL TEST5 TEST "BHI", "BLT", AND "BLOS"
;*
;* UPON ENTERING THIS TEST THE CONDITION CODES ARE:
;* N = 0, Z = 0, V = 1, AND C = 1.
;* THE REGISTERS ARE: R0 = ?, R1 = ? R2 = ?
;* R3 = ? R4 = ? R5 = ? SP = 077777
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES WILL BE:
;* N = 1, Z = 1, V = 1, AND C = 1
;* THE REGISTERS ARE ALL UNAFFECTED BY THE TEST.
;*****
TST5:
SEZ ;N=0,Z=1,V=1,C=1
BHI 15 ; V BRANCH IF Z AND C ARE BOTH 0
SEN ;N=1,Z=1,V=1,C=1
BLT 15 ; V BRANCH IF (N XOR V)=1
BLOS TST6 ; * BRANCH IF (Z OR C)=1
184: HALT ;STOP HERE IF A BRANCH FAILED

;*****
;SBTTL TEST6 TEST "BLE" AND "BGT"
;*
;* UPON ENTERING THIS TEST THE CONDITION CODES ARE:
;* N = 1, Z = 1, V = 1, AND C = 1.
;* THE REGISTERS ARE: R0 = ?, R1 = ? R2 = ?
;* R3 = ? R4 = ? R5 = ? SP = 077777
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES WILL BE:
;* N = 1, Z = 0, V = 1, AND C = 1
;* THE REGISTERS ARE ALL UNAFFECTED BY THE TEST.
;*****
TST6:
CLZ ;N=1,Z=0,V=1,C=1
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243 165070 003001
244 165072 003001
245 165074 000000
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BLE 15 ; V BRANCH IF (Z OR (N XOR V))=1  
BLT TST7 ; * BRANCH IF Z AND (N XOR V) ARE BOTH 0  
HALT ;STOP HERE IF A BRANCH FAILED  
;*****  
;SBTTL TEST7 TEST REGISTER DATA PATH  
;*  
;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
;* N = 1, Z = 0, V = 1, AND C = 1.  
;* THE REGISTERS ARE: R0 = 7, R1 = 7, R2 = 7  
;* R3 = 7, R4 = 7, R5 = 7, SP = 077777.  
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
;* N = 0, Z = 1, V = 0, AND C = 0.  
;* THE REGISTERS ARE LEFT AS FOLLOWS:  
;* R0 = 125252, R1 = 000000, R2 = 125252, R3 = 125252  
;* R4 = 125252, R5 = 125252, AND SP = 125252  
;*  
;*****  
TST7:  
MOV #125252,SP ;N=1,Z=0,V=0,C=1,SP=125252  
MOV SP,R0 ;N=1,Z=0,V=0,C=1,R0=125252  
MOV R0,R1 ;N=1,Z=0,V=0,C=1,R1=125252  
MOV R1,R2 ;N=1,Z=0,V=0,C=1,R2=125252  
MOV R2,R3 ;N=1,Z=0,V=0,C=1,R3=125252  
MOV R3,R4 ;N=1,Z=0,V=0,C=1,R4=125252  
MOV R4,R5 ;N=1,Z=0,V=0,C=1,R5=125252  
SUB R5,R1 ;N=0,Z=1,V=0,C=0, AND R1=000000  
BLT 15 ; V BRANCH IF (N XOR V)=1  
BEQ TST10 ; * BRANCH IF Z=1  
HALT  
;*****  
;SBTTL TEST10 TEST "ROL", "BCC", "BLT"  
;*  
;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
;* N = 0, Z = 1, V = 0, AND C = 0.  
;* THE REGISTERS ARE: R0 = 125252, R1 = 000000, R2 = 125252  
;* R3 = 125252, R4 = 125252, R5 = 125252, SP = 125252.  
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
;* N = 0, Z = 0, V = 1, AND C = 1.  
;* THE REGISTERS ARE LEFT UNCHANGED EXCEPT FOR  
;* R2 WHICH SHOULD NOW EQUAL 052524.  
;*  
;*****  
TST10:  
ROL R2 ;N=0,Z=0,V=1,C=1, AND R2 = 052524  
BCC 15 ; V BRANCH IF C=0  
BLT TST11 ; * BRANCH IF (N XOR V)=1  
HALT  
;*****  
;SBTTL TEST11 TEST "ADD", "INC", "COM", AND "BCS", "BLE"  
;*  
;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
;* N = 0, Z = 0, V = 1, AND C = 1.  
;* THE REGISTERS ARE: R0 = 125252, R1 = 000000, R2 = 052524
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305 165136 200223
306 165140 205203
307 165142 005123
308 165144 000301
309 165146 103401
310 165150 003401
311 165152 000000
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R3 = 125252, R4 = 125252, R5 = 125252, SP = 125252.  
UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
N = 0, Z = 1, V = 0, AND C = 0.  
THE REGISTERS ARE LEFT UNCHANGED EXCEPT FOR  
R5 WHICH NOW EQUALS 000000, AND R1 WHICH IS ALSO 000000  
;*****  
TST11:  
ADD R2,R5 ;(R2 = 052524) + (R5 = 125252)  
INC R3 ;N=1,Z=0,V=0,C=0, AND R3=177776  
COM R3 ;N=1,Z=0,V=0,C=0, AND R3=177777  
ADD R3,R1 ;N=0,Z=1,V=0,C=1, AND R5 = 000000  
BCS 15 ;N=0,Z=1,V=0,C=0, AND R1 = 000000  
BLE TST12 ; V BRANCH IF C=1  
HALT ; * BRANCH IF (Z OR (N XOR V))=1  
;*****  
;SBTTL TEST12 TEST "ROR", "BIS", "ADD", AND "BLO", "BGE"  
;*  
;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
;* N = 0, Z = 1, V = 0, AND C = 0.  
;* THE REGISTERS ARE: R0 = 125252, R1 = 000000, R2 = 052524  
;* R3 = 000000, R4 = 125252, R5 = 125252, SP = 125252.  
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
;* N = 0, Z = 1, V = 0, AND C = 0.  
;* THE REGISTERS ARE LEFT UNCHANGED EXCEPT FOR  
;* R3 WHICH SHOULD BE MODIFIED BACK TO 000000, AND  
;* R4 WHICH SHOULD NOW EQUAL 052525  
;*  
;*****  
TST12:  
ROR R4 ;N=0,Z=0,V=1,C=0, AND R4 = 052525  
BIS R4,R3 ;N=0,Z=0,V=0,C=0, AND R3 = 052525  
ADD R5,R5 ;N=1,Z=0,V=0,C=0, AND R3 = 177777  
INC R3 ;N=0,Z=1,V=0,C=0, AND R3 = 000000  
BLO 15 ; V BRANCH IF C=1  
BGE TST13 ; * BRANCH IF (N XOR V)=0  
HALT  
;*****  
;SBTTL TEST13 TEST "DEC" AND "BLOS", "BLT"  
;*  
;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
;* N = 0, Z = 1, V = 0, AND C = 0.  
;* THE REGISTERS ARE: R0 = 125252, R1 = 000000, R2 = 052524  
;* R3 = 000000, R4 = 052525, R5 = 125252, SP = 125252.  
;* UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
;* N = 1, Z = 0, V = 0, AND C = 0.  
;* THE REGISTERS ARE LEFT UNCHANGED EXCEPT FOR  
;* R1 WHICH SHOULD NOW EQUAL 177777  
;*  
;*****  
TST13:  
DEC R1 ;N=1,Z=0,V=0,C=0,R1=177777  
BLOS 15 ; V BRANCH IF (Z OR C)=1
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470 ;*****  
(2) ,SBTTL TEST20 TEST ASH, AND SWAB  
(3) ;*  
(3) ;* WHEN THIS TEST IS ENTERED THE CONDITION CODES ARE:  
(3) ;* N = 0, Z = 0, V = 0, AND C = 0.  
(3) ;* THE REGISTERS ARE: R0 = 000000, R1 = 000001, R2 = 000000  
(3) ;* R3 = 000000, R4 = 052525, R5 = 052525, SP = 125252.  
(3) ;* UPON COMPLETION OF THIS TEST THE CONDITION CODES ARE:  
(3) ;* N = 0, Z = 1, V = 0, AND C = 1.  
(3) ;* THE REGISTERS ARE LEFT UNCHANGED EXCEPT FOR  
(3) ;* R1 WHICH SHOULD NOW EQUAL 000000  
(3) ;*  
(3) ;*****  
(2) TST20:  
471 165334 072127 000015 ASH #15,R1 ;LEFT SHIFT BIT0 INTO BIT15  
472 ;N=1,Z=0,V=1,C=0, AND R1 = 100000  
473 165340 000301 SWAB R1 ;SWITCH BYTES OF R1, R1 = 000200  
474 ;N=1,Z=0,V=0,C=0  
475 165342 072127 177770 ASH #-10,R1 ;RIGHT SHIFT R1 8 PLACES  
476 ;N=0,Z=1,V=0,C=0, R1 = 000000  
477 165346 001401 BEQ TST21 ; * BRANCH IF Z=1  
478 165350 000000 HALT ;EITHER "SWAB" OR "ASH" FAILED  
479 ;*  
490 ;*****  
(2) ,SBTTL TEST21 TEST "JSR", "RTS", "RTI", & "JMP"  
(3) ;*  
(3) ;* THIS TEST FIRST SETS THE STACK POINTER TO 776,  
(3) ;* AND THEN VERIFIES THAT "JSR", "RTS", "RTI", AND "JMP"  
(3) ;* ALL WORK PROPERLY.  
(3) ;*  
(3) ;* ON ENTRY TO THIS TEST THE STACK POINTER "SP" IS INITIALIZED  
(3) ;* TO 00776 AND IS LEFT THAT WAY ON EXIT.  
(3) ;*  
(3) ;*****  
(2) TST21:  
491 165352 032737 000400 173024 BIT #400,#173024 ;DO THE MEMORY-MODIFYING  
492 ;GROUP OF TESTS? (THIS TEST,  
493 ;MEMORY TEST, CACHE TEST)  
494 ;YES  
495 165360 001001 BNE 115 ;SKIP, GO DIRECTLY TO BOOT  
496 165362 000571 BR JUMP0 ;SET UP THE STACK POINTER  
497 165364 012706 000776 115: MOV #776,SP ;TRY TO JSR TO 15  
498 165370 004767 000002 JSR PC,15 ;THE "JSR" MUST HAVE FAILED  
499 165374 000000 105: HALT ;WAS THE CORRECT ADDRESS PUSHED?  
500 165376 022716 165374 15: CMP #105,(SP) ;BRANCH IF YES  
501 165402 001401 BEQ 25 ;WRONG THING PUSHED ON STACK  
502 165404 000000 HALT ;CHANGE THE ADDRESS ON THE STACK  
503 165406 012716 165416 25: MOV #35,(SP) ;TRY TO RETURN TO 35  
504 165412 000207 RTS PC ;DID NOT RETURN PROPERLY  
505 165414 000000 HALT ;PUSH A ZERO ON THE STACK  
506 165416 005046 35: CLR -(SP) ;PUSH THE RETURN ADDRESS ON STACK  
507 165420 012746 165430 MOV #45, -(SP) ;SEE IF AN "RTI" WORKS  
508 165424 000002 RTI ;THE "RTI" FAILED  
509 165426 000000 HALT ;TRY TO "JMP"  
510 165430 000137 165436 45: JMP #055 ;THE "JMP" FAILED  
511 165434 000000 HALT
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512 165436 55: ;ADDRESS TO "JMP" TO  
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530 ;*****  
(2) ,SBTTL TEST22 TEST MAIN MEMORY FROM VIRTUAL 001000 TO LAST ADDR.  
(3) ;*  
(3) ;* THIS TEST WILL TEST MAIN MEMORY WITH THE CACHE DISABLED, FROM  
(3) ;* VIRTUAL ADDRESS 001000 TO LAST ADDR. IF THE DATA DOES NOT COMPARE  
(3) ;* PROPERLY THE TEST WILL HALT AT EITHER 165516 OR 165536. IF A  
(3) ;* PARITY ERROR OCCURS THE TEST WILL HALT AT ADDRESS 165750, WITH  
(3) ;* THE PC + 2 ON THE STACK WHICH IS IN THE KERNEL 0-SPACE.  
(3) ;*  
(3) ;* IN THIS TEST THE REGISTERS ARE INITIALIZED AS FOLLOWS:  
(3) ;* R0 = 001000, R1 = DATA READ, R2 = 001000, R3 = 177746 (CACHE CONTROL REG.)  
(3) ;* R4 = COUNT VALUE, R5 = LAST MEMORY ADDRESS SP = 000776  
(3) ;*  
(3) ;*****  
(2) TST22:  
531 165436 012700 165446 MOV #105,R0 ;SAVE RETURN ADDRESS  
532 165442 000137 173310 JMP #SIZE ;GO SIZE MEMORY, RETURN WITH R5 CONTAINING  
533 ;THE LAST MEMORY ADDRESS  
534 165446 012737 165750 000114 105: MOV #CONT,#114 ;SET UP PARITY VECTOR  
535 165454 005037 000116 CLR #116 ;SET PROCESSOR STATUS WORD TO ZERO  
536 165460 012703 177746 MOV #177746,R3 ;CACHE CONTROL REGISTER ADDRESS  
537 165464 012713 000014 MOV #MISS,(R3) ;FORCE MISS BOTH GROUPS  
538 165470 012732 001000 MOV #1000,R2 ;FIRST ADDRESS STORAGE  
539 165474 010200 15: MOV R2,R0 ;SETUP FIRST ADDRESS  
540 165476 010010 MOV R0,(R0) ;LOAD EACH ADDRESS WITH ITS  
541 ;OWN ADDRESS  
542 165500 005720 TST (R0)+  
543 165502 020005 CMP R0,R5  
544 165504 101774 BLOS 15  
545 165506 010200 MOV R2,R0 ;SET STARTING ADDRESS IN R0  
546 165510 011001 25: MOV (R0),R1 ;GET THE DATA  
547 165512 020001 CMP R0,R1 ;IS IT CORRECT?  
548 165514 001401 BEQ 35 ;BRANCH IF YES  
549 165516 000000 HALT ;DATA ERROR ON READING MEMORY LOCATION  
550 ;R0=ADDRESS, R1=DATA RECEIVED, R0=DATA EXPECTED  
551 165520 005120 35: COM (R0)+ ;COMPLEMENT DATA AND INCREMENT ADDRESS  
552 165522 020005 CMP R0,R5  
553 165524 101771 BLOS 25  
554 165526 014001 45: MOV -(R0),R1 ;READ THE DATA (IT SHOULD NOW BE THE  
555 ;COMPLEMENT OF THE ADDRESS)  
556 165530 005101 COM R1 ;COMPLEMENT BEFORE CHECKING  
557 165532 020001 CMP R0,R1 ;IS THE DATA CORRECT?  
558 165534 001401 BEQ 55 ;BRANCH IF YES  
559 165536 000000 HALT ;DATA ERROR ON READING MEMORY LOCATION  
560 ;R0=ADDRESS, R1=DATA RECEIVED, R0=DATA EXPECTED  
561 165540 020002 55: CMP R0,R2  
562 165542 001371 BNE 45
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SBTTL CACHE MEMORY DIAGNOSTIC TESTS

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THE FOLLOWING TWO TESTS ARE CACHE MEMORY TESTS, IF EITHER OF THEM FAILS TO RUN SUCCESSFULLY THEY WILL COME TO A HALT IN THE M9301 ROM. IF YOU DESIRE TO TRY TO BOOT YOUR SYSTEM, OR DIAGNOSTIC ANYWAY, YOU CAN PRESS "CONTINUE" AND THE PROGRAM WILL FORCE MISSES IN THE CACHE AND GO TO THE BOOT STRAP THAT HAS BEEN SELECTED.

SBTTL TEST23 TEST CACHE DATA MEMORY

THIS TEST WILL CHECK THE DATA MEMORY IN THE CACHE, ON THE PDP 11/60 THERE IS ONLY ONE GROUP (1-K), ON PDP 11/70 THERE ARE TWO GROUPS, 1/2 K EACH. THE TEST LOADS 052525 INTO AN ADDRESS COMPLEMENTS IT TWICE AND THEN READS THE DATA, THEN IT CHECKS TO INSURE THAT THE DATA WAS A HIT. THEN THE SEQUENCE IS REPEATED ON THE SAME ADDRESS WITH 125252 AS THE DATA. ALL CACHE MEMORY DATA LOCATIONS ARE TESTED IN THIS WAY. IF EITHER GROUP FAILS AND THE OPERATOR PASSES CONTINUE THE PROGRAM WILL TRY TO BOOT WITH THE CACHE DISABLED.
THE REGISTERS ARE INITIALIZED AS FOLLOWS FOR THIS TEST:
R0 = 4000 (ADDRESS) R1 = 2 (COUNT), R2 = 1000 (COUNT)
R3 = 177746 (CONTROL REG.), R4 = 125252 (PATTERN) R5 = LAST MEMORY ADDRESS
SP = 000776 (FLAG UP ZERO PUSHED ON STACK)

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TST23: CLR (SP) ;SET THE CYCLE FLAG TO ZERO,PATTERN FLAG TO 0  
MOV #125252,R4 ;SET UP R4 FOR TEST  
MOV #GRP0,(R5) ;FORCE REPLACE GROUP 0 AND FORCE MISS GROUP 1 (ON 11/70)  
MOV #4000,R0 ;FORCE MISS UPPER 1/2 K OF CACHE ON 11/60  
MOV #1000,R2 ;SET STARTING ADDRESS INTO R0  
MOV #1000,R2 ;SET COUNT TO 1000 OCTAL  
COM R4 ;COMPLEMENT DATA IN R4  
MOV R4,(R0) ;WRITE THE TEST PATTERN  
COM (R0) ;DOUBLE COMPLEMENT DATA AND  
COM (R0) ;MAKE SURE DATA IS IN THE CACHE  
CMP (R0),R4 ;COMPARE DATA & SET BIT 0 IN HIT/MISS REG.  
BEQ 53 ;BRANCH IF DATA MATCHES  
HALT ;CACHE DATA DIDN'T MATCH  
ROR #177752 ;R0=ADDRESS, R4=EXPECTED DATA  
BCS 43 ;WAS THE LAST MEMORY REFERENCE A HIT?  
HALT ;BRANCH IF YES  
 ;CACHE FAILED TO HIT  
 ;R0=ADDRESS THAT WAS REFERENCED
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BR 000MISS ;ABORT REST OF TEST IF "CONTINUE" PRESSED  
COMB (SP) ;  
BNE 33 ;  
TST (R0)+ ;MOVE TO NEXT ADDRESS  
SOB R2,53 ;BRANCH IF NOT DONE  
MOV #GRP1,(R5) ;FORCE REPLACE GROUP 1 AND FORCE MISS GROUP 0 (ON 11/70)  
MOV #6000,R0 ;FORCE MISS LOWER 1/2 K OF CACHE ON 11/60  
COMB 1(SP) ;COMPLEMENT THE CYCLE FLAG  
BNE 13 ;LOOP IF NOT DONE
```

SBTTL TEST24 TEST MEMORY WITH THE DATA CACHE ON
THIS TEST CHECKS VIRTUAL MEMORY FROM 001000 THRU LAST ADDRESS TO INSURE THAT YOU CAN GET HITS ALL THE WAY UP THROUGH MAIN MEMORY. ON THE PDP 11/70, IT STARTS WITH GROUP 1 ENABLED, THEN TESTS GROUP 0, AND FINALLY CHECKS MEMORY WITH BOTH GROUPS ENABLED. ON THE PDP 11/60, THE TEST IS DONE WITH THE WHOLE CACHE ENABLED.

UPON ENTRY THE REGISTERS WILL BE SET UP AS FOLLOWS:
R0 = 001000 (ADDRESS), R1 = 3 (PASS COUNT), R2 = (FIRST ADDRESS),
R3 = 177746 (CONTROL REG.),
R5 = (LAST MEMORY ADDRESS), SP = 776

UPON COMPLETION OF THIS TEST MAIN MEMORY FROM VIRTUAL ADDRESS 001000 THRU LAST ADDRESS WILL CONTAIN ITS OWN VIRTUAL ADDRESS.

```
TST24: MOV #1000,R2 ;SETUP FIRST ADDRESS  
MOV R2,R0 ;FIRST ADDRESS IS 1000 OCTAL  
MOV R0,(R0) ;FILL MEMORY WITH ADDRESSES  
TST (R0)+  
CMP R0,R5  
BLOS 13  
MOV #3,R1 ;SET PASS COUNT TO THREE  
CLR (SP)  
BIT #2,#175024 ;MICRO-SWITCH 2 INDICATES PDP 11/60 OR 11/70  
BEQ 65 ;IT IS PDP 11/60  
MOV #GRP0,(SP) ;LOAD CODE TO FORCE GROUP 0 ONTO STACK  
MOV R2,R0 ;FIRST ADDRESS  
COM (R0) ;DOUBLE COMPLEMENT DATA AND  
COM (R0) ;MAKE SURE IT IS IN THE CACHE.  
CMP R0,(R0) ;COMPARE DATA, AND SET BIT 0 IN HIT/MISS REG  
BEQ 53 ;ALSO POINT TO NEXT ADDRESS  
HALT ;BRANCH IF DATA MATCHES  
TST (R0)+ ;DATA DIDN'T MATCH R0 = ADDRESS + 2  
ROR #177752 ;WAS THE LAST MEMORY REFERENCE A HIT?  
BCS 43 ;BRANCH IF YES  
BR 000MISS ;HIT FAILED TO OCCUR R0 = ADDRESS + 2  
 ;ABORT REST OF TEST IF "CONTINUE" PRESSED  
CMP R0,R5  
BLOS 33
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746 173112 032737 000010 173024 CHKSWR: BIT #10,0#173024 ;IS MICRO-SWITCH SET TO
747 ;DISABLE LOOKING AT SWITCH REGISTER?
748 173120 001340 BNE STANT1 ;IF OFF, DONT LOOK AT SWR
749 173122 000734 BR START ;IF ON, SENSE THE CONSOLE SWREG
750
751
752 .SBTTL THIS IS THE START OF THE TC11/TU56 BOOT STRAP (DECTAPE, TC11-G)
753 ;COMMAND REGISTER ADDRESS IS 177342
754
755 173124 010211 TU56: MOV R2,(R1) ;LOAD UNIT NUMBER INTO C.S.R.
756 173126 052311 BIS (R3)+,(R1) ;"OR" REWIND COMMAND INTO C.S.R.
757 173130 005711 1S: TST (R1) ;SEE IF ERROR BIT IS SET
758 173132 100376 BPL 1S ;WAIT UNTIL BIT IS OF C.S.R. IS SET
759 173134 005761 177776 TST -2(R1) ;IS THE ERROR "END ZONE"
760 173140 100017 BPL AGAIN ;BRANCH IF NOT "END ZONE"
761 173142 000420 BR NP03
762
763
764 .SBTTL THIS IS THE START OF THE TM11/TU10 BOOT STRAP (MAGNETIC TAPE, TM11)
765 ;COMMAND REGISTER ADDRESS IS 172522
766
767 173144 010211 TU10: MOV R2,(R1) ;LOAD UNIT NUMBER INTO C.S.R.
768 173146 006061 177776 ROR -2(R1) ;IS THE SELECTED DRIVE ON LINE
769 173152 103375 BCC 1S ;WAIT FOR BIT TO BE SET BY DRIVE
770 173154 052311 BIS (R3)+,(R1) ;"OR" REWIND COMMAND INTO C.S.R.
771
772 173156 105711 2S: TSTB (R1) ;THIS COMMAND ALSO SETS 000 BPI 9 CHAN.
773 173160 102376 RPL 2S ;SEE IF THE REWIND IS COMPLETE
774 173162 012761 177777 000002 MOV #-1,-2(R1) ;WAIT FOR READY BIT OF C.S.R. TO BE SET
775 173170 112311 MOVVB (R3)+,(R1) ;SET RECORD COUNTER TO SKIP ONE RECORD
776 173172 TU10A: ;LOAD SPACE FORWARD COMMAND INTO C.S.R.
777 173172 030511 5S: BIT R5,(R1) ;TEST FOR "ERROR" AND "READY" BITS
778 173174 001776 BEQ 5S ;BRANCH IF NEITHER SET
779 173176 100003 BPL CMNSGD ;BRANCH TO COMMON READ IF NO ERRORS
780
781
782 .SBTTL CODE TO CLEAN UP WORLD AND TRY BOOTSTRAP AGAIN
783
784 173200 000025 AGAIN: RESET ;CLEAR ALL DEVICES AFTER ERROR
785 173202 000743 BR CHKSWR ;GO SET UP MEMORY MANAGEMENT AND UNIBUS MAP
786 ;AND ATTEMPT TO BOOT AGAIN.
787
788 .SBTTL THIS IS THE START OF THE RP11/RP03 BOOT STRAP (DISK PACK, RP11-C)
789 ;COMMAND REGISTER ADDRESS IS 176714
790
791 173204 010211 RP03: MOV R2,(R1) ;LOAD THE UNIT NUMBER INTO THE COMMAND REG.
792
793
794 .SBTTL THIS IS THE START OF THE COMMON READ CODE
795
796 173206 012761 177000 000002 CMNSGD: MOV #-512,-2(R1) ;LOAD WORD COUNT OF 256 WORDS
797 173214 112302 MOVVB (R3)+,R2 ;LOAD READ FUNCTION INTO LO BYTE
798 ;& THEN LOAD READ FUNCTION INTO C.S.R.
799

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800
801 ;NOTE: THE ABOVE IS DONE BECAUSE RKB11
802 ;DOES NOT RECOGNIZE BYTE OPERATIONS
803 173216 042711 000377 BIC #577,(R1) ;ON THE BUS.
804 173222 000402 BR CMN1 ;CLEAR OUT LO BYTE OF THE C.S.R.
805
806
807 .#BASE4 ;ASSEMBLED AT 773224 & 773226
808 173224 173000 ;VECTOR TO THE START OF M9301 BOOTSTRAP
809 173226 000340 ;PROCESSOR STATUS TO ASSUME AT BOOT TIME
810
811 173230 050211 CMN1: BIS R2,(R1) ;MOVE THE READ FUNCTION INTO C.S.R.
812 173232 105711 G01: TSTB (R1) ;TEST FOR "READY" BIT
813 173234 100376 BPL G01 ;TEST FOR "READY" BIT
814 173236 005711 TST (R1) ;WAIT UNTIL READY IS SET
815 173240 100005 BPL CLRCS ;TEST FOR ERROR BIT
816 173242 105713 TSTB (R3) ;NO ERROR
817 173244 001355 BNE AGAIN ;IS IT TU16?
818 173246 021361 000014 CMP (R3),14(R1) ;NO
819 173252 001352 BNE AGAIN ;IF YES, WAS THE ERROR A FRAME COUNT ERROR?
820 ;IF NOT, TRY TO BOOT AGAIN
821 173254 105011 CLRCS: CLRB (R1) ;CLEAR COMMAND REGISTER. THIS WILL
822 ;STOP DECTAPE MOTION IF DEVICE WAS
823 ;TU56 - DON'T CLEAR HIGH BYTE
824 173256 005007 CLR PC ;START SECONDARY BOOT AT 0
825
826
827 .SBTTL THIS IS THE START OF THE RKXX/RK06 BOOT STRAP (DISK DUMMY)
828 ;COMMAND REGISTER ADDRESS IS 177400
829
830 173260 010061 000010 RK06: MOV R0,10(R1) ;LOAD DRIVE NUMBER INTO DRIVE SELECT REG.
831 173264 012711 000003 MOV #3,(R1) ;LOAD PACK ACKNOWLEDGE FUNCTION
832 173270 000740 BR TU10A

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.MAIN, MACY11 27(1006) 23-FEB-77 15:29 PAGE 19 OF 26 B-CS-M9301-0-12 A
DQM9A 23-FEB-77 14:55 THIS IS THE START OF THE RM11/RP04 BOOT STRAP (DISK PACK, RWP04)

834 .SBTTL THIS IS THE START OF THE RM11/RP04 BOOT STRAP (DISK PACK, RWP04)
835 ;COMMAND REGISTER ADDRESS IS 176700
836
837 173272 110061 000010 RP04: MOVW R0,10(R1) ;SELECT UNIT NUMBER TO BOOT FROM
838 173276 112311 MOVW (R3)+,(R1) ;ISSUE READ-IN PRESET COMMAND
839 173300 012761 014000 000032 MOV #14000,32(R1) ;SET FMT2 & ECC INHIBIT BITS
840 173306 000470 BR CMNSHM ;GO JOIN THE COMMON RM70 CODE

.MAIN, MACY11 27(1026) 23-FEB-77 15:29 PAGE 20 OF 26 B-CS-M9301-0-12 A
DQM9A 23-FEB-77 14:55 THIS IS THE START OF THE RM11/RP04 BOOT STRAP (DISK PACK, RWP04)

842
843
844 .SBTTL THIS IS THE MEMORY SIZING CODE
845 ;ENTER WITH R0=RETURN ADDRESS
846 ;EXIT WITH R5=LAST MEMORY ADDRESS
847
848 173310 012705 160000 SIZE: MOV #160000,R5 ;SETUP MEMORY CHECK LIMIT (28K)
849 173314 025037 000006 CLR #6 ;CLEAR LOC. 6 (TIMEOUT VEC,+2)
850 173320 012737 173320 000004 MOV #15,R#4 ;SETUP TIMEOUT VECTOR
851 173326 012706 000776 15: MOV #770,SP ;SETUP STACK POINTER
852 173332 005745 TST =(R5) ;FIND LAST MEM. LUC.
853 173334 010027 MOV R0,PL ;RETURN
854
855 .SBTTL THIS IS THE START OF THE RM11/TU16 BOOT STRAP (MAGNETIC TAPE SYSTEM, TWU16)
856 ;COMMAND REGISTER ADDRESS IS 172440
857
858
859 173336 010061 000032 TU16: MOV R0,32(R1) ;LOAD UNIT NUMBER INTO SLAVE SELECT REG.
860 173342 052361 000032 BIS (R3)+,32(R1) ;MERGE IN FORMAT AND DENSITY BITS
861 173346 032761 010000 000012 15: BIT #MOL,12(R1) ;IS THE MEDIUM ON LINE?
862 173354 001774 BEQ 15 ;WAIT FOR BIT 12 OF DRIVE STATUS REG
863 173356 112311 MOVW (R3)+,(R1) ;ISSUE REWIND COMMAND
864 173360 105761 000012 25: TSTB 12(R1) ;IS DRIVE READY BIT SET YET?
865 173364 100375 BPL 25 ;WAIT FOR DRIVE READY BIT
866 173366 112311 MOVW (R3)+,(R1) ;ISSUE DRIVE CLEAR COMMAND
867 173370 105761 000012 35: TSTB 12(R1) ;IS DRIVE READY BIT SET?
868 173374 100375 BPL 35 ;WAIT UNTIL BIT 07 IS SET
869 173376 012761 177777 000006 MOV #-1,0(R1) ;SET SKIP COUNT TO 1 RECORD
870 173400 112311 MOVW (R3)+,(R1) ;ISSUE SPACE FORWARD COMMAND
871 173406 105761 000012 45: TSTB 12(R1) ;HAS THE DRIVE FINISHED THE SPACE?
872 173412 100375 BPL 45 ;WAIT UNTIL BIT 07 IS SET
873 173414 000425 BR CMNSHM ;GO JOIN COMMON RM70 CODE
874
875 .SBTTL THIS IS THE START OF THE PC11 BOOTSTRAP (HIGH SPEED PAPER TAPE READER)
876 ;THE STATUS REGISTER ADDRESS IS 177550
877
878 173416 012700 175424 PC11: MOV #15,R0 ;SAVE RETURN PC
879 173422 000732 BR SIZE ;GO SIZE MEMORY
880 ;RETURN WITH R5=LAST ADDR.
881 173424 010115 15: MOV R1,(R5)
882 173426 142705 000024 BICB #24,R5 ;MASK FOR SPECIAL ADDRESS
883 173432 010515 MOV R5,(R5) ;STORE OWN ADDRESS IN POINTER
884 173434 011503 25: MOV (R5),R3 ;GET BYTE POINTER
885 173436 005211 INC (R1) ;ENABLE TAPE READER
886 173440 105711 35: TSTB (R1) ;TEST DONE BIT
887 173442 100376 BPL 35 ;WAIT UNTIL READY
888 173444 116113 000002 MOVW 2(R1),(R3) ;STORE DATA AT BYTE POINTER
889 173450 005215 INC (R5) ;BUMP POINTER
890 173452 122703 000375 CMPB #375,R3 ;STORED JUMP OFFSET?
891 173456 001366 BNE 25 ;BRANCH IF NOT YET
892 173460 105223 INCB (R3)+ ;YES, ALL DONE
893 173462 000143 JMP =(R3) ;GO EXECUTE AS BRANCH
894
895 .SBTTL THIS IS THE START OF THE RM11/RN04 BOOT STRAP (FIXED HEAD DISK, RNS04)
896 ;COMMAND REGISTER ADDRESS IS 172040
897

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098
099 173464 110061 000010 R504: MOVB R0,10(R1) ;LOAD THE DRIVE NUMBER TO BOOT FROM
900
  
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902 .SBTTL THIS IS THE START OF THE COMMON RH-70 CODE
903
904 173473 016161 000016 000016 CMNSRH: MOV 16(R1),16(R1) ;TURN OFF ANY ACTIVE ATTENTION FLAGS
905 173476 000643 CSRH1: BR CMNSGO ;BRANCH TO COMMON READ CODE
906
907
908 .SBTTL THIS IS THE START OF THE RX11/RX01 BOOT STRAP (FLOPPY DISK)
909 ;COMMAND REGISTER ADDRESS IS 177170
910
911 173520 052705 000040 RX01: BIS #40,R5 ;ADD 'DONE' BIT TO 'ERROR' AND 'TR' BITS
912 173524 005700 TST R0 ;TEST UNIT NUMBER
913 173526 001421 BEQ 15 ;BRANCH IF UNIT 0 WAS SELECTED
914 173510 005723 TST (R3)+ ;ADD 2 TO FUNCTION CODE POINTER
915 173512 153511 15: BITB R5,(R1) ;TEST FOR 'TR' AND 'DONE' BITS
916 173514 001776 BEQ 15 ;WAIT UNTIL ONE IS SET
917 173516 112311 MOVB (R3)+,(R1) ;LOAD READ COMMAND FOR PROPER DRIVE
918 173520 012702 000002 MOV #2,R2 ;LOAD LOOP COUNT INTO R2
919 173524 105711 25: TSTB (R1) ;TEST FOR THE 'TR' BIT
920 173526 100376 BPL 25 ;WAIT UNTIL IT IS SET
921 173530 112761 000001 000002 MOVB #001,2(R1) ;LOAD TRACK ADDRESS THEN SECTOR NUMBER
922 173536 077206 SOB R2,25 ;LOOP BACK TO LOAD SECTOR NUMBER
923 173540 000511 35: BIT R5,(R1) ;TEST FOR 'ERROR', 'TR', AND 'DONE' BITS
924 173542 001776 BEQ 35 ;WAIT FOR ONE OF THE BITS
925 173544 100615 BMI AGAIN ;BRANCH TO RETRY BOOTSTRAP IF 'ERROR' BIT SET
926 173546 111311 MOVB (R3),(R1) ;LOAD EMPTY BUFFER COMMAND FOR PROPER DRIVE
927 173550 130511 45: BITB R5,(R1) ;TEST FOR 'TR' OR 'DONE' BITS
928 173552 001776 BEQ 45 ;WAIT FOR ONE OF THE BITS
929 173554 100003 BPL CHK240 ;BRANCH TO CHECK ADDRESS ZERO IF 'DONE' BIT
930 173556 116122 000002 MOVB 2(R1),(R2)+ ;STORE DATA IN MEMORY (R2 GOES FROM 000 TO 17)
931 173562 000772 BR 45 ;GO GET NEXT BYTE
932 173564 022737 000240 000000 CHK240: CMP #240,#0 ;CHECK THE FIRST ADDRESS BOOTED
933 173572 001202 BNE AGAIN ;BRANCH TO RETRY IF NOT A 'NOP'
934 173574 005007 CLR PC ;START SECONDARY BOOT AT ADDRESS ZERO
935
936 .SBTTL THIS IS THE START OF THE RK11/RK05 BOOT STRAP (DECPACK DISK CARTRIDGE, RK11-D)
937 ;COMMAND REGISTER ADDRESS IS 177404
938
939 173576 072227 000005 RK05: ASH #5,R2 ;LEFT SHIFT UNIT NUMBER 5 PLACES
940 173602 010261 000006 MOV R2,6(R1) ;LOAD UNIT NUMBER INTO DEVICE
941 173606 000733 BR CSRH1 ;BRANCH TO COMMON READ CODE
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947 173610 060017
948 173612 011
949 173613 003
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951 173614
952 173614 021
953 173615 071
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955 173616 004003
956 173620
957 173620 005
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959 173621 077
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963 173622 001300
964 173624 007
965 173625 011
966 173626 031
967 173627 071
968 173630 001000
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971 173632 007
972 173633 003
973 173634 027
974 173635 023
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.SBTTL FUNCTION CODES FOR THE ALL OF THE DEVICES
TU10S: .WORD 060017 ;REWIND SELECTED DRIVE AND SET 800 BPI
        .BYTE 011 ;SPACE FORWARD COMMAND FOR TU10
        .BYTE 003 ;READ COMMAND FOR TU10
        ;PACK ACKNOWLEDGE FOR RK06
RK06S:
RP04S: .BYTE 021 ;READ-IN PRESET FOR RP04; READ FOR RK06
RS04S: .BYTE 071 ;READ COMMAND FOR RP04 & RS04
TU56S: .WORD 004003 ;SEARCH FOR BLOCK 0, REVERSE DIRECTION
MK05S:
RP03S: .BYTE 005 ;READ COMMAND FOR TU56, RK05, RP03
        .BYTE 077 ;THIS IS A FILLER-NON-ZERO BYTE
        ;TO DISTINGUISH FROM THE (BYTE FOLLOWING
        ;THE READ FORWARD COMMAND) IN TU16
TU16S: .WORD 1300 ;FORMAT BITS FOR TU16, 800 BPI, NRZI
        .BYTE 007 ;REWIND SELECTED DRIVE
        .BYTE 011 ;DRIVE CLEAN COMMAND
        .BYTE 031 ;SPACE FORWARD
        .BYTE 071 ;READ FORWARD
        .WORD 1000 ;FRAME COUNT ERROR
RX01S: .EVEN ;INSURE WORD BOUNDARY
        .BYTE 007 ;READ SECTOR COMMAND FOR DRIVE ZERO
        .BYTE 003 ;EMPTY BUFFER COMMAND FOR DRIVE ZERO
        .BYTE 027 ;READ SECTOR COMMAND FOR DRIVE ONE
        .BYTE 023 ;EMPTY BUFFER COMMAND FOR DRIVE ONE
    
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980 173636 172522
981 173640 177342
982 173642 177404
983 173644 176714
984 173646 177440
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986 173652 176700
987 173654 172040
988 173656 177170
989 173660 177550
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993 173662 173610
994 173664 173616
995 173666 173620
996 173670 173620
997 173672 173614
998 173674 173622
999 173676 173614
1000 173700 173615
1001 173702 173632
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1005 173704 173144
1006 173706 173124
1007 173710 173576
1008 173712 173204
1009 173714 173260
1010 173716 173336
1011 173720 173272
1012 173722 173464
1013 173724 173500
1014 173726 173416
1015 173730 000000
1016 173732 000000

.SBTTL COMMAND AND STATUS REGISTER ADDRESS TABLE
CUSRPT: .WORD 172522 ;THIS IS THE C.S.R. ADDRESS FOR TU10
        .WORD 177342 ;THIS IS THE C.S.R. ADDRESS FOR THE TU56
        .WORD 177404 ;THIS IS THE C.S.R. ADDRESS FOR THE RK05
        .WORD 176714 ;THIS IS THE C.S.R. ADDRESS FOR THE RP03
        .WORD 177440 ;THIS IS THE C.S.R. ADDRESS FOR THE RK06
        .WORD 172440 ;THIS IS THE C.S.R. ADDRESS FOR THE RH11/TU16
        .WORD 176700 ;THIS IS THE C.S.R. ADDRESS FOR THE RH11/RP04
        .WORD 172040 ;THIS IS THE C.S.R. ADDRESS FOR THE RH11/RS04
        .WORD 177170 ;THIS IS THE C.S.R. ADDRESS FOR RX11/RX01
        .WORD 177550 ;THIS IS THE C.S.R. ADDRESS FOR THE PC11

.SBTTL FUNCTION POINTER TABLE
CMUPTK: .WORD TU10 ;POINTER TO FUNCTION TABLE FOR THE TU10
        .WORD TU56 ;POINTER TO FUNCTION TABLE FOR THE TU56
        .WORD RK05 ;POINTER TO FUNCTION TABLE FOR THE RK05
        .WORD RP03 ;POINTER TO FUNCTION TABLE FOR THE RP03
        .WORD RK06 ;POINTER TO FUNCTION TABLE FOR THE RK06
        .WORD TU16 ;POINTER TO FUNCTION TABLE FOR THE RH11/TU16
        .WORD RP04 ;POINTER TO FUNCTION TABLE FOR THE RH70/RP04 OR RH11/RP04
        .WORD RS04 ;POINTER TO FUNCTION TABLE FOR THE RH70/RS04 OR RH11/RS04
        .WORD RX01 ;POINTER TO FUNCTION TABLE FOR THE RX01

.SBTTL STARTING ADDRESS TABLE
ADDRS: .WORD TU10 ;STARTING ADDRESS FOR THE TM11/TU10
        .WORD TU56 ;STARTING ADDRESS FOR THE TC11/TU56
        .WORD RK05 ;STARTING ADDRESS FOR THE RK11/RK05
        .WORD RP03 ;STARTING ADDRESS FOR THE RP11/RP03
        .WORD RK06 ;STARTING ADDRESS FOR THE RK06
        .WORD TU16 ;STARTING ADDRESS FOR THE RH70/TU16 (800 BPI NRZI)
        .WORD RP04 ;STARTING ADDRESS FOR THE RH70/RP04 OR RH11/RP04
        .WORD RS04 ;STARTING ADDRESS FOR THE RH70/RS04 OR RH11/RS04
        .WORD RX01 ;STARTING ADDRESS FOR THE RX11/RX01
        .WORD PC11 ;STARTING ADDRESS FOR THE PC11
        .WORD 0 ;RESERVED
        .WORD 0 ;RESERVED
    
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1010
1010 000001 .END

ADDR5	173704	CSHP1K	173636	N	000003	START2	173034	TST3	165020
AGAIN	173200	LSHM1	173476	PC11	173416	SWR	177570	TST4	165036
BASE1	165000	UIAG	165002	RK05	173576	TST1	165000	TST5	165052
BASE2	173000	DISPLA	177573	RK055	173620	TST10	165126	TST6	165066
BASE3	173002	PCE	201000	RK06	173260	TST11	165136	TST7	165076
BASE4	173224	GO1	173232	RK065	173614	TST12	165154	TUR	000001
BIT6	000120	GRP0	000030	RP03	173204	TST13	165172	TU10	173144
BOOT	173200	GRP1	000044	RP035	173620	TST14	165202	TU10A	173172
BOOTMI	165754	JUMP	165700	RP04	173272	TST15	165224	TU10B	173610
CHK3WR	173112	JUMP0	165746	RP045	173614	TST16	165246	TU16	173336
CHK240	173564	KIPAK0	172340	RS04	173464	TST17	165300	TU16B	173622
CLRC5	173254	KIPAK7	172356	RS045	173615	TST2	165004	TU56	173124
CMOPTR	173662	KIPOR0	172300	RX01	173500	TST20	165334	TU56B	173616
CMNS60	173206	KIPOR7	172316	RX015	173652	TST21	165352	STN	000025
CMNSMH	173474	MISS	000014	SIZE	173310	TST22	165436	.	173734
CMN1	173232	MMN0	177572	START	173014	TST23	165544		
CONT	165750	MUL	010000	START1	173022	TST24	165644		

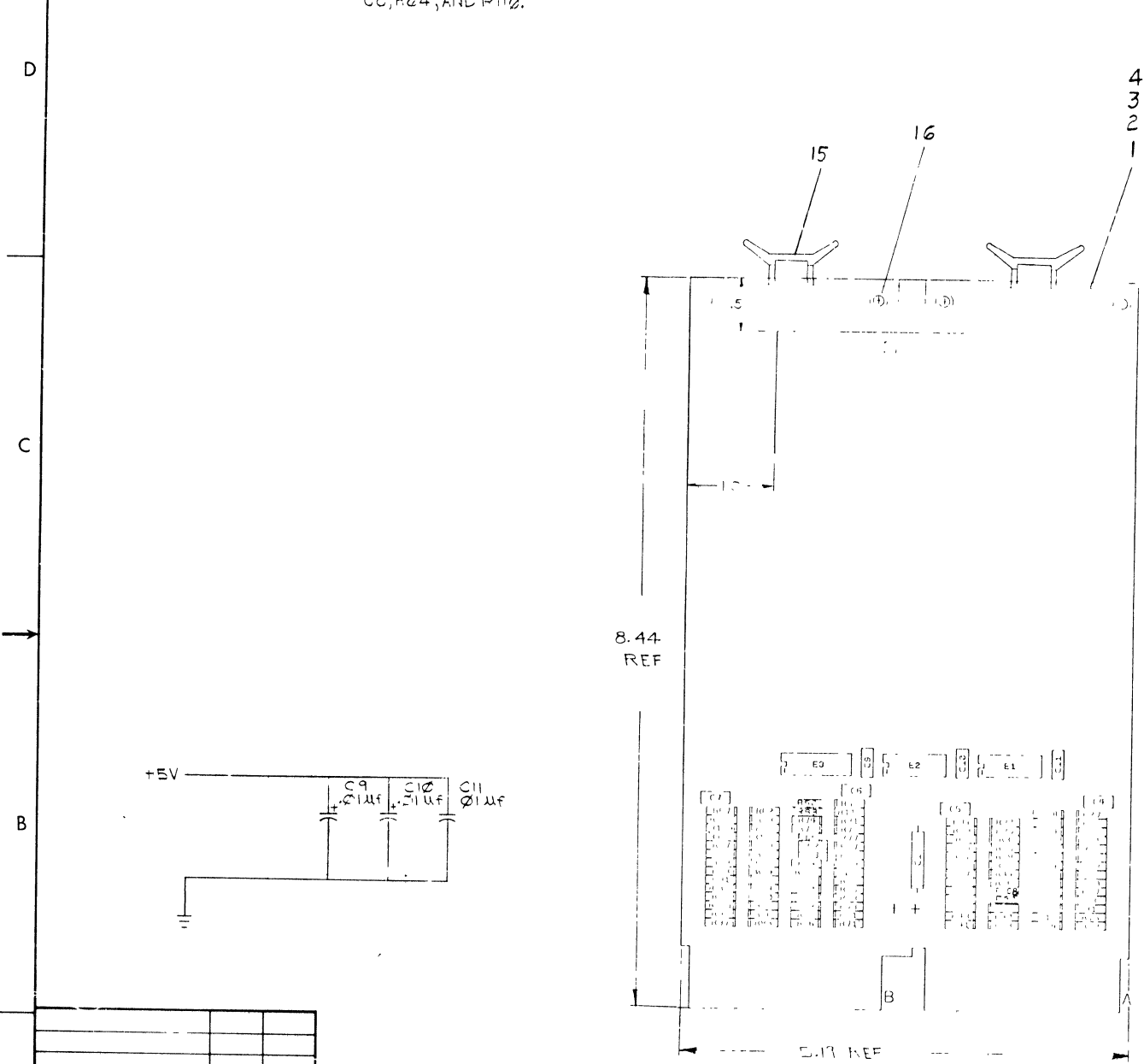
. ABS, 173734 000

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

DQM9A, DQM9A=DQM9A
RUN-TIME: 2 2 0 SECONDS
RUN-TIME RATIO: 31/50.2
CORE USED: 7K (13 PAGES)

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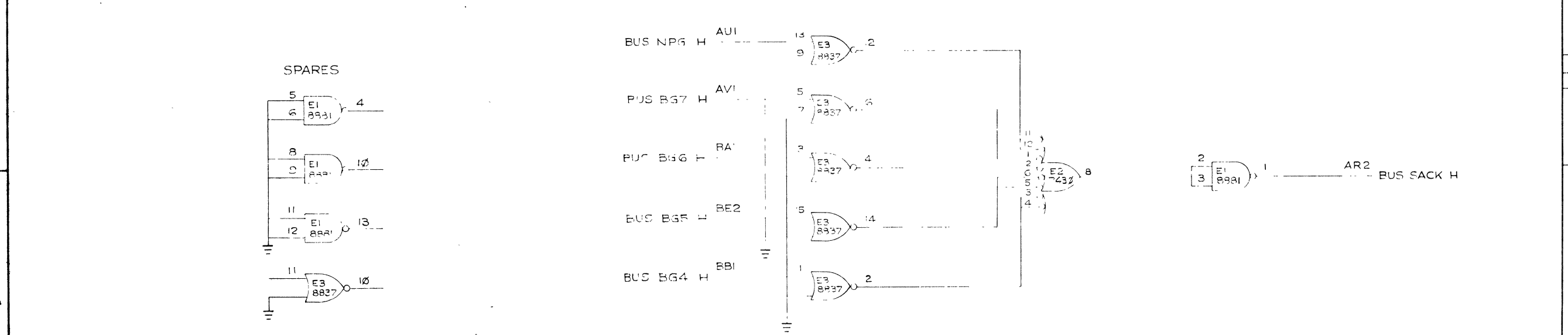
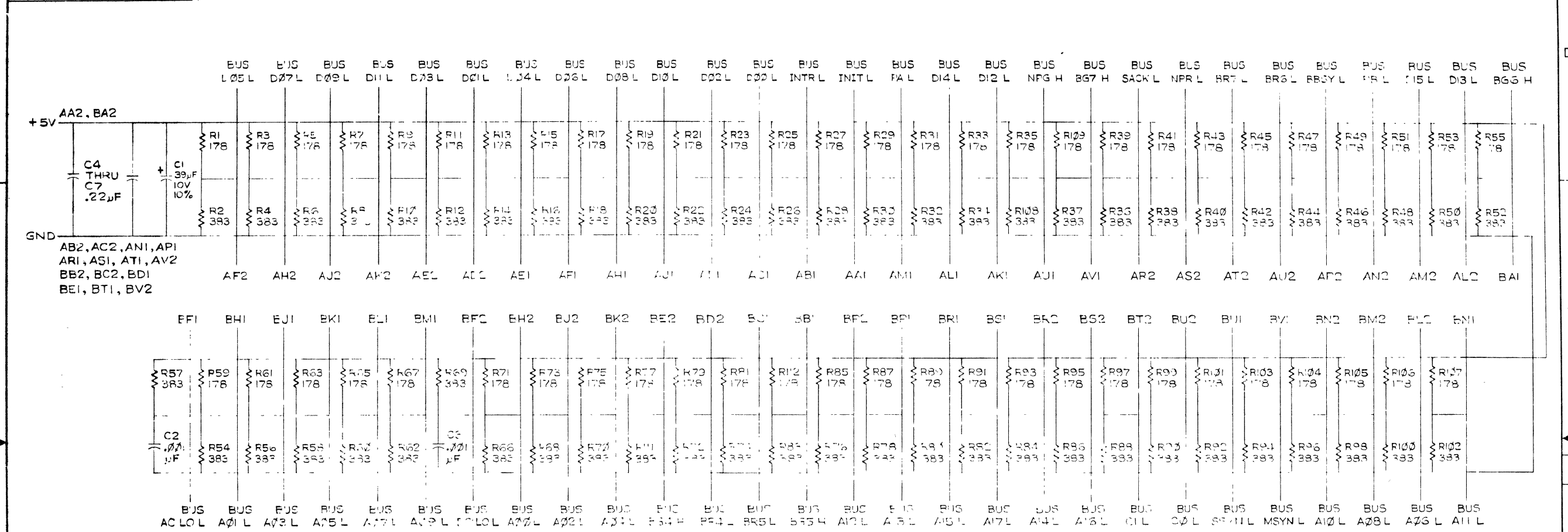
NOTES:
 1. THE FOLLOWING REFERENCE DESIGNATIONS ARE NOT USED: C6, R64, AND R110.



IC DEC 8837	8	16
IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

REF	DESCRIPTION	X Y HOLE COORDINATE HOLE LOCATION	K CO M9302 0 4	ITEM NO
REF	ASSY DRILLING HOLE LAYOUT		D AM M9302 0 5	2
REF	MODULE ECO HISTORY		B MH M9302 0 6	3
1	ETCHED CIRCUIT BOARD		5011311	4
3	C9 C10 C11	CAP 01 uf 100V 20 DISC	1001610 01	5
1	C1	CAP 39 uf 10V 10	1990076	6
1	C8	CAP 0.01 uf 35V 10	1005306	7
4	C4 THRU C7	CAP 22 uf 50V X	1010274 01	8
2	C2 C3	CAP 001 uf 250V 20 DISC	1000043	9
53	R2 R4 R6 R8 R10 R12 R14 R16 R18 R20 R22 R24 R26 R28 R30 R32 R34 R36 R38 R40 R42 R44 R46 R48 R50 R54 R56 R58 R60 R62 R66 R69 R70 R72 R74 R75 R78 R80 R82 R84 R86 R88 R90 R92 R94 R96 R98 R100 R102 R104 R106 R108 R110 R112 R114 R116 R118 R120 R122 R124 R126 R128 R130 R132 R134 R136 R138 R140 R142 R144 R146 R148 R150 R154 R156 R158 R160 R162 R166 R169 R170 R172 R174 R175 R178 R180 R182 R184 R186 R188 R190 R192 R194 R196 R198 R200 R202 R204 R206 R208 R210 R212 R214 R216 R218 R220 R222 R224 R226 R228 R230 R232 R234 R236 R238 R240 R242 R244 R246 R248 R250 R254 R256 R258 R260 R262 R266 R269 R270 R272 R274 R275 R278 R280 R282 R284 R286 R288 R290 R292 R294 R296 R298 R300 R302 R304 R306 R308 R310 R312 R314 R316 R318 R320 R322 R324 R326 R328 R330 R332 R334 R336 R338 R340 R342 R344 R346 R348 R350 R354 R356 R358 R360 R362 R366 R369 R370 R372 R374 R375 R378 R380 R382 R384 R386 R388 R390 R392 R394 R396 R398 R400 R402 R404 R406 R408 R410 R412 R414 R416 R418 R420 R422 R424 R426 R428 R430 R432 R434 R436 R438 R440 R442 R444 R446 R448 R450 R454 R456 R458 R460 R462 R466 R469 R470 R472 R474 R475 R478 R480 R482 R484 R486 R488 R490 R492 R494 R496 R498 R500 R502 R504 R506 R508 R510 R512 R514 R516 R518 R520 R522 R524 R526 R528 R530 R532 R534 R536 R538 R540 R542 R544 R546 R548 R550 R554 R556 R558 R560 R562 R566 R569 R570 R572 R574 R575 R578 R580 R582 R584 R586 R588 R590 R592 R594 R596 R598 R600 R602 R604 R606 R608 R610 R612 R614 R616 R618 R620 R622 R624 R626 R628 R630 R632 R634 R636 R638 R640 R642 R644 R646 R648 R650 R654 R656 R658 R660 R662 R666 R669 R670 R672 R674 R675 R678 R680 R682 R684 R686 R688 R690 R692 R694 R696 R698 R700 R702 R704 R706 R708 R710 R712 R714 R716 R718 R720 R722 R724 R726 R728 R730 R732 R734 R736 R738 R740 R742 R744 R746 R748 R750 R754 R756 R758 R760 R762 R766 R769 R770 R772 R774 R775 R778 R780 R782 R784 R786 R788 R790 R792 R794 R796 R798 R800 R802 R804 R806 R808 R810 R812 R814 R816 R818 R820 R822 R824 R826 R828 R830 R832 R834 R836 R838 R840 R842 R844 R846 R848 R850 R854 R856 R858 R860 R862 R866 R869 R870 R872 R874 R875 R878 R880 R882 R884 R886 R888 R890 R892 R894 R896 R898 R900 R902 R904 R906 R908 R910 R912 R914 R916 R918 R920 R922 R924 R926 R928 R930 R932 R934 R936 R938 R940 R942 R944 R946 R948 R950 R954 R956 R958 R960 R962 R966 R969 R970 R972 R974 R975 R978 R980 R982 R984 R986 R988 R990 R992 R994 R996 R998 R1000 R1002 R1004 R1006 R1008 R1010 R1012 R1014 R1016 R1018 R1020 R1022 R1024 R1026 R1028 R1030 R1032 R1034 R1036 R1038 R1040 R1042 R1044 R1046 R1048 R1050 R1054 R1056 R1058 R1060 R1062 R1066 R1069 R1070 R1072 R1074 R1075 R1078 R1080 R1082 R1084 R1086 R1088 R1090 R1092 R1094 R1096 R1098 R1100 R1102 R1104 R1106 R1108 R1110 R1112 R1114 R1116 R1118 R1120 R1122 R1124 R1126 R1128 R1130 R1132 R1134 R1136 R1138 R1140 R1142 R1144 R1146 R1148 R1150 R1154 R1156 R1158 R1160 R1162 R1166 R1169 R1170 R1172 R1174 R1175 R1178 R1180 R1182 R1184 R1186 R1188 R1190 R1192 R1194 R1196 R1198 R1200 R1202 R1204 R1206 R1208 R1210 R1212 R1214 R1216 R1218 R1220 R1222 R1224 R1226 R1228 R1230 R1232 R1234 R1236 R1238 R1240 R1242 R1244 R1246 R1248 R1250 R1254 R1256 R1258 R1260 R1262 R1266 R1269 R1270 R1272 R1274 R1275 R1278 R1280 R1282 R1284 R1286 R1288 R1290 R1292 R1294 R1296 R1298 R1300 R1302 R1304 R1306 R1308 R1310 R1312 R1314 R1316 R1318 R1320 R1322 R1324 R1326 R1328 R1330 R1332 R1334 R1336 R1338 R1340 R1342 R1344 R1346 R1348 R1350 R1354 R1356 R1358 R1360 R1362 R1366 R1369 R1370 R1372 R1374 R1375 R1378 R1380 R1382 R1384 R1386 R1388 R1390 R1392 R1394 R1396 R1398 R1400 R1402 R1404 R1406 R1408 R1410 R1412 R1414 R1416 R1418 R1420 R1422 R1424 R1426 R1428 R1430 R1432 R1434 R1436 R1438 R1440 R1442 R1444 R1446 R1448 R1450 R1454 R1456 R1458 R1460 R1462 R1466 R1469 R1470 R1472 R1474 R1475 R1478 R1480 R1482 R1484 R1486 R1488 R1490 R1492 R1494 R1496 R1498 R1500 R1502 R1504 R1506 R1508 R1510 R1512 R1514 R1516 R1518 R1520 R1522 R1524 R1526 R1528 R1530 R1532 R1534 R1536 R1538 R1540 R1542 R1544 R1546 R1548 R1550 R1554 R1556 R1558 R1560 R1562 R1566 R1569 R1570 R1572 R1574 R1575 R1578 R1580 R1582 R1584 R1586 R1588 R1590 R1592 R1594 R1596 R1598 R1600 R1602 R1604 R1606 R1608 R1610 R1612 R1614 R1616 R1618 R1620 R1622 R1624 R1626 R1628 R1630 R1632 R1634 R1636 R1638 R1640 R1642 R1644 R1646 R1648 R1650 R1654 R1656 R1658 R1660 R1662 R1666 R1669 R1670 R1672 R1674 R1675 R1678 R1680 R1682 R1684 R1686 R1688 R1690 R1692 R1694 R1696 R1698 R1700 R1702 R1704 R1706 R1708 R1710 R1712 R1714 R1716 R1718 R1720 R1722 R1724 R1726 R1728 R1730 R1732 R1734 R1736 R1738 R1740 R1742 R1744 R1746 R1748 R1750 R1754 R1756 R1758 R1760 R1762 R1766 R1769 R1770 R1772 R1774 R1775 R1778 R1780 R1782 R1784 R1786 R1788 R1790 R1792 R1794 R1796 R1798 R1800 R1802 R1804 R1806 R1808 R1810 R1812 R1814 R1816 R1818 R1820 R1822 R1824 R1826 R1828 R1830 R1832 R1834 R1836 R1838 R1840 R1842 R1844 R1846 R1848 R1850 R1854 R1856 R1858 R1860 R1862 R1866 R1869 R1870 R1872 R1874 R1875 R1878 R1880 R1882 R1884 R1886 R1888 R1890 R1892 R1894 R1896 R1898 R1900 R1902 R1904 R1906 R1908 R1910 R1912 R1914 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R2262 R2266 R2269 R2270 R2272 R2274 R2275 R2278 R2280 R2282 R2284 R2286 R2288 R2290 R2292 R2294 R2296 R2298 R2300 R2302 R2304 R2306 R2308 R2310 R2312 R2314 R2316 R2318 R2320 R2322 R2324 R2326 R2328 R2330 R2332 R2334 R2336 R2338 R2340 R2342 R2344 R2346 R2348 R2350 R2354 R2356 R2358 R2360 R2362 R2366 R2369 R2370 R2372 R2374 R2375 R2378 R2380 R2382 R2384 R2386 R2388 R2390 R2392 R2394 R2396 R2398 R2400 R2402 R2404 R2406 R2408 R2410 R2412 R2414 R2416 R2418 R2420 R2422 R2424 R2426 R2428 R2430 R2432 R2434 R2436 R2438 R2440 R2442 R2444 R2446 R2448 R2450 R2454 R2456 R2458 R2460 R2462 R2466 R2469 R2470 R2472 R2474 R2475 R2478 R2480 R2482 R2484 R2486 R2488 R2490 R2492 R2494 R2496 R2498 R2500 R2502 R2504 R2506 R2508 R2510 R2512 R2514 R2516 R2518 R2520 R2522 R2524 R2526 R2528 R2530 R2532 R2534 R2536 R2538 R2540 R2542 R2544 R2546 R2548 R2550 R2554 R2556 R2558 R2560 R2562 R2566 R2569 R2570 R2572 R2574 R2575 R2578 R2580 R2582 R2584 R2586 R2588 R2590 R2592 R2594 R2596 R2598 R2600 R2602 R2604 R2606 R2608 R2610 R2612 R2614 R2616 R2618 R2620 R2622 R2624 R2626 R2628 R2630 R2632 R2634 R2636 R2638 R2640 R2642 R2644 R2646 R2648 R2650 R2654 R2656 R2658 R2660 R2662 R2666 R2669 R2670 R2672 R2674 R2675 R2678 R2680 R2682 R2684 R2686 R2688 R2690 R2692 R2694 R2696 R2698 R2700 R2702 R2704 R2706 R2708 R2710 R2712 R2714 R2716 R2718 R2720 R2722 R2724 R2726 R2728 R2730 R2732 R2734 R2736 R2738 R2740 R2742 R2744 R2746 R2748 R2750 R2754 R2756 R2758 R2760 R2762 R2766 R2769 R2770 R2772 R2774 R2775 R2778 R2780 R2782 R2784 R2786 R2788 R2790 R2792 R2794 R2796 R2798 R2800 R2802 R2804 R2806 R2808 R2810 R2812 R2814 R2816 R2818 R2820 R2822 R2824 R2826 R2828 R2830 R2832 R2834 R2836 R2838 R2840 R2842 R2844 R2846 R2848 R2850 R2854 R2856 R2858 R2860 R2862 R2866 R2869 R2870 R2872 R2874 R2875 R2878 R2880 R2882 R2884 R2886 R2888 R2890 R2892 R2894 R2896 R2898 R2900 R2902 R2904 R2906 R2908 R2910 R2912 R2914 R2916 R2918 R2920 R2922 R2924 R2926 R2928 R2930 R2932 R2934 R2936 R2938 R2940 R2942 R2944 R2946 R2948 R2950 R2954 R2956 R2958 R2960 R2962 R2966 R2969 R2970 R2972 R2974 R2975 R2978 R2980 R2982 R2984 R2986 R2988 R2990 R2992 R2994 R2996 R2998 R3000 R3002 R3004 R3006 R3008 R3010 R3012 R3014 R3016 R3018 R3020 R3022 R3024 R3026 R3028 R3030 R3032 R3034 R3036 R3038 R3040 R3042 R3044 R3046 R3048 R3050 R3054 R3056 R3058 R3060 R3062 R3066 R3069 R3070 R3072 R3074 R3075 R3078 R3080 R3082 R3084 R3086 R3088 R3090 R3092 R3094 R3096 R3098 R3100 R3102 R3104 R3106 R3108 R3110 R3112 R3114 R3116 R3118 R3120 R3122 R3124 R3126 R3128 R3130 R3132 R3134 R3136 R3138 R3140 R3142 R3144 R3146 R3148 R3150 R3154 R3156 R3158 R3160 R3162 R3166 R3169 R3170 R3172 R3174 R3175 R3178 R3180 R3182 R3184 R3186 R3188 R3190 R3192 R3194 R3196 R3198 R3200 R3202 R3204 R3206 R3208 R3210 R3212 R3214 R3216 R3218 R3220 R3222 R3224 R3226 R3228 R3230 R3232 R3234 R3236 R3238 R3240 R3242 R3244 R3246 R3248 R3250 R3254 R3256 R3258 R3260 R3262 R3266 R3269 R3270 R3272 R3274 R3275 R3278 R3280 R3282 R3284 R3286 R3288 R3290 R3292 R3294 R3296 R3298 R3300 R3302 R3304 R3306 R3308 R3310 R3312 R3314 R3316 R3318 R3320 R3322 R3324 R3326 R3328 R3330 R3332 R3334 R3336 R3338 R3340 R3342 R3344 R3346 R3348 R3350 R3354 R3356 R3358 R3360 R3362 R3366 R3369 R3370 R3372 R3374 R3375 R3378 R3380 R3382 R3384 R3386 R3388 R3390 R3392 R3394 R3396 R3398 R3400 R3402 R3404 R3406 R3408 R3410 R3412 R3414 R3416 R3418 R3420 R3422 R3424 R3426 R3428 R3430 R3432 R3434 R3436 R3438 R3440 R3442 R3444 R3446 R3448 R3450 R3454 R3456 R3458 R3460 R3462 R3466 R3469 R3470 R3472 R3474 R3475 R3478 R3480 R3482 R3484 R3486 R3488 R3490 R3492 R3494 R3496 R3498 R3500 R3502 R3504 R3506 R3508 R3510 R3512 R3514 R3516 R3518 R3520 R3522 R3524 R3526 R3528 R3530 R3532 R3534 R3536 R3538 R3540 R3542 R3544 R3546 R3548 R3550 R3554 R3556 R3558 R3560 R3562 R3566 R3569 R3570 R3572 R3574 R3575 R3578 R3580 R3582 R3584 R3586 R3588 R3590 R3592 R3594 R3596 R3598 R3600 R3602 R3604 R3606 R3608 R3610 R3612 R3614 R3616 R3618 R3620 R3622 R3624 R3626 R3628 R3630 R3632 R3634 R3636 R3638 R3640 R3642 R3644 R3646 R3648 R3650 R3654 R3656 R3658 R3660 R3662 R3666 R3669 R3670 R3672 R3674 R3675 R3678 R3680 R3682 R3684 R3686 R3688 R3690 R3692 R3694 R3696 R3698 R3700 R3702 R3704 R3706 R3708 R3710 R3712 R3714 R3716 R3718 R3720 R3722 R3724 R3726 R3728 R3730 R3732 R3734 R3736 R3738 R3740 R3742 R3744 R3746 R3748 R3750 R3754 R3756 R3758 R3760 R3762 R3766 R3769 R3770 R3772 R3774 R3775 R3778 R3780 R3782 R3784 R3786 R3788 R3790 R3792 R3794 R3796 R3798 R3800 R3802 R3804 R3806 R3808 R3810 R3812 R3814 R3816 R3818 R3820 R3822 R3824 R3826 R3828 R3830 R3832 R3834 R3836 R3838 R3840 R3842 R3844 R3846 R3848 R3850 R3854 R3856 R3858 R3860 R3862 R3866 R3869 R3870 R3872 R3874 R3875 R3878 R3880 R3882 R3884 R3886 R3888 R3890 R3892 R3894 R3896 R3898 R3900 R3902 R3904 R3906 R3908 R3910 R3912 R3914 R3916 R3918 R3920 R3922 R3924 R3926 R3928 R3930 R3932 R3934 R3936 R3938 R3940 R3942 R3944 R3946 R3948 R3950 R3954 R3956 R3958 R3960 R3962 R3966 R3969 R3970 R3972 R3974 R3975 R3978 R3980 R3982 R3984 R3986 R3988 R3990 R3992 R3994 R3996 R3998 R4000 R4002 R4004 R4006 R4008 R4010 R4012 R4014 R4016 R4018 R4020 R4022 R4024 R4026 R4028 R4030 R4032 R4034 R4036 R4038 R4040 R4042 R4044 R4046 R4048 R4050 R4054 R4056 R4058 R4060 R4062 R4066 R4069 R4070 R4072 R4074 R4075 R4078 R4080 R4082 R4084 R4086 R4088 R4090 R4092 R4094 R4096 R4098 R4100 R4102 R4104 R4106 R4108 R4110 R4112 R4114 R4116 R4118 R4120 R4122 R4124 R4126 R4128 R4130 R4132 R4134 R4136 R4138 R4140 R4142 R4144 R4146 R4148 R4150 R4154 R4156 R4158 R4160 R4162 R4166 R4169 R4170 R4172 R4174 R4175 R4178 R4180 R4182 R4184 R4186 R4188 R4190 R4192 R4194 R4196 R4198 R4200 R4202 R4204 R4206 R4208 R4210 R4212 R4214 R4216 R4218 R4220 R4222 R4224 R4226 R4228 R4230 R4232 R4234 R4236 R4238 R4240 R4242 R4244 R4246 R4248 R4250 R4254 R4256 R4258 R4260 R4262 R4266 R4269 R4270 R4272 R4274 R4275 R4278 R4280 R4282 R4284 R4286 R4288 R4290 R4292 R4294 R4296 R4298 R4300 R4302 R4304 R4306 R4308 R4310 R4312 R4314 R4316 R4318 R4320 R4322 R4324 R4326 R4328 R4330 R4332 R4334 R4336 R4338 R4340 R4342 R4344 R4346 R4348 R4350 R4354 R4356 R4358 R4360 R4362 R4366 R4369 R4370 R4372 R4374 R4375 R4378 R4380 R4382 R4384 R4386 R4388 R4390 R4392 R4394 R4396 R4398 R4400 R4402 R4404 R4406 R4408 R4410 R4412 R4414 R4416 R4418 R4420 R4422 R4424 R4426 R4428 R4430 R4432 R4434 R4436 R4438 R4440 R4442 R4444 R4446 R4448 R4450 R4454 R4456 R4458 R4460 R4462 R4466 R4469 R4470 R4472 R4474 R4475 R4478 R4480 R4482 R4484 R4486 R4488 R4490 R4492 R4494 R4496 R4498 R4500 R4502 R4504 R4506 R4508 R4510 R4512 R4514 R4516 R4518 R4520 R4522 R4524 R4526 R4528 R4530 R4532 R4534 R4536 R4538 R4540 R4542 R4544 R4546 R4548 R4550 R4554 R4556 R4558 R4560 R4562 R4566 R4569 R4570 R4572 R4574 R4575 R4578 R4580 R4582 R4584 R4586 R4588 R4590 R4592 R4594 R4596 R4598 R4600 R4602 R4604 R4606 R4608 R4610 R4612 R4614 R4616 R4618 R4620 R4622 R4624 R4626 R4628 R4630 R4632 R4634 R4636 R4638 R4640 R4642 R4644 R4646 R4648 R4650 R4654 R4656 R4658 R4660 R4662 R4666 R4669 R4670 R4672 R4674 R4675 R4678 R4680 R4682 R4684 R4686 R4688 R4690 R4692 R4694 R4696 R4698 R4700 R4702 R4704 R4706 R4708 R4710 R4712 R4714 R4716 R4718 R4720 R4722 R4724 R4726 R4728 R4730 R4732 R4734 R4736 R4738 R4740 R4742 R4744 R4746 R4748 R4750 R4754 R4756 R4758 R4760 R4762 R4766 R4769 R4770 R4772 R4774 R4775 R4778 R4780 R4782 R4784 R4786 R4788 R4790 R4792 R4794 R4796 R4798 R4800 R4802 R4804 R4806 R4808 R4810 R4812 R4814 R4816 R4818 R4820 R4822 R4824 R4826 R4828 R4830 R4832 R4834 R4836 R4838 R4840 R4842 R4844 R4846 R4848 R4850 R4854 R4856 R4858 R4860 R4862 R4866 R4869 R4870 R4872 R4874 R4875 R4878 R4880 R4882 R4884 R4886 R4888 R4890 R4892 R4894 R4896 R4898 R4900 R4902 R4904 R4906 R4908 R4910 R4912 R4914 R4916 R4918 R4920 R4922 R4924 R4926 R4928 R4930 R4932 R4934 R4936 R4938 R4940 R4942 R4944 R4946 R4948 R4950 R4954 R4956 R4958 R4960 R4962 R4966 R4969 R			

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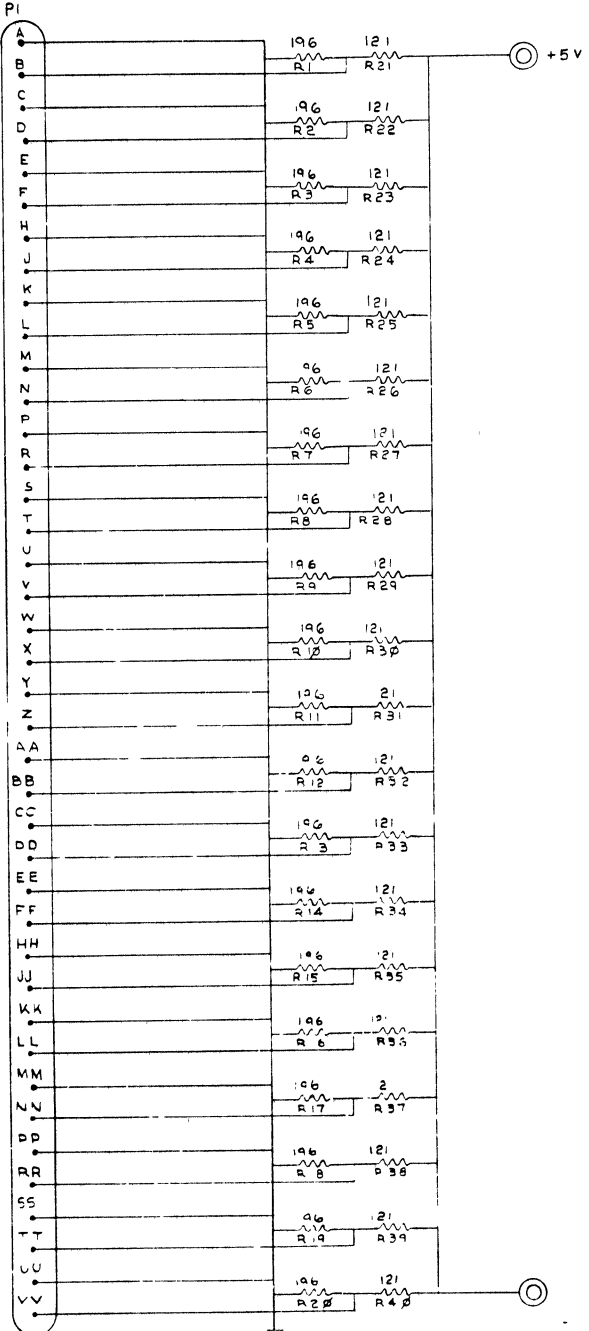
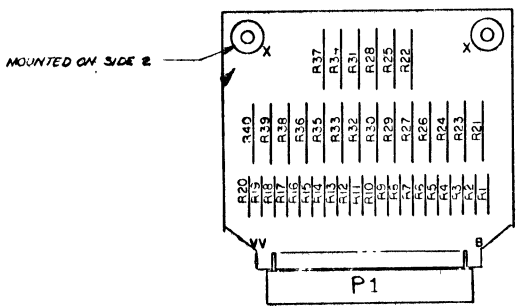


REVISIONS			TITLE		SIZE	CODE	NUMBER		REV
CHK	CHANGE NO	REV	UNIBUS TERMINATOR		D	CS	M9302-0-1		C

439

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NOTES:



IC TYPE	GND	+5V
GND AND +5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

REF	X-Y COORDINATE HOLE LOCATION	X-CO-H873-Ø-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-24-H873-Ø-5	2
REF	MODULE ECO HISTORY	B-MH-H873-Ø-6	3
1	ETCHED CIRCUIT BOARD	5011301	4
20	R21-R40	RES, 121Ω, 1/4W, 1% MF (RN60D)	301782
20	R1-R20	RES, 196Ω, 1/4W, 1% MF	1302955
2		PERMA NUT #0440-1000	3009649
1	P1	CONNECTOR, FEMALE, 40 POS	121162G
REF	TEST PROCEDURE H873	A-5P-H873 0-8	3
REF	SOLDERING FIXTURE	9305995	10

FIRST USED ON OPTION MODEL		11/70	
ETCH BOARD REV		2-1	
PARTS LIST			
SEMICONDUCTOR CONVERSION CHART			
DEC NO	EIA NO	DEC NO	EIA NO
TITLE: MEMORY BUS TERMINATOR (MTR)			
DICE: H873-Ø-1			

REVISIONS

CHK	CHANGE NO	REV

T. NORTHRUP
7-29-75
H873-Ø-202 C
T. NORTHRUP
1-1-79
H873-Ø-201 B

REVISIONS

DEC NO EIA NO DEC NO EIA NO

SEMICONDUCTOR CONVERSION CHART

REVISIONS

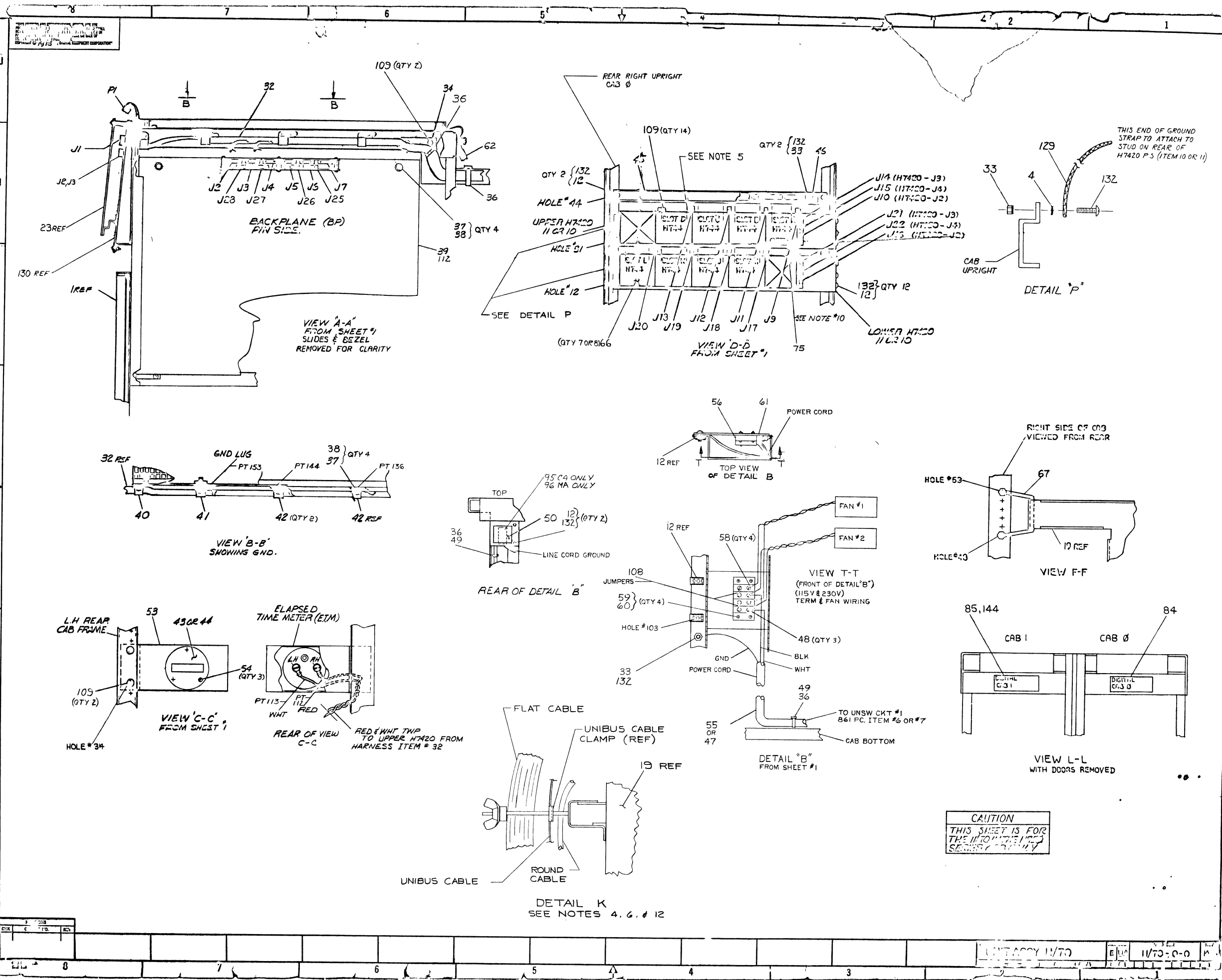
CHK CHANGE NO REV

T. NORTHRUP
7-29-75
H873-Ø-202 C
T. NORTHRUP
1-1-79
H873-Ø-201 B

EQUIPMENT CORPORATION

DICE: H873-Ø-1

440



442

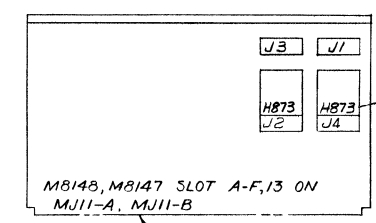
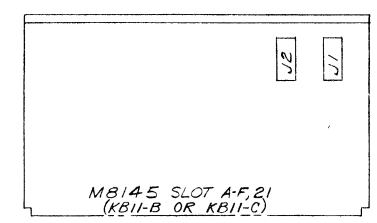
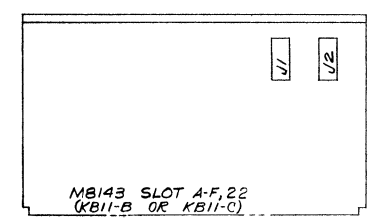
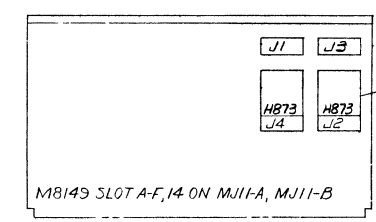
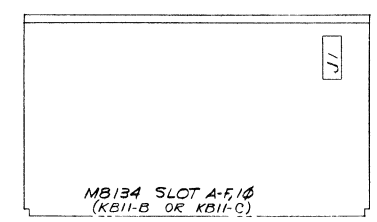
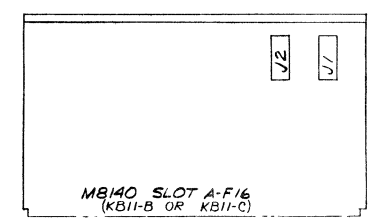
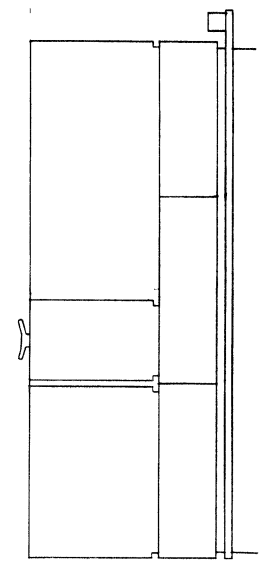
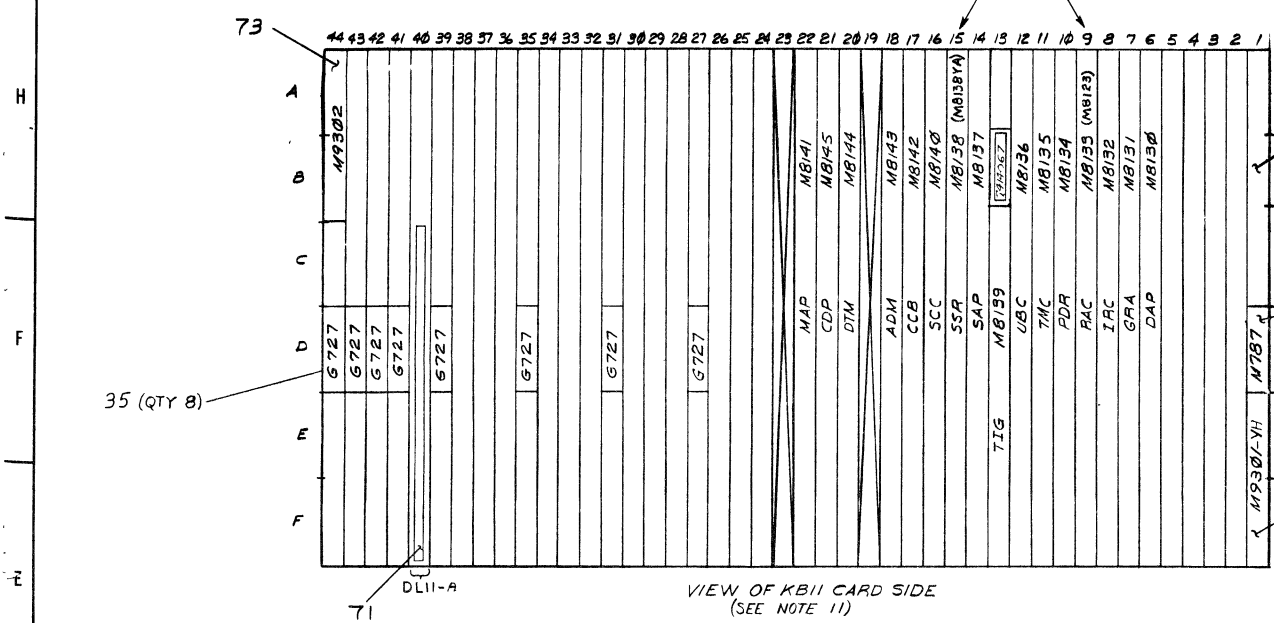
REV	DATE	BY	CHK

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CABLE ITEM NO.	FROM				TO				REMARKS	
	UNIT	SLOT	MODULE	CONN.	UNIT	SLOT	MODULE	CONN.		
62	KB11	A-F,18	M8143	J1	0	MJ11	A-F,13	M8148	J1	1
	KB11	A-F,18	M8143	J2	0	MJ11	A-F,13	M8148	J3	1
	KB11	A-F,21	M8145	J1	0	MJ11	A-F,14	M8149	J3	1
64	KB11	A-F,10	M8134	J1	0	CONSOL	---	---	J1	0
64	KB11	A-F,16	M8140	J2	0	CONSOL	---	---	J3	0
64	KB11	A-F,16	M8140	J1	0	CONSOL	---	---	J2	0

POWER CORD HOOKUP	
FROM	TO
UPPER 117-20 CAB 0	CSPL: PHASE 1 (SWITCHED)
LOWER 117-20 CAB 0	CSPL: PHASE 2 (SWITCHED)
MJ11-A, MJ11-B CAB 1	CSPL: PHASE 3 (SWITCHED)

HARNESS TABLE		
ITEM NO	FROM HARNESS	TO CONN.
P1	J4	(CONS)
P2	J2	(BA)
P3	J3	(BP)
P4	J4	(BP)
P5	J5	(BP)
P6	J6	(BP)
P7	J7	(BP)
P28	J28	(BP)
P27	J27	(BP)
P26	J26	(BP)
P25	J25	(BP)
P3	J5	(BA11-F)
P13	J13	(H7420)
P10	J10	(H7420)
P14	J14	(H7420)
P9	J9	(H744)
P11	J11	(H744)
P12	J12	(H744)
P13	J13	(H744)
P22	J22	(H7420)
P15	J15	(H7420)
P21	J1	(H7420)
P16	J16	(H744)
P19	J19	(H744)
P20	J1	(H744)
P17	J17	(H744)
P23	J2	(B61)
P24	J2	(B61)
PT12	E-T-M	(RH)
PT13	E-T-M	(LH)
PT14	GND CHASSIS	
PT15	GND CHASSIS	
PT153	GND CHASSIS	
P1	BAV1	J34 (B61)
P2	BAV1	J32 (B61)



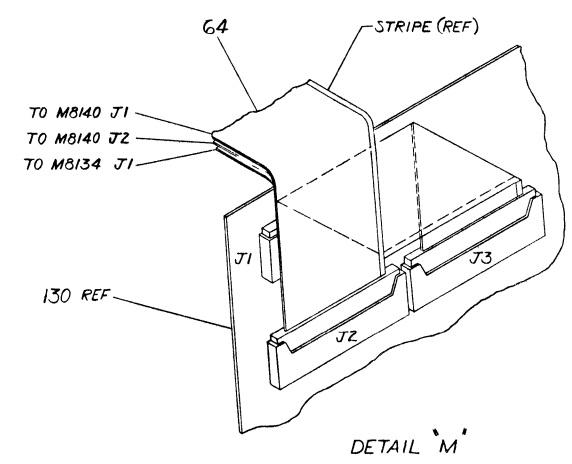
VIEW SHOWING MODULES CONN. SIDE.

CAUTION
THIS SHEET IS FOR THE 1170/1175 H953 SERIES CAB ONLY

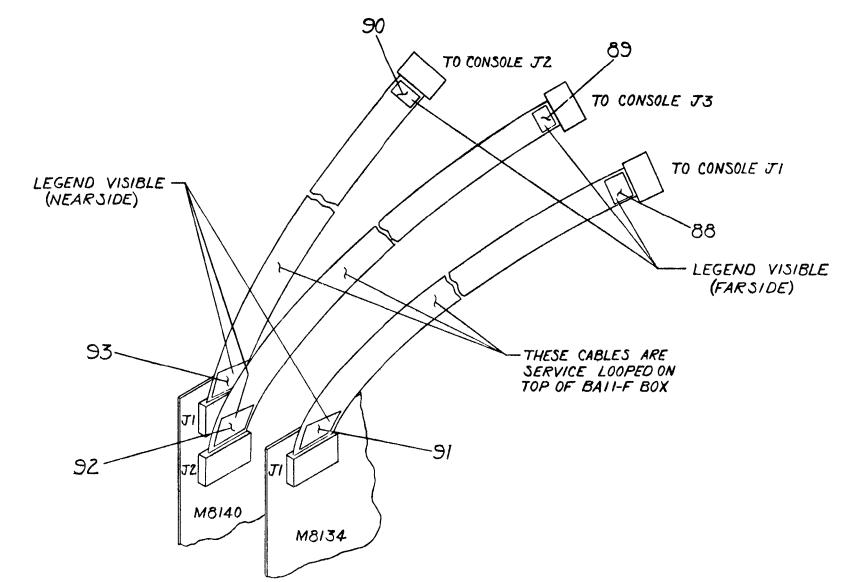
CHK	CHANGE NO.	REV

TITLE	UNIT ASSY 1170	REV	0-0
DATE	11/70	BY	
CHKD		APP'D	

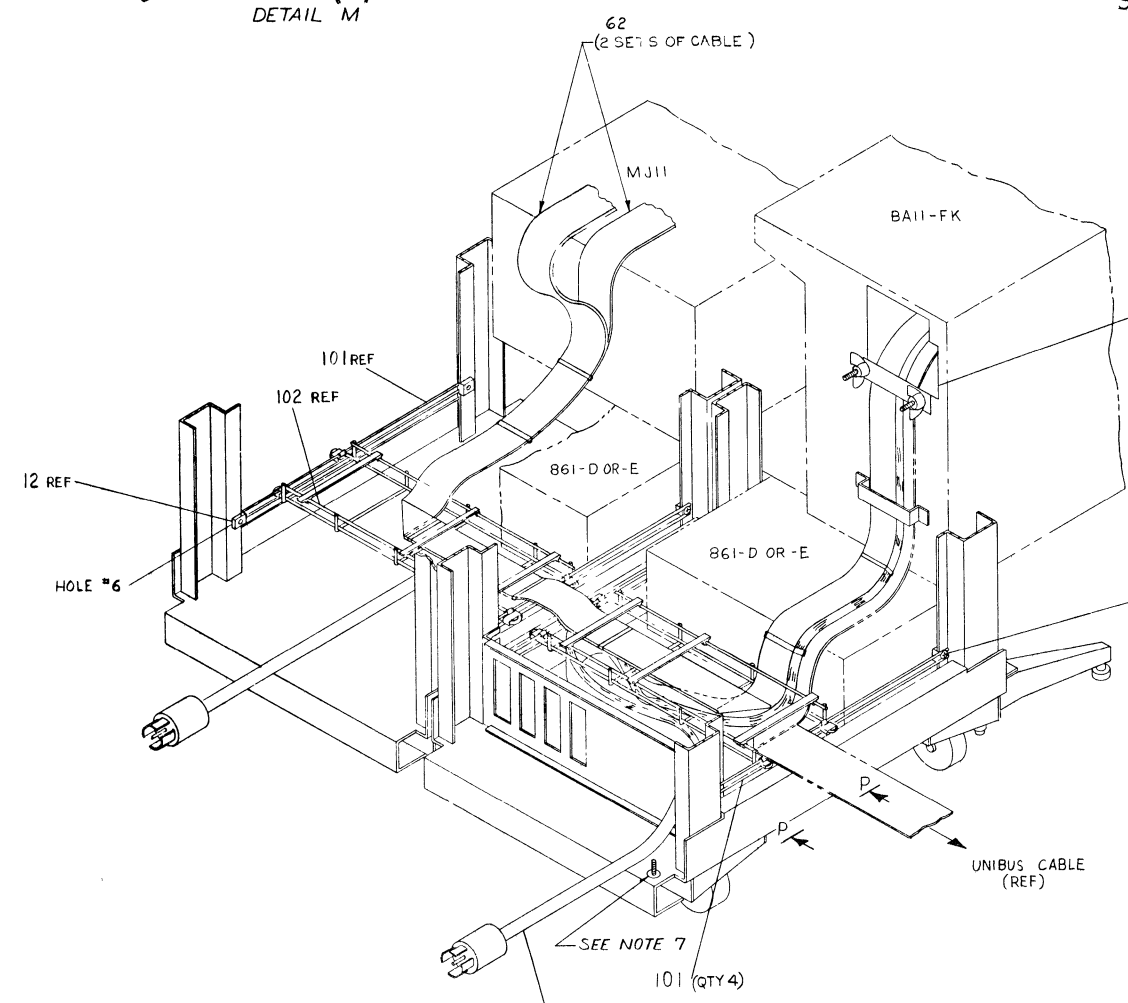
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 GOVERNMENT PRINTING OFFICE: 1975 O-244-000



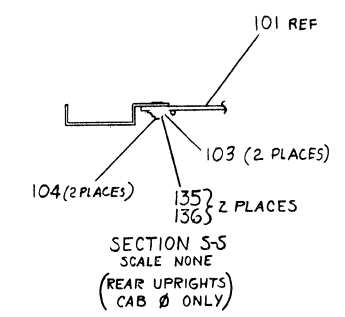
DETAIL M



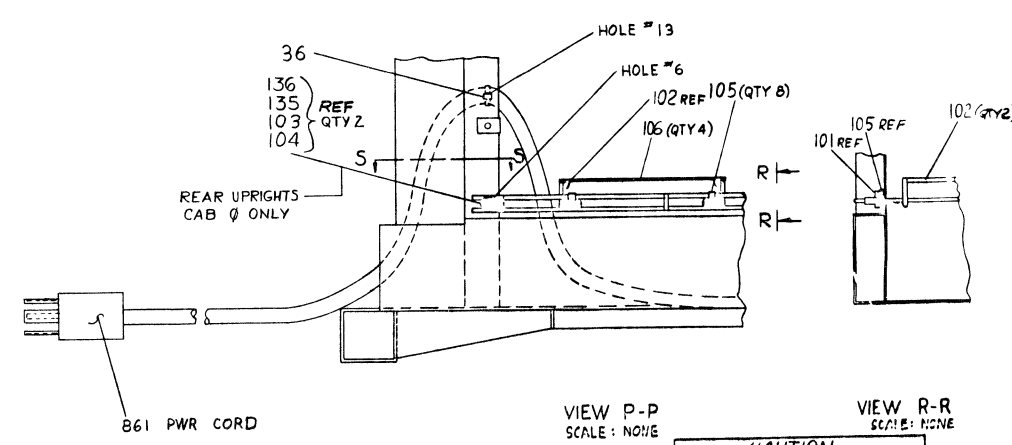
DETAIL N
 SHOWING WHERE TO APPLY
 LABEL 'TO' & 'FROM' CONN.
 ON CONSOLE. FOR CORRECT
 ORIENTATION, SEE DETAIL M



SEE DETAIL K
 SEE NOTES 4, 6 & 12



SECTION S-S
 SCALE NONE
 (REAR UPRIGHTS
 CAB Ø ONLY)



VIEW P-P
 SCALE: NONE

VIEW R-R
 SCALE: NONE

CAUTION
 THIS SHEET IS FOR THE
 UNIT ASSY 11/70

REV.	DATE	BY	CHKD.

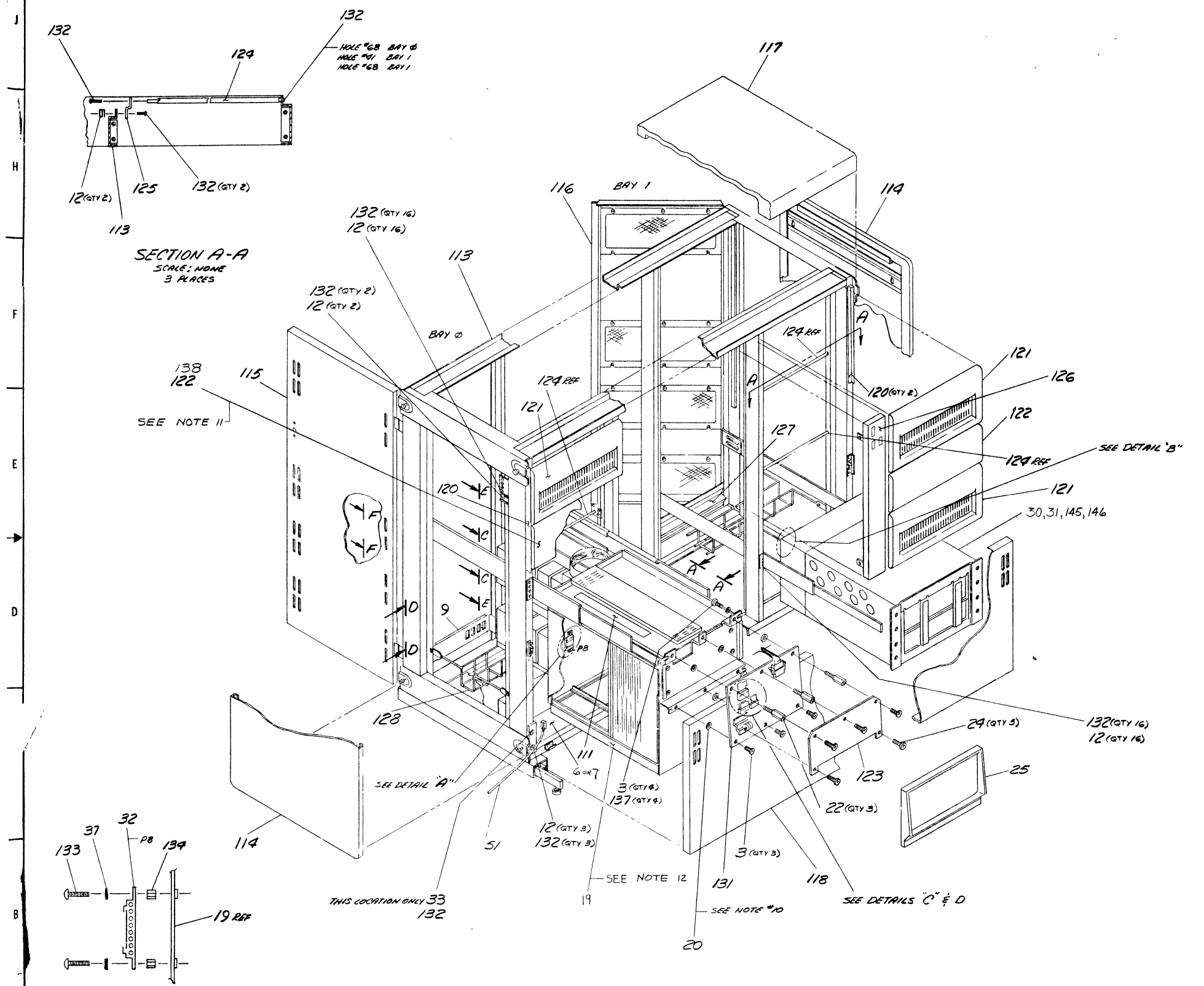
UNIT ASSY 11/70
 BU 11/70-0-0

444

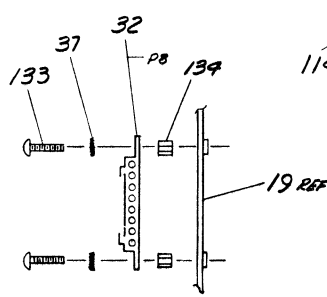
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LEGEND
SEE SHEET 1

- NOTES:**
- FOR 1170 SYSTEM EXPANSION SEE: E-AR-1170-0-1.
 - FOR DRAWING DIRECTORY SEE: D-AD-1170-0.
 - REMOVE REM NUT FROM BAY-FK BOX (ITEM #19) AS INDICATED IN VIEW E-E.
 - CABLE ROUTING FROM THE BAY-F BOX (ITEM #19) TO LAY FLAT ON TOP REAR OF BAY-F BOX FOLLOWING DOWN BACK OF BOX, THROUGH STRAIN RELIEF (SEE REAR VIEW OF CAB SHEET) ALLOWING FOR A SERVICE LOOP, THROUGH THE CABLE TROUGH (ITEM 128) ALLOWING FOR ANOTHER SERVICE LOOP AND INTO THE FIRST RJ11 (ITEM #30 OR #31). FASTEN CABLES TO CABLE TROUGH WITH THE WRAPS (ITEM #36) (SEE SHEET 7).
 - WHEN MOUNTING CABLES IN CABLE CLAMP (SEE DETAIL "H"), THEY SHALL BE MOUNTED AGAINST CLAMP WALL IN THE FOLLOWING ORDER ONLY: ROUND CABLE FIRST, UNIBUS CABLE SECOND & FLAT CABLES LAST. ANY DEVIATION COULD CAUSE FRACTURE OF UNIBUS CABLE.
 - CABLE (ITEM #62) TO LAY FLAT WITH SHIELD SIDE DOWN FACING BAY-F BOX (ITEM #19) WITH INDICATOR STRIPE ON RIGHT, VIEWED FROM REAR OF CABINET. CABLE (ITEM #64) TO LAY THE SAME WAY EXCEPT INDICATOR STRIPE IS TO BE ON LEFT.
 - MODULE HOLDER (ITEM #81) SHOULD BE USED TO HOLD SINGLE, DOUBLE & QUAD HEIGHT MODULES IN PLACE. QTY WILL BE DETERMINED BY NUMBER OF MODULES USED.
 - WHEN OPTIONAL H700 (ITEM #66) IS NOT INSTALLED, RUN LOOSE END OF POWER HARNESS INTO PARTING CONN (ITEM #25) AND TIE DOWN TO MAIN BODY OF HARNESS USING THE WRAP (ITEM #36).
 - ATTACH DECALS (SEE VIEW D-D) AS INDICATED BESIDE CONN. ON SHEET PARTIAL SURFACE OF H700.
 - ADHESIVE SIDE OF "WASHER" (ITEM #20) IS TO FACE "CONSOLE BOARD" (ITEM #31).
 - 4 SPACERS (ITEM 138) MUST BE MOUNTED BETWEEN "BLANK PANEL" (ITEM 122) AND THE CABINET VERTICLE TO ALLOW CLEARANCE FOR INTERLOCK.
 - INSTALL "INTERLOCK ASSY" (ITEM 141 NOT SHOWN) ON "BAY-FK ASSY" (ITEM 13) PER INSTRUCTIONS ON DEC DRAW. V: D-AD-701263-0-0.
 - FOR ASSEMBLY OF CABINET OPTIONS SEE: E-AR-H3500-0-0.
 - FOR ASSY OF AIR INTAKE BEZEL ASSY (ITEM 121) SEE E-AD-701233-0-0.



SECTION A-A
SCALE: NONE
3 PLACES



DETAIL "A"
SCALE: NONE

CAUTION
THIS SHEET IS FOR THE 1170 IN THE H3500 SERIES CAB ONLY

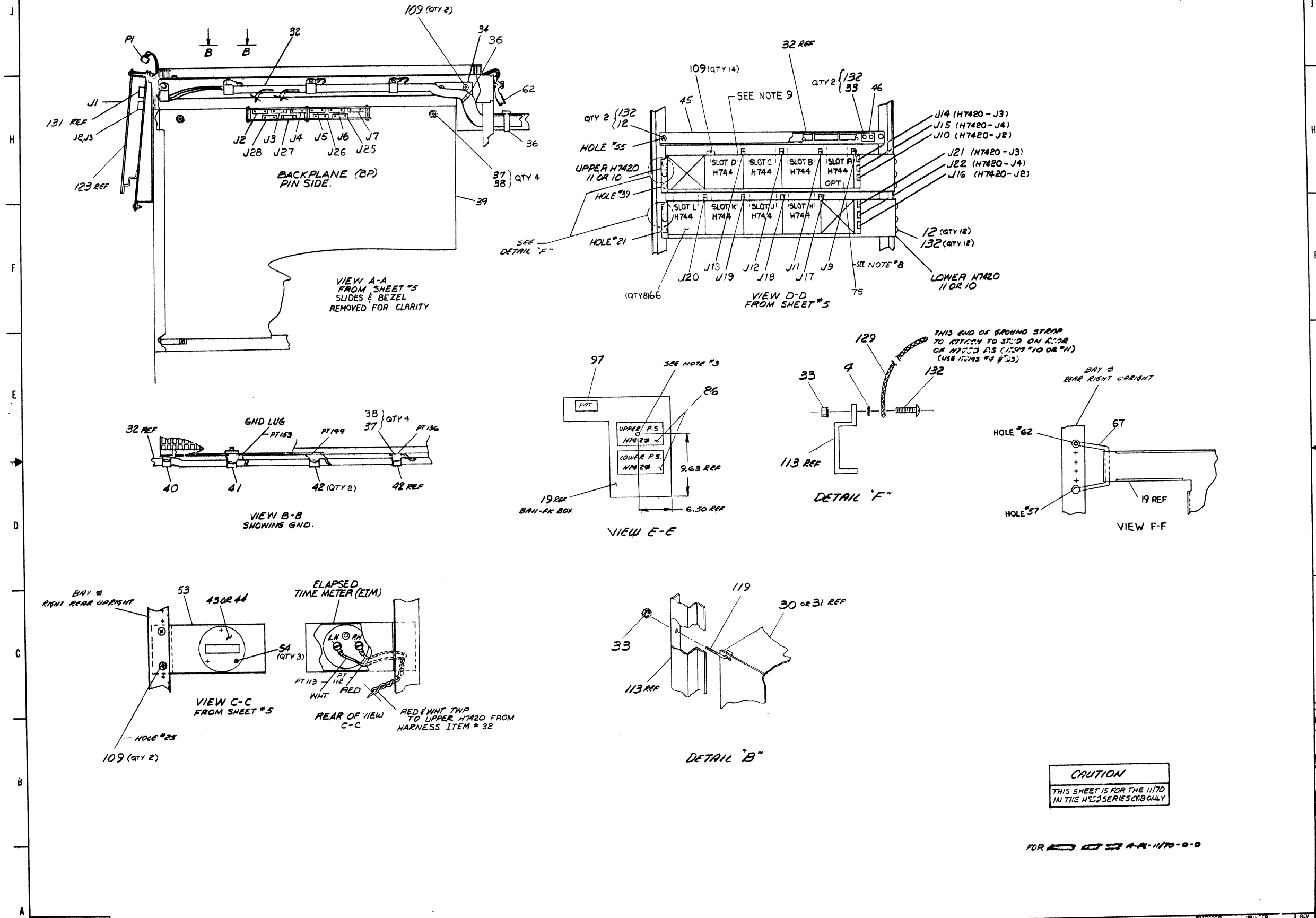
FOR PARTS LIST SEE A-R-1170-0-0

REV	CHANGE NO	REV

TITLE	UNIT ASSY 11/70	REV	K
DATE	11/70	REV	
SCALE		REV	
SHEET	3 OF 8	REV	
DIST		REV	

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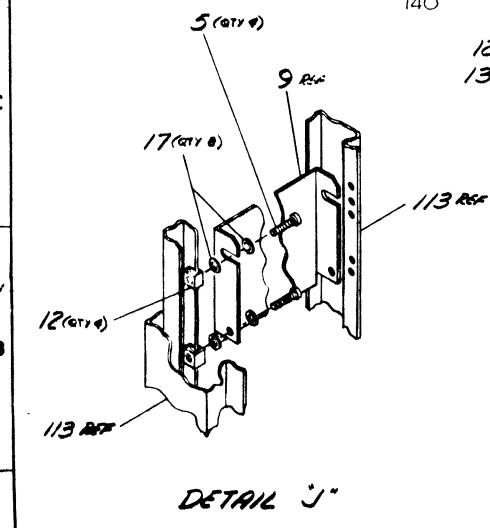
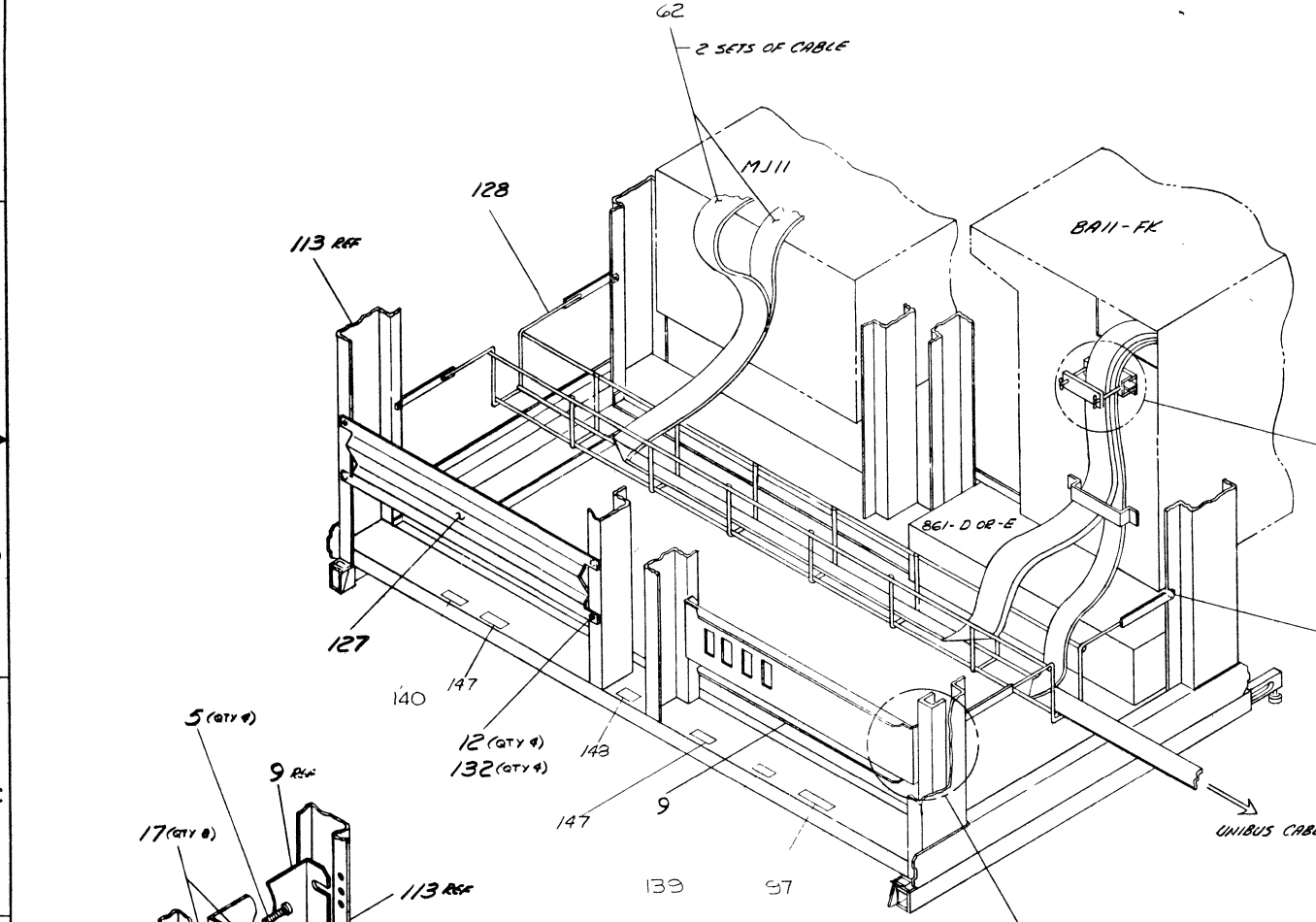
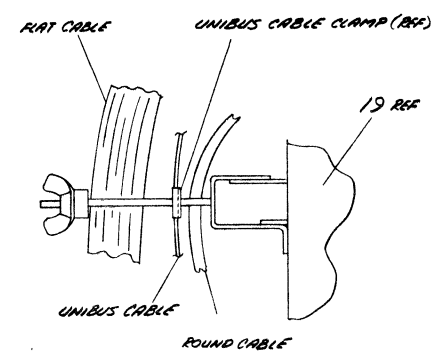
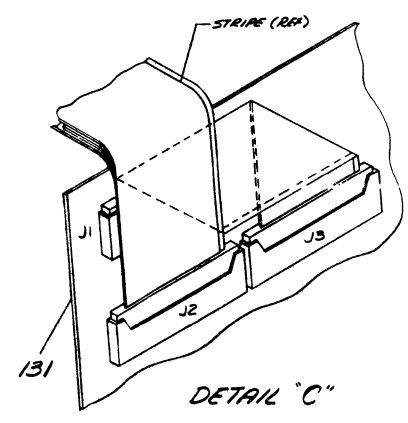
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REVISONS		DATE		BY		CHK		TITLE		DRAWN		NUMBER		REV	
NO.	DESCRIPTION	DATE	BY	CHK	DATE	BY	CHK	UNIT ASSY 11/70	EUA	11/70-0-0	EUA	11/70-0-0	1	K	

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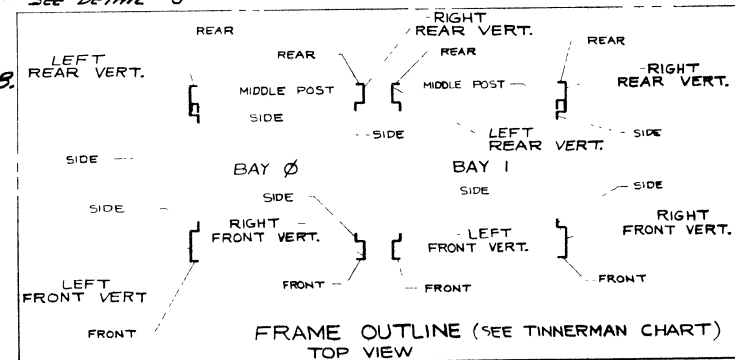
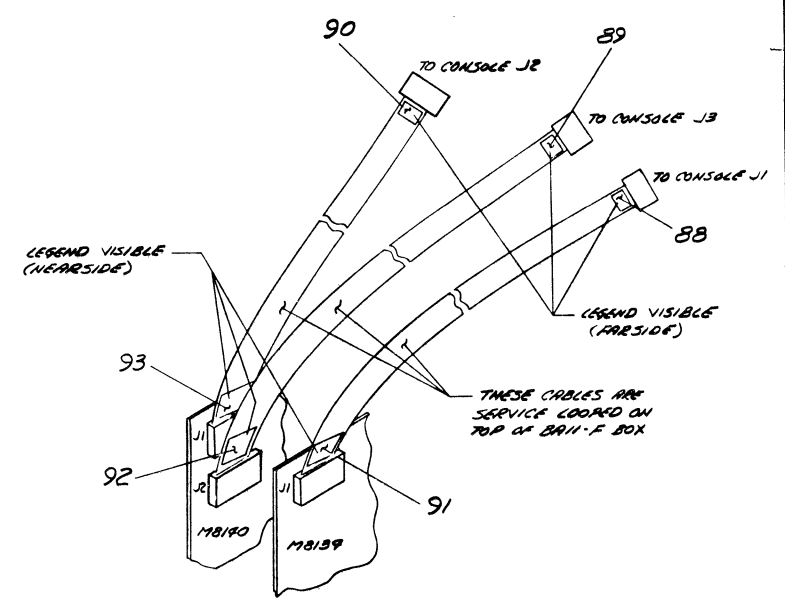


LOCATION OF TINNEMAN NUTS (ITEM #12) SEE FRAME OUTLINE AT BOTTOM OF PAGE

LOCATE ALL NUTS BY COUNTING HOLES UP FROM BOTTOM OF CIRCUMFERENCE

VERTICALS ARE DESIGNATED RIGHT & LEFT FROM THE POSITION OF STANDING FACING FRONT OF CAB.

	BAY 0			BAY 1		
	LEFT	RIGHT	MFR. HOLES FOR	LEFT	RIGHT	MFR. HOLES FOR
FRONT	5	9, 7	ITEM 6 OR 7	25, 27, 29	25, 27, 29	ITEM 30 OR 31
		21, 29, 30, 33	ITEM 10 OR 11	53, 57, 55, 56	53, 57, 55, 56	ITEM 30 OR 31
		53, 62, 61, 62	ITEM 10 OR 11	80, 81, 82, 83	80, 81, 82, 83	ITEM 30 OR 31
		79, 83	ITEM 13	30, 62	30, 62	ITEM 121
SIDE						
	17		ITEM 128		17	ITEM 128
		55	ITEM 93	90, 98		ITEM 125
	63, 69	ITEM 103	67, 69		ITEM 125	
REAR				5, 12	5, 12	ITEM 127
				25, 27, 29, 29	25, 27, 29, 29	ITEM 30 OR 31
				53, 57, 55, 56	53, 57, 55, 56	ITEM 30 OR 31
				80, 81, 82, 83	80, 81, 82, 83	ITEM 30 OR 31
SIDE		7, 15	ITEM 9		17	ITEM 128
	17		ITEM 128			
		21, 29, 27	ITEM 10 OR 11			
		53, 62, 65	ITEM 10 OR 11			
	35	ITEM 13				
	59, 60, 61, 62	ITEM 13				
MIDDLE POST (SIDE)	59, 60, 61, 62		ITEM 13			
	7, 15		ITEM 9			



CAUTION
THIS SHEET IS FOR THE 1170 IN THE M82 SERIES G-3 CAB

FOR PARTS LIST SEE APL-1170-0-0

REV	CHANGE NO	REV

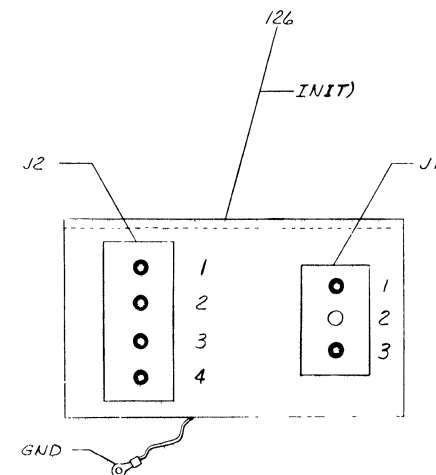
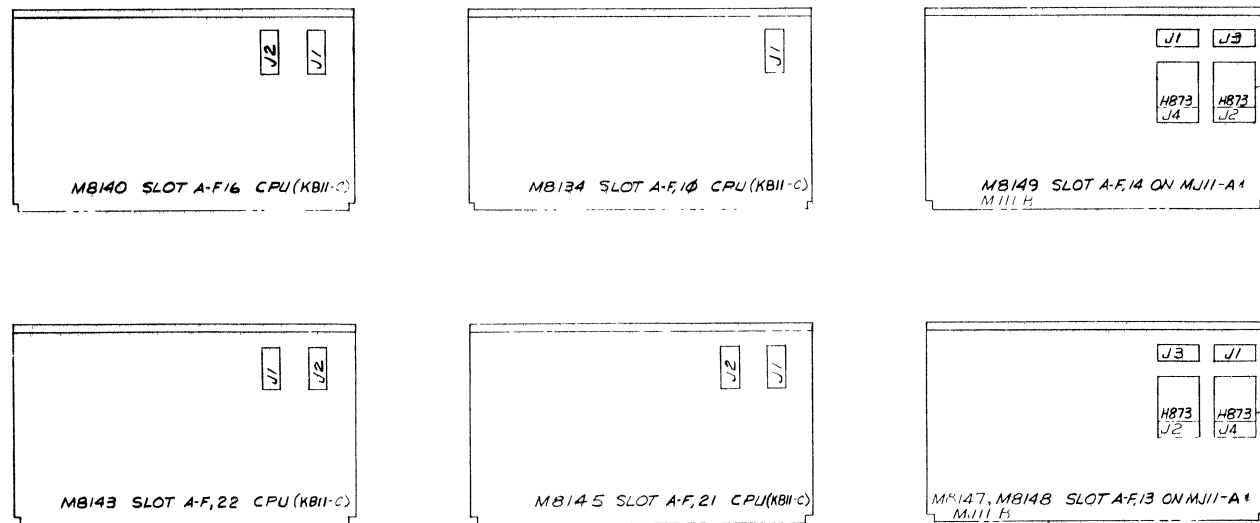
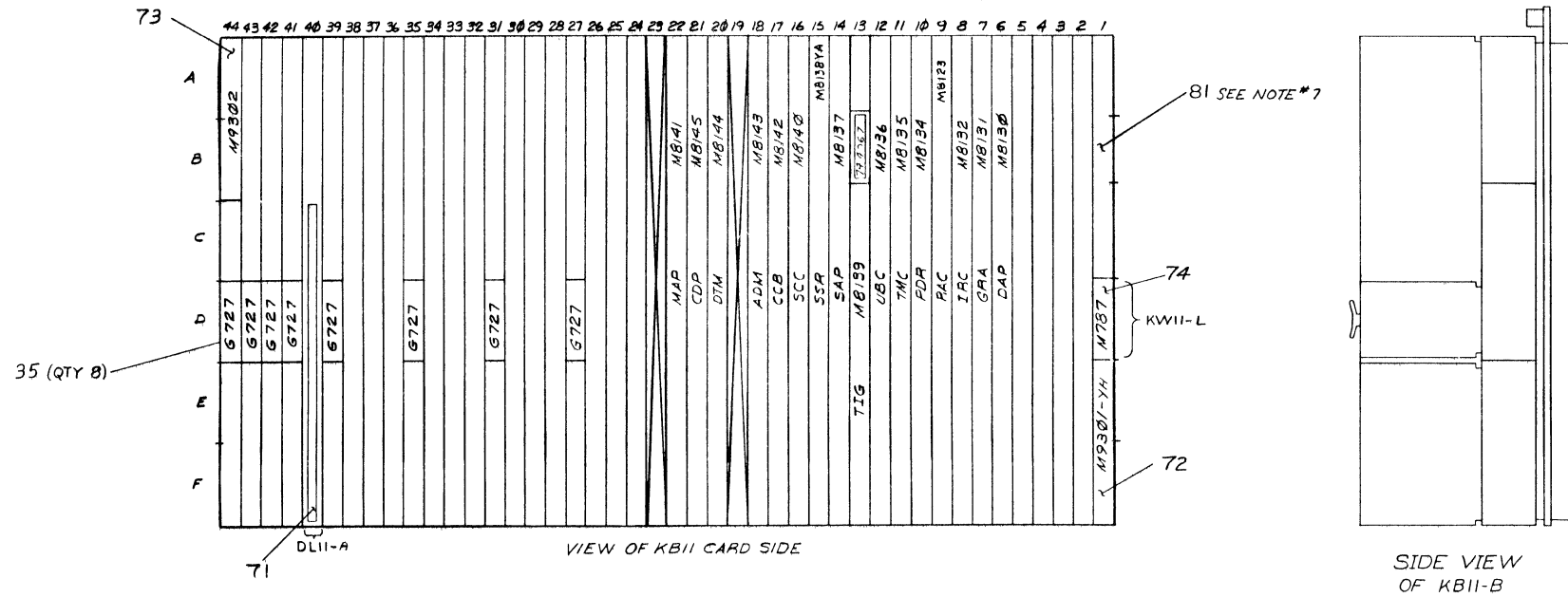
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SCALE		SHEET	7 OF 8	DIST	

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CABLE LEGEND (SEE NOTE 5)											
CABLE NO.	UNIT	FROM				UNIT	TO				REMARKS
		SLOT	MODULE	CONN.	BAV		SLOT	MODULE	CONN.	BAV	
62	KB11	A-F, 18	MB193	J1	0	MJ11	A-F, 13	MB193	J1	1	
	KB11	A-F, 18	MB193	J2	0	MJ11	A-F, 13	MB193	J3	1	
	KB11	A-F, 21	MB193	J2	0	MJ11	A-F, 18	MB193	J3	1	
69	KB11	A-F, 21	MB193	J1	0	MJ11	A-F, 18	MB193	J1	1	
	KB11	A-F, 18	MB193	J1	0	CONSOL			J1	0	
69	KB11	A-F, 18	MB193	J2	0	CONSOL			J3	0	
	KB11	A-F, 18	MB193	J1	0	CONSOL			J2	0	

POWER CORD HOOKUP	
FROM	TO
UPPER H7420 BAY 0	B6-FE PHASE 1 (SWITCHED)
LOWER H7420 BAY 0	B6-FE PHASE 2 (SWITCHED)
MJ11-A BAY 1	B6-FE PHASE 3 (SWITCHED)

HARNESS TABLE		
ITEM NO	FROM HARNESS	TO CONN.
	P1	J4 (CONS)
	P2	J2 (BA)
	P3	J3 (BP)
	P4	J4 (BP)
	P5	J5 (BA)
	P6	J6 (BP)
	P7	J7 (BP)
	P28	J28 (BP)
	P27	J27 (BP)
	P26	J26 (BP)
	P25	J25 (BP)
	P8	J8 (BA11-F)
	P15	J15 (H7420)
	P10	J10 (H7420)
	P14	J14 (H7420)
32	P9	J9 (H744)
	P11	J11 (H744)
	P12	J12 (H744)
	P13	J13 (H744)
	P22	J22 (H744)
	P16	J16 (H744)
	P21	J21 (H744)
	P18	J18 (H744)
	P19	J19 (H744)
	P20	J20 (H744)
	P17	J17 (H744)
	P23	J23 (B61)
	P24	J24 (B61)
	PT112	E-T-M (RH)
	PT113	E-T-M (LH)
	PT144	CHD CHASSIS
	PT156	CHD CHASSIS
	PT153	CHD CHASSIS
51	PT149	J23 (B61)
176	J11 (H744)	J11 (H744)
	J12 (H744)	J12 (H744)
	J13 (H744)	J13 (H744)
	J14 (H744)	J14 (H744)
	J15 (H744)	J15 (H744)
	J16 (H744)	J16 (H744)
	J17 (H744)	J17 (H744)
	J18 (H744)	J18 (H744)
	J19 (H744)	J19 (H744)
	J20 (H744)	J20 (H744)
	J21 (H744)	J21 (H744)
	J22 (H744)	J22 (H744)
	J23 (H744)	J23 (H744)
	J24 (H744)	J24 (H744)



CAUTION
THIS SHEET IS FOR THE 11/70 IN THE H950 SERIES CAB ONLY

FOR PARTS LIST SEE A-F-11/70-0-0

REVISIONS		
CHR	CHANGE NO	REV

TITLE	UNIT ASSY 11/70	REV	1	DATE	11/70	SCALE	1:1	DR	EUA	CHK	K
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11/70-0-0

448

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST			QUANTITY / VARIATION															
MADE BY G. MARINI DATE 1/16/75 ENG <i>Ronald J. Healy</i> DATE 3/26/75			CHECKED D. HEALY DATE 2/19/75 PROD <i>Don Weaver</i> DATE 3/29/75			SECTION 1 ISSUED SECT. 1			11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ						
1	E-IA-7010297-0-0	PANEL ASSY	2	2	2	2	-	-	2	2	-	-						
2	D-IA-7412671-0-0	BRKT. PANEL SUPPORT	2	2	2	2	-	-	2	2	-	-						
3	9006022+1	SCR PHIL HD PAN #6-32 X .38	12	12	12	12	7	7	12	12	7	7						
4	9007651	WASHER EXT. TOOTH LOCK #10	20	20	20	20	4	4	20	20	4	4						
5	9006073-3	SCR PHIL HD TRUSS #10-32 X .50	20	20	20	20	4	4	20	20	4	4						
6	D-UA-861-D-0	POWER CONT 861-D 115V	2	-	2	-	1	-	2	-	1	-						
7	D-UA-861-E-0	POWER CONT 861-E 230V	-	2	-	2	-	1	-	2	-	1						
8	D-UA-H952-AC- β	END PANEL H952-AC	2	2	2	2	-	-	2	2	-	-						
9	D-AD-7010574-0-0	CONNECTOR PANEL ASSY	1	1	1	1	1	1	1	1	1	1						
10	D-UA-H7420-A- β	H7420-A POWER SUPPLY 120V	2	-	2	-	2	-	2	-	2	-						
11	D-UA-H7420-B- β	H7420-B POWER SUPPLY 240V	-	2	-	2	-	2	-	2	-	2						
12	9007786	NUT, SPRING #10	64	64	64	64	113	113	64	64	113	113						
13	D-AD-7010532-0-0	FULL DOOR UNIT ASSY	2	2	2	2	-	-	2	2	-	-						
14	C-PL-7006501-36-0	BASIC CAB ASSY 19"	1	-	1	-	-	-	1	-	-	-						
15	D-IA-7010780-0-0	PANEL LOGO 11/70	1	1	1	1	-	-	1	1	-	-						
16	D-UA-H952-QB- β	COVER PANEL 10 1/2 H952-QB	3	3	3	3	-	-	3	3	-	-						
17	9006714	WASH, NYLON .25 I.D. X .06 THK	8	8	8	8	8	8	8	8	8	8						
18	C-PS-1211386-0-0	THICK LATCH MOULDING	12	12	12	12	-	-	12	12	-	-						
19	E-UA-BALL-FK- β	UNIT ASSY BALL-FK	1	1	1	1	1	1	1	1	1	1						
20	9008848	WATER FIBER (ADHESIVE BACK)	6	6	6	6	6	6	6	6	6	6						
21	D-IA-7412671-0-0	BRKT. PANEL SUPPORT	2	2	2	2	-	-	2	2	-	-						
22	1212316	SPACER HEX #6-32 MALE X .38	3	3	3	3	3	3	3	3	3	3						
TITLE UNIT ASSY 11/70			ASSY NO. E-UA-11/70-0-0	SIZE CODE A PL	NUMBER 11/70-0-0	REV K	ECO NO 11/70-0000H											
DEC FORM DEC 16-(325)-1031-N870 DRA 110			SHEET 1 OF 7	DIST														

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST			QUANTITY / VARIATION															
MADE BY G. MARINI DATE 1/16/75 ENG <i>Ronald J. Healy</i> DATE 3/26/75			CHECKED D. HEALY DATE 2/19/75 PROD <i>Don Weaver</i> DATE 3/29/75			SECTION 1 ISSUED SECT. 1			11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ						
45	D-MD-7409445-0-0	BRKT. HARNESS SUPPORT	1	1	1	1	1	1	1	1	1	1						
46	B-MD-7409447-0-0	PLATE SUPPORT	1	1	1	1	1	1	1	1	1	1						
47	1700006-0-9	POWER CORD, 115V 13A (9 FT)	1	-	1	-	-	-	1	-	-	-						
48	9007928-01	CONN. SOLDERLESS CRIMP #10 HOLE	3	3	3	3	-	-	3	3	-	-						
49	9008264	TIE MOUNT ADH. BACK	A	A	A	A	A	A	A	A	A	A						
50	3610267	DECAL (DANGER HIGH VOLTAGE)	2	2	2	2	-	-	2	2	-	-						
51	C-IA-7010695-0-0	861-D to 861-D HARNESS	1	1	1	1	-	-	1	1	-	-						
52	9006071-3	SCR PHIL HD TRUSS #10-32 X .38	3	3	3	3	-	-	3	3	-	-						
53	D-IA-7409622-0-0	BRKT. METER MTG.	1	1	1	1	1	1	1	1	1	1						
54	9009236-1	SCR SELF TAP PH HD PAN 4-40 X .31	3	3	3	3	3	3	3	3	3	3						
55	1700016-09	POWER CORD 230V 10 A (9 FT)	-	1	-	1	-	-	-	1	-	-						
56	9006899	STRIP, TERM (4 TERM)	1	1	1	1	-	-	1	1	-	-						
57	9006568	NUT, KEPS 5/16-18	3	3	3	3	-	-	3	3	-	-						
58	9007929-01	CONN SOLDERLESS #6 HOLE	4	4	4	4	-	-	4	4	-	-						
59	9006025-1	SCR PHIL HD PAN 6-32 X .62	4	4	4	4	-	-	4	4	-	-						
60	9006560	NUT KEPS #5-32	4	4	4	4	-	-	4	4	-	-						
61	C-MD-7407607-0-0	PLATE, JONES STRIP	1	1	1	1	-	-	1	1	-	-						
62	D-AD-7010823-0-0	CABLE ASSY	1	1	1	1	1	1	1	1	1	1						
63	D-CS-H873- β -1	TERMINATOR, MEMORY BUS	4	4	4	4	4	4	4	4	4	4						
64	D-UA-RC06R- β - β	7/0 CABLE COVER	3	3	3	3	3	3	3	3	3	3						
65	9006011-1	SCR PHIL PAN #4-40 X .38	8	8	8	8	-	-	8	8	-	-						
66	E-UA-H744- β - β	5V REGULATOR	7	7	7	7	7	7	7	7	7	7						
TITLE UNIT ASSY 11/70			ASSY NO. E-UA-11/70-0-0	SIZE CODE A PL	NUMBER 11/70-0-0	REV K	ECO NO 11/70-0000H											
DEC FORM DEC 16-(325)-1031-N870 DRA 110			SHEET 3 OF 7	DIST														

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST			QUANTITY / VARIATION															
MADE BY G. MARINI DATE 1/16/75 ENG <i>Ronald J. Healy</i> DATE 3/26/75			CHECKED D. HEALY DATE 2/19/75 PROD <i>Don Weaver</i> DATE 3/29/75			SECTION 1 ISSUED SECT. 1			11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ						
23	D-IA-7413126-0-0	PANEL INDICATOR	1	1	1	1	-	-	1	1	-	-						
24	9006404-2	SCR PHIL FLAT HD #6-32 X .38	5	5	5	5	5	5	5	5	5	5						
25	E-PS-1210710-0-0	BEZEL	1	1	1	1	1	1	1	1	1	1						
26	9008887	JUMPER ASSY	1	1	1	1	-	-	1	1	-	-						
27	C-PL-7006501-35-0	BASIC CAB ASSY 19"	1	1	1	1	-	-	1	1	-	-						
28	D-IA-7010780-1-0	PANEL LOGO (BLANK)	1	1	1	1	-	-	1	1	-	-						
29	D-AD-7010791-0-0	FRONT DOOR ASSY	1	1	1	1	-	-	1	1	-	-						
30	E-UA-MJ11-AY- β	UNIT ASSY MJ11	1	-	1	-	-	-	1	-	-	-						
31	E-UA-MJ11-AZ- β	UNIT ASSY MJ11	-	1	-	1	-	-	-	-	-	-						
32	J-IA-7011051-0-0	HARNESS POWER, 11/70	1	1	1	1	1	1	1	1	1	1						
33	9006565	NUT KEPS #10-32	6	6	6	6	10	10	6	6	10	10						
34	D-IA-7409446-0-0	SUPPORT HARNESS	1	1	1	1	1	1	1	1	1	1						
35	A-PL-G727- β - β	GRANT CONTINUITY	8	8	8	8	8	8	8	8	8	8						
36	9007880	TIE WRAP	A	A	A	A	A	A	A	A	A	A						
37	9008072	WASHER EXT. TOOTH LOCK #8	8	8	8	8	2	2	8	8	2	2						
38	906037-1	SCR PH HD PAN 8-32 X .38	8	8	8	8	-	-	8	8	-	-						
39	A-PL-KB11-B- β	16 BIT PROCESSOR	1	1	-	-	-	-	-	-	-	-						
40	9007083	CLAMP CABLE 3/8"	1	1	1	1	1	1	1	1	1	1						
41	9007087	CLAMP CABLE 5/8"	1	1	1	1	1	1	1	1	1	1						
42	9007090	CLAMP CABLE 7/8"	2	2	2	2	2	2	2	2	2	2						
43	1201208	METER ELAPSED TIME 120V / 60HZ	1	-	1	-	-	-	1	-	-	-						
44	1202234	METER ELAPSED TIME 120V / 50HZ	-	1	-	1	-	-	-	1	-	-						
TITLE UNIT ASSY 11/70			ASSY NO. E-UA-11/70-0-0	SIZE CODE A PL	NUMBER 11/70-0-0	REV K	ECO NO 11/70-0000H											
DEC FORM DEC 16-(325)-1031-N870 DRA 110			SHEET 2 OF 3	DIST														

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST			QUANTITY / VARIATION															
MADE BY G. MARINI DATE 1/16/75 ENG <i>Ronald J. Healy</i> DATE 3/26/75			CHECKED D. HEALY DATE 2/19/75 PROD <i>Don Weaver</i> DATE 3/29/75			SECTION 1 ISSUED SECT. 1			11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ						
67	A-PL-7010865-0-0	SHIPPING BRKT. (PROCESSOR)	1	1	1	1	1	1	1	1	1	1						
68	D-PS-1210568-03-0	SHIPPING SKID	1	1	1	1	-	-	1	1	-	-						
69	A-PS-9905128-2	SHIPPING BAG (DOUBLE BAY)	1	1	1	1	-	-	1	1	-	-						
70	9006633	WASH. INT. TOOTH #6	12	12	12	12	-	-	12	12	-	-						
71	B-DD-DL11-A	SYNC LINE INTERFACE DL11-A	1	1	1	1	1	1	1	1	1	1						
72	M9301-YH	TERMINATOR BOOT STRAP MODULE	1	1	1	1	1	1	1	1	1	1						
73	D-CS-M9302- β -1	BUS TERMINATOR, UNIBUS	1	1	1	1	1	1	1	1	1	1						
74	B-DD-KW11-L	LINE TIME CLOCK INTERFACE KW11-L	1	1	1	1	1	1	1	1	1	1						
75	1209340-00	CONN., 8 PIN FEMALE	4	4	4	4	-	-	4	4	-	-						
76	1209350-15	CONN., 8 PIN FEMALE	1	1	1	1	-	-	1	1	-	-						
77	1209350-06	CONN., 6 PIN FEMALE	1	1	1	1	-	-	1	1	-	-						
78	9006632	WASH. INT. TOOTH #4	8	8	8	8	-	-	8	8	-	-						
79	9006633	WASH. INT. TOOTH #6	12	12	12	12	-	-	12	12	-	-						
80	D-IA-7413126-0-0	PANEL INDICATOR	1	1	1	1	-	-	1	1	-	-						
81	D-SC-1209856-0-02	MODULE HOLDER	A	A	A	A	A	A	A	A	A	A						
82	D-DD-L800- β	DECAL	A	A	A	A	A	A	A	A	A	A						
83	3612424-00	11/70 PROCESSOR MODULE PLACE. STICKER	1	1	1	1	-	-	1	1	-	-						
84	3612425-00	DECAL CABINET DESIGNATIONS	1	1	1	1	-	-	1	1	-	-						
85	3612425-01	DECAL CABINET DESIGNATIONS	1	1	1	1	-	-	1	1	-	-						
86	3612426-00	DECALS, 11/70 RFG. CONFIGURATION	1	1	1	1	1	1	1	1	1	1						
TITLE UNIT ASSY 11/70			ASSY NO. E-UA-11/70-0-0	SIZE CODE A PL	NUMBER 11/70-0-0	REV K	ECO NO 11/70-0000H											
DEC FORM DEC 16-(325)-1031-N870 DRA 110			SHEET 4 OF 8	DIST														

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION									
PARTS LIST				11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
MADE BY	G. MARINI	CHECKED	D. HEALY	SECTION									
DATE	1/16/75	DATE	2/19/75	ISSUED SECT									
ENG	T. NORTHROP	PROD	DON WEAVER	ISSUED SECT									
DATE	3/26/75	DATE	3-26-75	ISSUED SECT									
ITEM NO	DWG NO. / PART NO.	DESCRIPTION											
87	A-DC-7409872-0-0	POWER HARN DECALS (P)											
88	3612427-14	CABLE MARKER (CONSOLE J1)											
89	3612427-15	CABLE MARKER (CONSOLE J2)											
90	3612427-16	CABLE MARKER (CONSOLE J3)											
91	3612427-13	CABLE MARKER (MB134-J1)											
92	3612427-12	CABLE MARKER (MB140-J2)											
93	3612427-11	CABLE MARKER (MB140-J1)											
94	9107646-0-0	TUBING, BLACK (5 IN)											
95	A-DC-7407314-0-0	DECAL 115V (WHT. ON CLR.)											
96	A-DC-7406574-0-0	DECAL 230V (WHT. ON CLR.)											
97	A-DC-7409478-0-0	DECAL, PATENT											
98	C-PL-7006501-40-0	BASIC CAB ASSY 19"											
99	9009714-03	SCR, PHL, TRUSS HD, #10-32 x .25 LG											
100	EN-01862-03	G.C. CHECK LIST											
101	C-IA-7011222-0-0	BAR ASSY, BASKET											
102	D-IA-7011223-2-0	BASKET, WIRE CABLE (1-BAY)											
103	9006664	WASHER, FLAT .218 I.D. x .062 THK											
104	9006074-2	SCR, PHL, FLAT HD. #10-32 x .62											
105	9009760	CLIP											
106	C-MD-7413983-0-0	CLAMP, WIRE BASKET											
107	9006074-3	SCR, PHL, TRUSS HD. #1032 x .62											
TITLE		UNIT ASSY 11/70	ASSY NO.	E-UA-11/70-0-0	SIZE CODE	A PL	NUMBER	11/70-0-0	REV	K	ECO NO		
SHEET		5	OF 7		DIST								

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION									
PARTS LIST				11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
MADE BY	G. MARINI	CHECKED	D. HEALY	SECTION									
DATE	1/16/75	DATE	2/19/75	ISSUED SECT									
ENG	T. NORTHROP	PROD	DON WEAVER	ISSUED SECT									
DATE	3/26/75	DATE	3/26/75	ISSUED SECT									
ITEM NO	DWG NO. / PART NO.	DESCRIPTION											
129	9008847-00	GND STRAP											
130	D-CS-5411294-0-1	11/70 CONSOLE BD.											
131	D-CS-5411294-1-1	570 CONSOLE BOARD											
132	9009700-00	SCREW, SEMS, PHL. TRUSS HD, #10-32x.50											
133	9006041-01	SCREW, PHL PAN HD, #8-32x.75											
134	9006818-00	SPACER, .38 AF x .25 LG, #8											
135	9007906-00	WASHER, SPLIT LOCK, #10											
136	9009005-00	NUT, HEX, #10-32											
137	9007649-00	WASHER, EXT. TOOTH LOCK, #6											
138	9006795-00	SPACER, #10 x .12 LG											
139	3612425-03	DECAL, "BAY 8"											
140	3612425-04	DECAL, "BAY 1"											
141	D-AD-7012669-0-0	INTERLOCK ASSY											
142	E-UA-MJ11-BY-0	UNIT ASSY. MJ11											
143	E-UA-MJ11-BZ-0	UNIT ASSY. MJ11											
144	3612425-06	DECAL CAB DESIGNATIONS											
145	C-PL-MJ11-BA-0	MJ11-BA UNIT ASSY											
146	C-PL-MJ11-BB-0	MJ11-BB UNIT ASSY											
147	A-DC-7417478-0-0	DECAL, CABLE LOCATING (SIGNAL)											
148	A-DC-7417479-0-0	DECAL, CABLE LOCATING (POWER)											
REF	E-AR-11/70-0-1	11/70 SYSTEM EXPANSION											
TITLE		UNIT ASSY 11/70	ASSY NO.	E-UA-11/70-0-0	SIZE CODE	A PL	NUMBER	11/70-0-0	REV	K	ECO NO		
SHEET		7	OF 7		DIST								

DEC FORM DEC 16-(325)-1031-N870
DRA 110

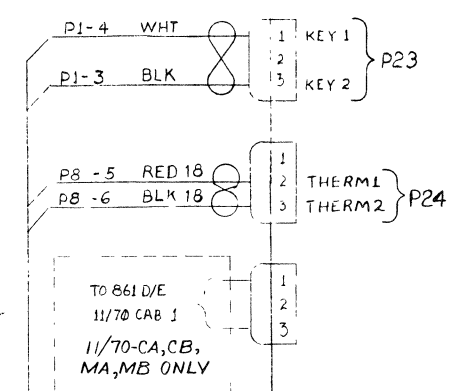
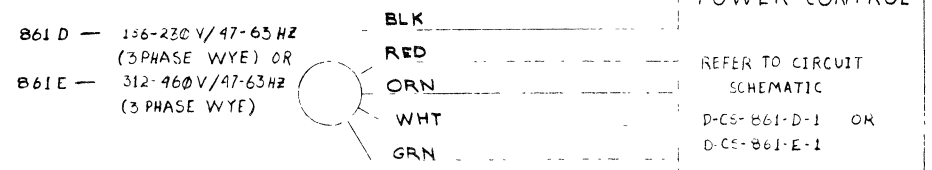
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION									
PARTS LIST				11/70-CA	11/70-CB	11/70-MA	11/70-MB	11/70-ME	11/70-MF	11/70-MC	11/70-MD	11/70-MH	11/70-MJ
MADE BY	G. MARINI	CHECKED	D. HEALY	SECTION									
DATE	1/16/75	DATE	2/19/75	ISSUED SECT									
ENG	T. NORTHROP	PROD	DON WEAVER	ISSUED SECT									
DATE	3/26/75	DATE	3/26/75	ISSUED SECT									
ITEM NO	DWG NO. / PART NO.	DESCRIPTION											
108	9009002	CINCH JONES JUMPER											
109	9009228-10	SCREW, SEMS PHL PAN HD #10-32 x .38											
110	9006022-3	SCREW, PHL TRUSS HD #6-32 x .38											
111	3612424-1-0	11/70 PROCESSOR MODULE PLACEMENT											
		STICKER											
112	A-PL-KB11-C-0	16 BIT PROCESSOR											
113	A-PL-H9506-A-0	H9506-A FRAME ASSY											
114	A-PL-H9504-CA-0	END PANEL ASSY (HI BOY)											
115	A-PL-H9504-HA-0	DOOR ASSY, LEFT REAR (HI BOY)											
116	A-PL-H9504-EA-0	DOOR ASSY, RIGHT REAR (HI BOY)											
117	A-PL-H9504-NA-0	COVER, TOP											
118	A-PL-H9504-RC-0	COVER, FRONT, DOUBLE BAY											
119	C-MD-7413859-0-0	BRACKET, SHIPPING											
120	A-PL-H9504-YA-0	H9504-YA TRIM STRIP MOLDING											
121	E-AD-7012399-0-0	10.50 AIR INTAKE BEZEL ASSY											
122	A-PL-H9504-SA-0	H9504-SA 5.25 BLANK PANEL											
123	D-IA-7013916-0-0	PANEL, INDICATOR, 570											
124	1212173-00	ROD & TUBE ASSY											
125	C-MD-7413654-0-0	SUPPORT, ROLLER, BRKT											
126	B-AD-7013443-0-0	INITIALIZER PANEL ASSY											
127	D-IA-7414167-0-0	PLATE, CONN MFG											
128	1213092-01	WIRE TROUGH, DOUBLE BAY											
TITLE		UNIT ASSY 11/70	ASSY NO.	E-UA-11/70-0-0	SIZE CODE	A PL	NUMBER	11/70-0-0	REV	K	ECO NO		
SHEET		6	OF 7		DIST								

DEC FORM DEC 16-(325)-1031-N870
DRA 110

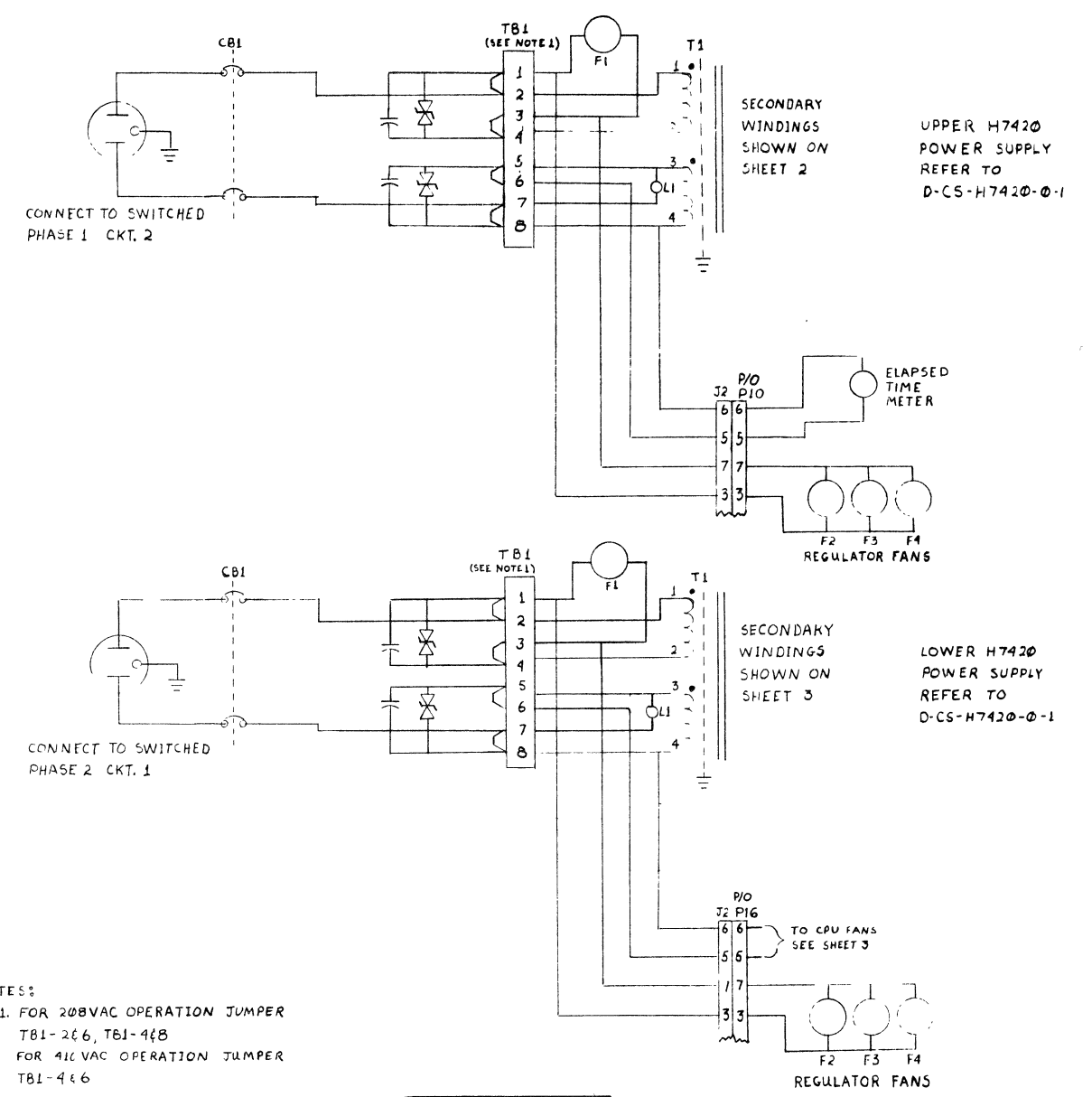
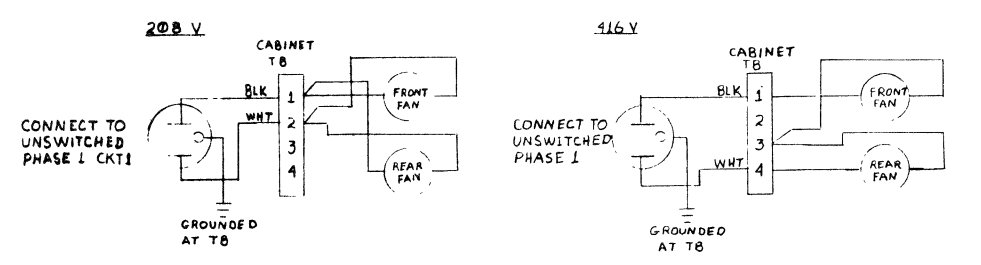
450

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D I C 11/70-0-2



CABINET FAN HOOK UP FOR:
11/70-CA,CB,MA,MB ONLY



NOTES:
1. FOR 200VAC OPERATION JUMPER T81-2&6, T81-4&8
FOR 416 VAC OPERATION JUMPER T81-4&6

THIS SHEET IS FOR ALL 11/70 VARIATIONS

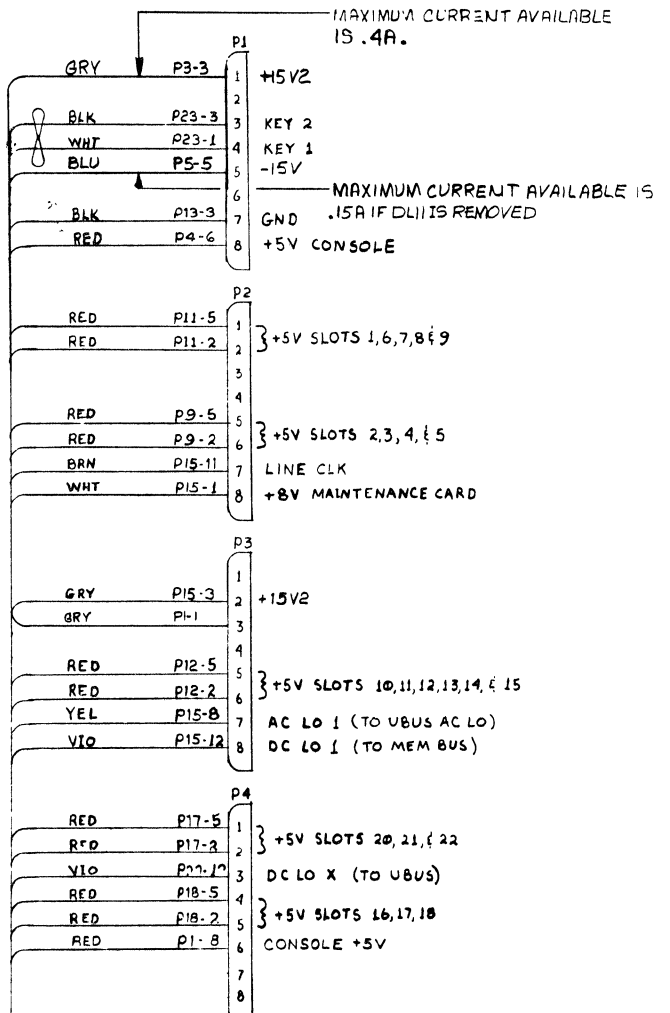
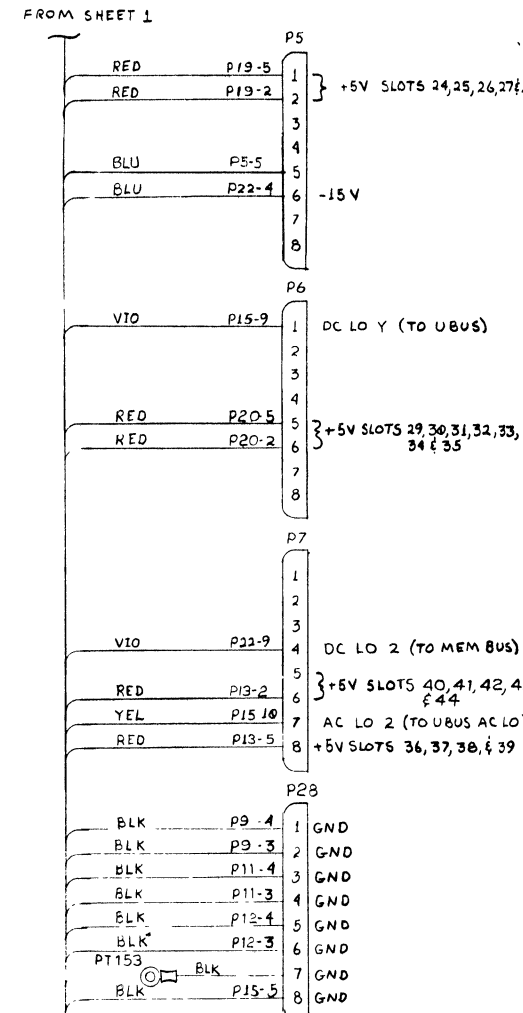
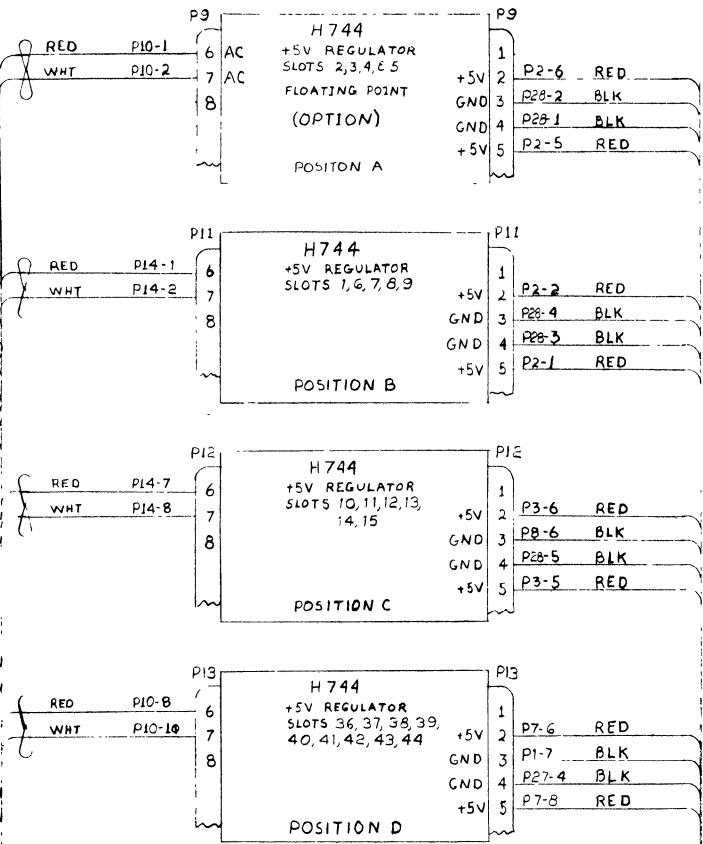
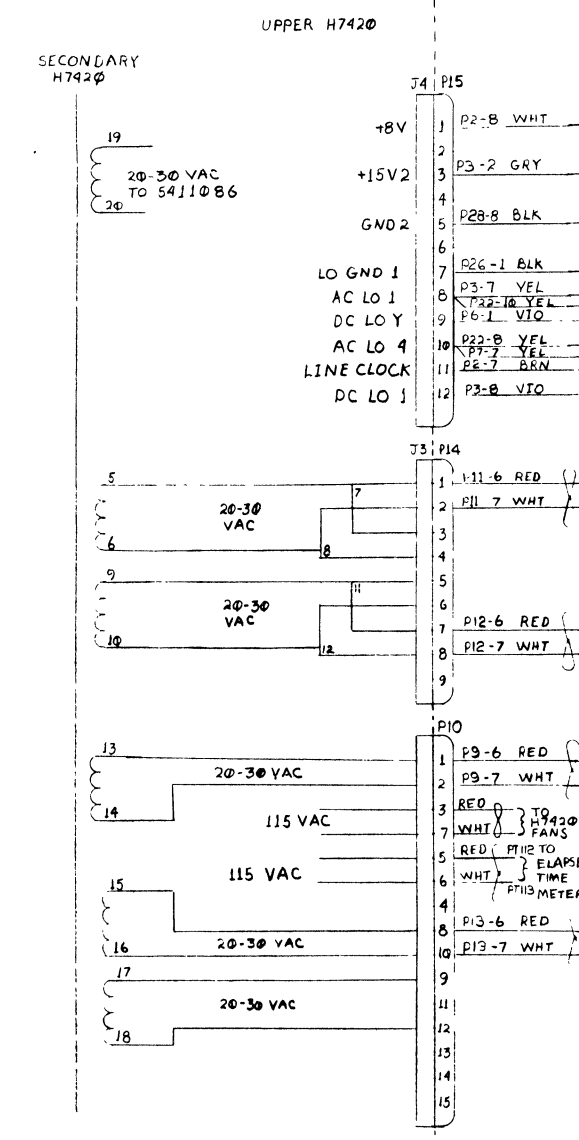
REV.	CHANGE NO.	DATE	BY	CHK'D
A	11/70-00001	4-22-76	T. NORTHROP	
B	11/70-00008		R. BOUCHER	
C	11/70-00012		R. BOUCHER	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/70		PARTS LIST		
DIMENSIONAL TOLERANCE				
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED				
MILLIMETERS	INCHES	ANGLES		
X.XX ± 0.10	.XX ± 0.005	30° 30'		
XX ± 0.5	XX ± 0.2			
X ± 2	.X ± 1			
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.		
MATERIAL	FINISH	SCALE	SIZE CODE	NUMBER
		B-DD-11/70-0	D I C	11/70-0-2
SHEET 1 OF 3		DIST		



POWER SYSTEM CONFIGURATION

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CONTINUED ON SHEET 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/70				
PARTS LIST				
DIMENSIONAL TOLERANCE		DATE		
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		DATE		
MILLIMETERS	INCHES	ANGLES	POWER SYSTEM CONFIGURATION	
.XXX = ±0.10 XX = ±0.5 X = ±2	.XXX = ±.008 .XX = ±.02 .X = ±.1	30° 30'		
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	SIZE CODE	NUMBER
MATERIAL	FINISH	SCALE	DIC 11/70-0	3
SHEET 2 OF 3			DIST	1

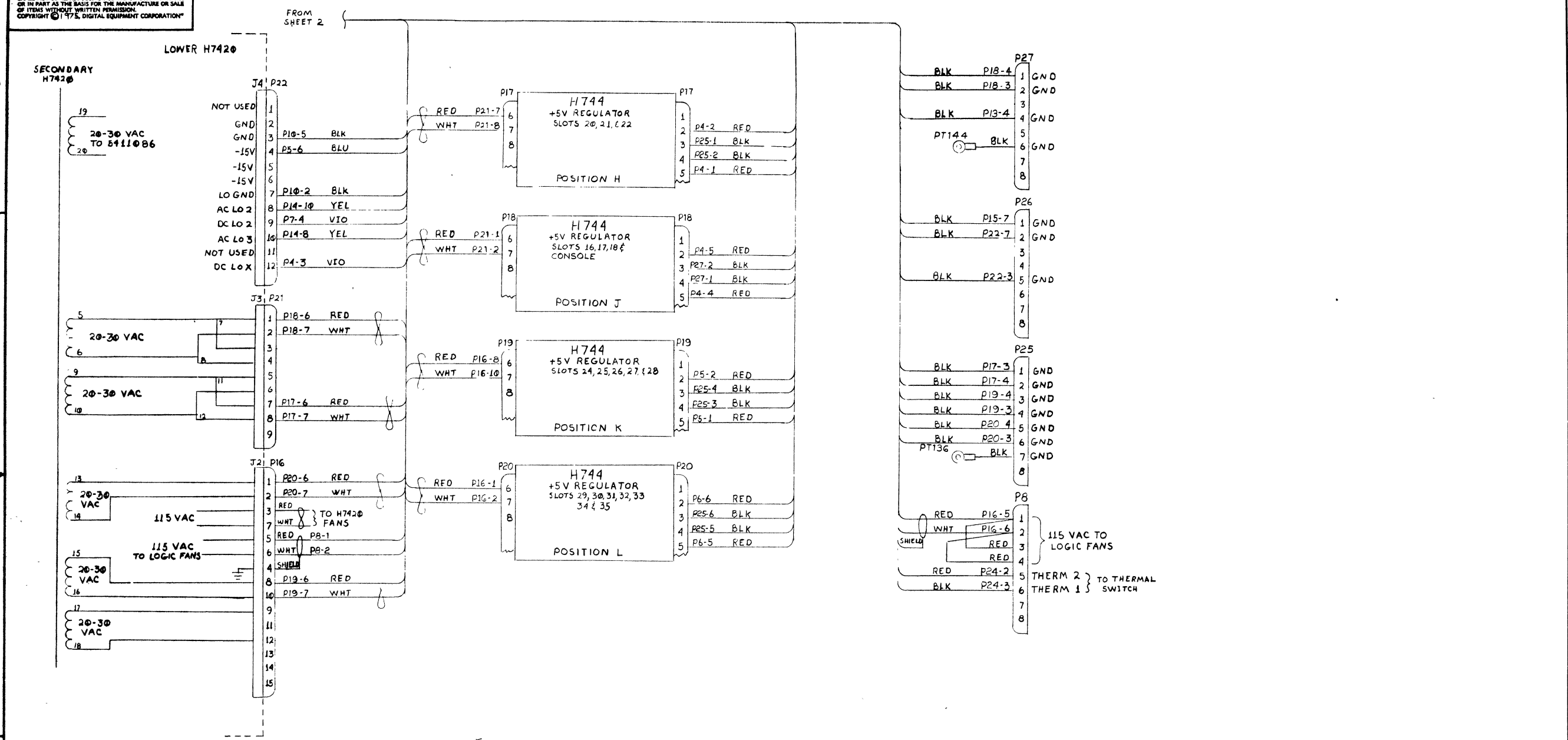
REV.	CHANGE NO.

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DEC 11/70-0-2

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2-0-02/11010 2



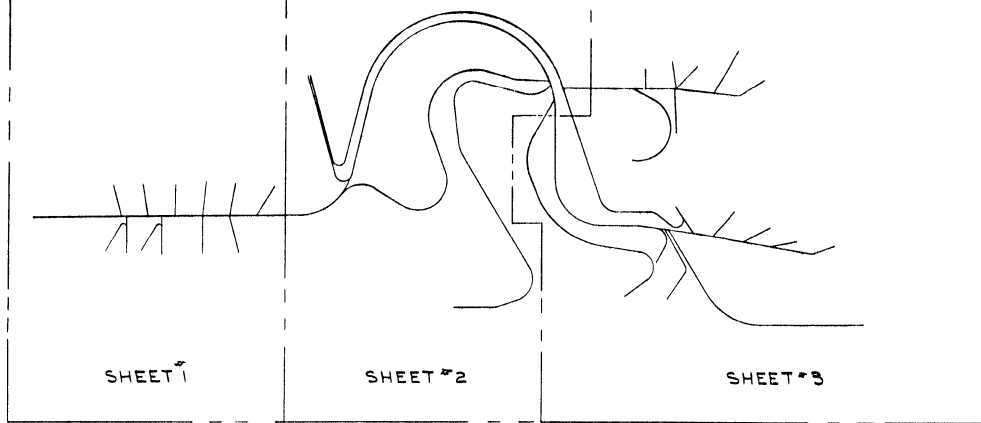
REV.	CHANGE NO.	DATE
1		

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/70				
PARTS LIST				
DIMENSIONAL TOLERANCE		DATE	DIGITAL	
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		DATE	TITLE	
MILLIMETERS	INCHES	ANGLES	POWER SYSTEM CONFIGURATION	
X.XX ±0.10	.XX ±.005	±0°30'		
X.X ±0.5	.XX ±.02			
X ±2	X ±.1			
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	SIZE CODE	NUMBER
			B-DD-11/70-0	DIC 11/70-0-2
			SCALE	REV.
			SHEET 3 OF 3	C

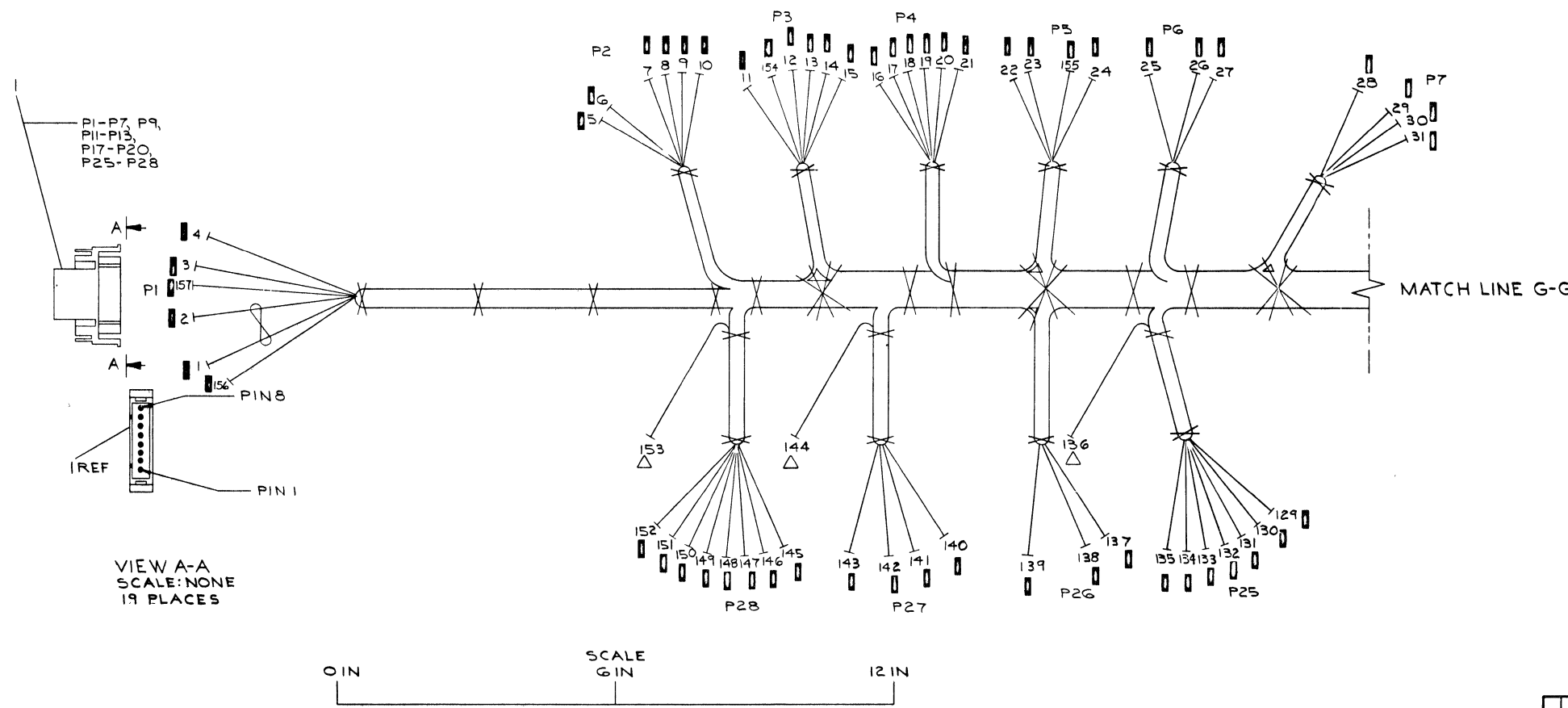
0 7 6 5 4 3 2 1

REVISIONS AND APPROVALS: [Signature]

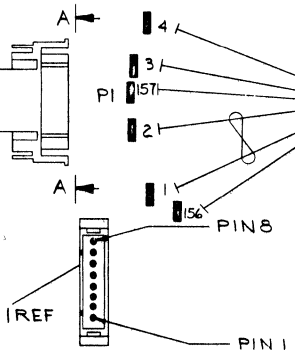
J
H
F
E
D
C
B
A



- NOTES:
- 1) USE TIE WRAPS (X) ITEM #10 APPROX. EVERY THREE (3) INCHES WHEN NECESSARY, AND AT EVERY BREAKOUT POINT
 - 2) COMPONENTS TO BE LABELED WITH COMPONENT IDENTIFIER USING BRADY MARKERS OR DECALS 7404872-0-0.
 - 3) FOR POINT TO POINT WIRING REF TO DWG: 701051-0-1
 - 4) IN AREA INDICATED ENCLOSE MAIN HARNESS WITH ZIPPER TUBING (ITEM #29) ZIPPER MUST BE ROUTED ALONG THE OUTSIDE CURVE OF BUNDLE. INSURE THAT EXCESS TUBING IS TUCKED IN AT END.
 - 5) TWIST TOGETHER
 P22-7 BLK #18 AWG.
 P22-8 YEL #18 AWG.
 P22-9 VIO #18 AWG.
 P22-10 YEL #18 AWG.
 P22-12 VIO #18 AWG.
 P15-7 BLK #18 AWG.
 P15-8 YEL #18 AWG.
 P15-10 YEL #18 AWG.
 P15-11 BRN #18 AWG.
 P15-12 VIO #18 AWG.
 - 6) WITH ARROW POINTING TO -15V (P-1)
 * MAXIMUM CURRENT AVAILABLE IS .4A
 - 7) WITH ARROW POINTING TO -15V (P-5)
 * MAXIMUM CURRENT AVAILABLE IS .5A WITH DL11 REMOVED



P1-P7, P9,
P11-P13,
P17-P20,
P25-P28



VIEW A-A
SCALE: NONE
19 PLACES

0 IN SCALE 12 IN
6 IN

DO NOT REDUCE
FOR MANUFACTURING PURPOSES ONLY

W/R	WIRE, #18 AWG BLK/RED TWP	9107430-02	29
W/R	WIRE, #18 AWG BLK/WHT TWP	9107430-09	28
W/R	TUBING, BLK .38 IN	9107245-00	27
W/R	TUBING, BLK	9107243	26
W/R	TUBING, ZIPPER	9107679	25
W/R	TUBING, #14 AWG BLK	9107295-00	24
W/R	CABLE, 2 COND - SHIELD	9107761	23
W/R	WIRE, #10 AWG RED	9107260-22	22
W/R	WIRE, #18 AWG WHT	9107360-99	21
W/R	WIRE, #18 AWG BLK	9107360-00	20
W/R	WIRE, #18 AWG BRN	9107360-11	19
W/R	WIRE, #18 AWG VIO	9107360-77	18
W/R	WIRE, #18 AWG YEL	9107360-44	17
W/R	WIRE, #14 AWG RED/WHT TWP	9107440-29	16
W/R	WIRE, #14 AWG WHT	9107370-99	15
W/R	WIRE, #14 AWG RED	9107370-22	14
W/R	WIRE, #14 AWG BLU	9107370-66	13
W/R	WIRE, #14 AWG GRAY	9107370-03	12
W/R	WIRE, #14 AWG BLK	9107370-00	11
X	TIE WRAP	9007032	10
Δ	CONN, SOLDERLESS	9007928-00	9
□	SOCKET, FEMALE	1207379-03	8
□	PIN, MALE	1209330-00	7
2	CONN, 9 PIN	1209331-09	6
2	CONN, 12 PIN	1209331-12	5
2	CONN, 15 PIN	1209331-15	4
2	CONN, 3 PIN	1209331-03	3
1	HOUSING 8 PIN	1209331-00	2
19	CONN, 8 PIN	1209331-01	1

REV	1	DATE	11/70
BY	...	...	...
CHKD	...	...	...
APP'D	...	...	...
DESIGNED	...	...	...
DRAWN	...	...	...
FLIGHT	...	...	...
REVISIONS	...	...	...

THIRD ANGLE PROJECTION

QUANTITY & VARIATION

UNLESS OTHERWISE SPECIFIED

SCALE: 1:1

TITLE: POWER HARNESS

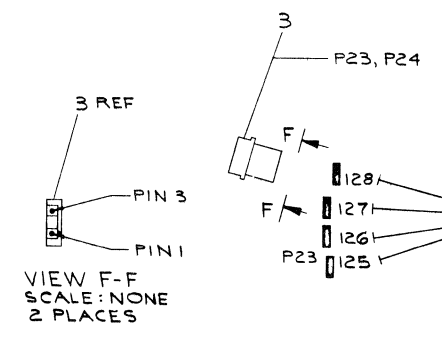
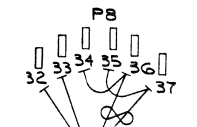
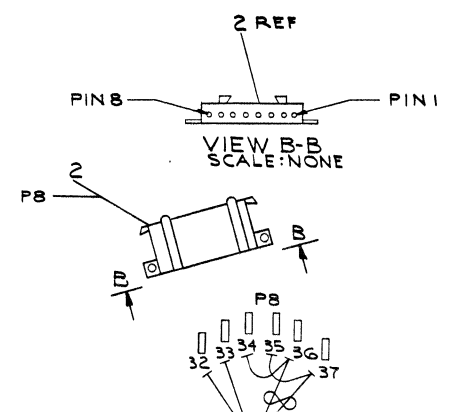
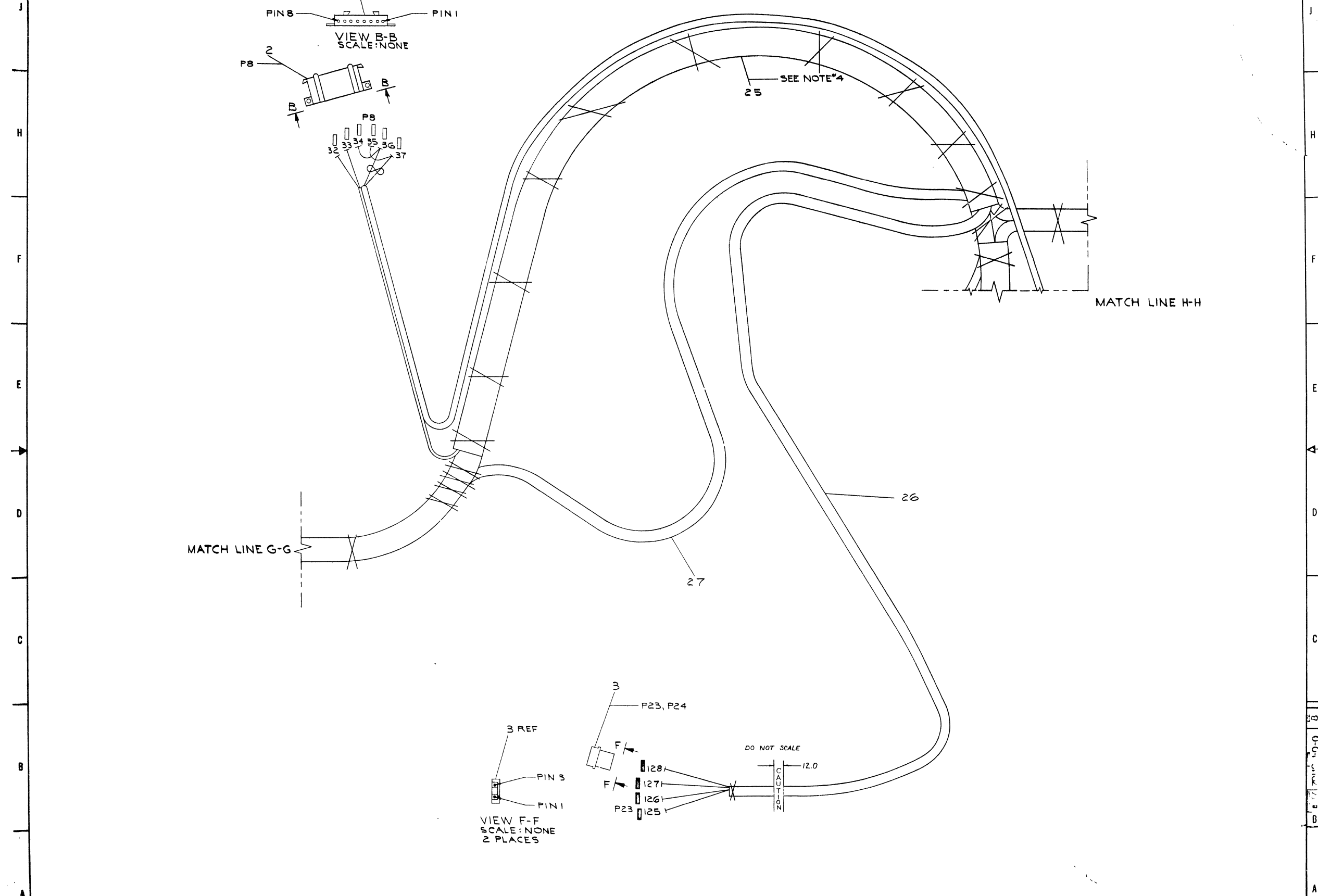
DATE: 11/70

SIZE: E 1/4 701051-0-0

454

7 6 5 4 3 2 1

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DO NOT SCALE

12.0

REV	CHANGE NO.	REV

POWER HARNESS 11/70		EIA	70110C1-C-0	REV B
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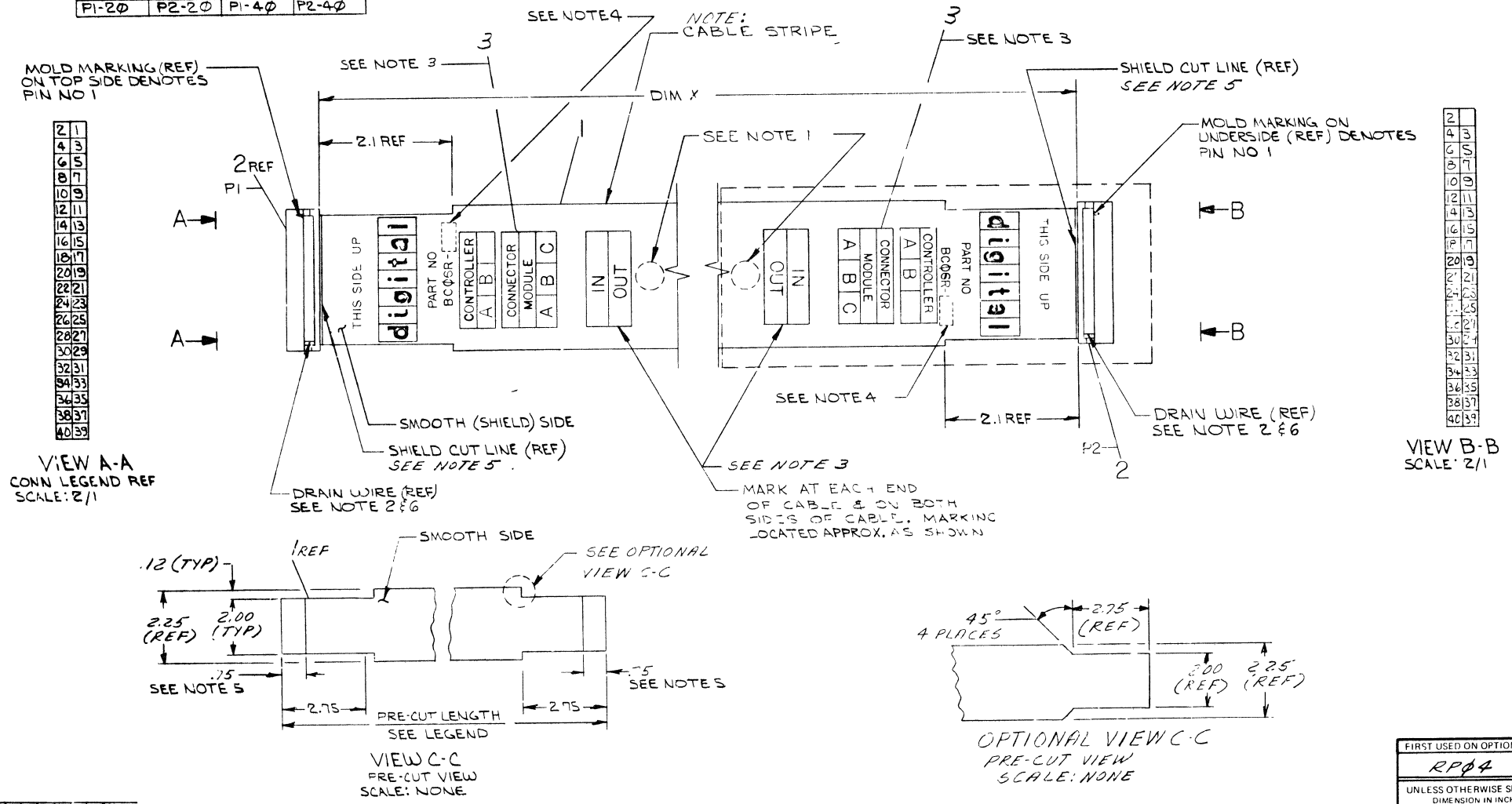
455

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WIRE TABLE			
FROM	TO	FROM	TO
P1-1	P2-1	P1-21	P2-21
P1-2	P2-2	P1-22	P2-22
P1-3	P2-3	P1-23	P2-23
P1-4	P2-4	P1-24	P2-24
P1-5	P2-5	P1-25	P2-25
P1-6	P2-6	P1-26	P2-26
P1-7	P2-7	P1-27	P2-27
P1-8	P2-8	P1-28	P2-28
P1-9	P2-9	P1-29	P2-29
P1-10	P2-10	P1-30	P2-30
P1-11	P2-11	P1-31	P2-31
P1-12	P2-12	P1-32	P2-32
P1-13	P2-13	P1-33	P2-33
P1-14	P2-14	P1-34	P2-34
P1-15	P2-15	P1-35	P2-35
P1-16	P2-16	P1-36	P2-36
P1-17	P2-17	P1-37	P2-37
P1-18	P2-18	P1-38	P2-38
P1-19	P2-19	P1-39	P2-39
P1-20	P2-20	P1-40	P2-40

LEGEND			
NUMBER	DIM X'	PRECUT LENGTH	REMARKS
BC06R-01	1 FT	1 FT 1.5 IN ± 1 IN	SEE PRE-CUT VIEW C-C
BC06R-02	2 FT	2 FT 1.5 IN ± 1 IN	
BC06R-03	3 FT	3 FT 1.5 IN ± 1 IN	
BC06R-04	4 FT	4 FT 1.5 IN ± 1 IN	
BC06R-05	4 FT 6 IN	4 FT 7.5 IN ± 1.5 IN	
BC06R-06	6 FT	6 FT 1.5 IN ± 2 IN	
BC06R-08	8 FT	8 FT 1.5 IN ± 2 IN	
BC06R-10	10 FT	10 FT 1.5 IN ± 2 IN	
BC06R-12	12 FT	12 FT 1.5 IN ± 3 IN	
BC06R-20	20 FT	20 FT 1.5 IN ± 3 IN	
BC06R-25	25 FT	25 FT 1.5 IN ± 3 IN	
BC06R-30	30 FT	30 FT 1.5 IN ± 6 IN	
BC06R-50	50 FT	50 FT 1.5 IN ± 10 FT	
BC06R-60	60 FT	60 FT 1.5 IN ± 12 FT	
BC06R-75	75 FT	75 FT 1.5 IN ± 15 FT	
BC06R-100	100 FT	100 FT 1.5 IN ± 2 FT	
BC06R-07	7 FT	7 FT 1.5 IN ± 2 IN	SEE PRE-CUT VIEW C-C

- NOTES:
1. INSPECTION & TEST STAMPS TO BE PLACED AT EACH END OF THE CABLE ASSEMBLY.
 2. DRAIN WIRE CONNECTS TO PIN NO 40.
 3. RUBBER STAMP INFORMATION SHOWN USING INK (ITEM 3) & ART WORK DEC NO A-DC-741699-0-0
 4. STAMP APPLICABLE OPTION DASH NO ACCORDING TO LENGTH.
 5. REMOVE SHIELD .75 FROM END OF PRECUT CABLE (SEE VIEW C-C).
 6. COVER EXPOSED DRAIN WIRE WITH ITEM 4 PRIOR TO ASSY (BOTH ENDS)



A/R	DESCRIPTION	PART NO	QTY
A/R	PLASTIC TAPE	3612511-0	4
A/R	INK	490150	3
Z	CONNECTOR 40 SOCKET	1211206	2
A/R	CABLE 40 COND FLAT W/SHIELD	17-00034	1

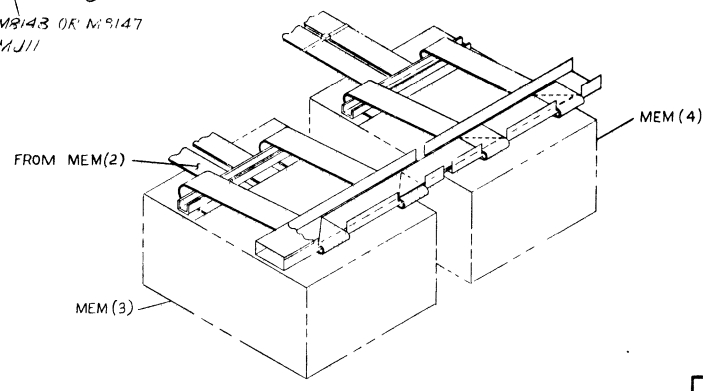
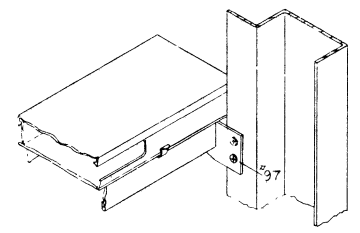
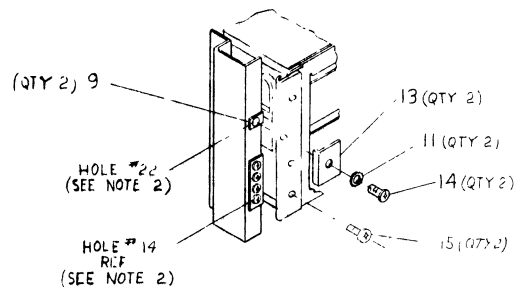
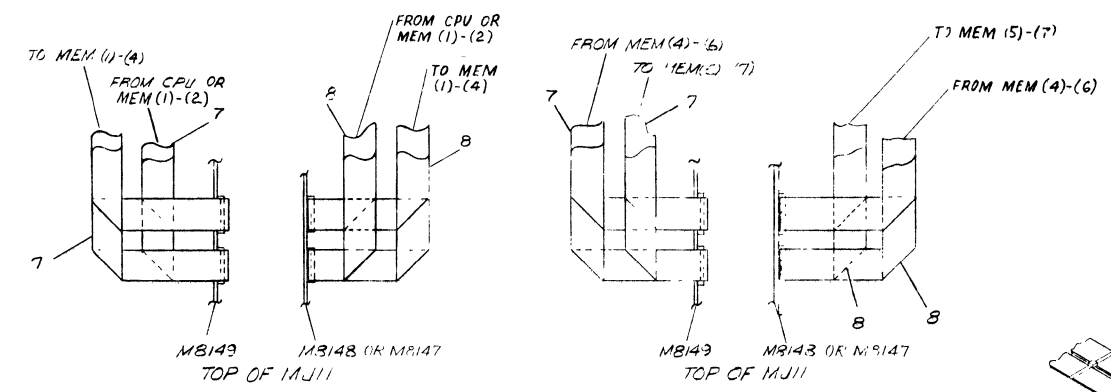
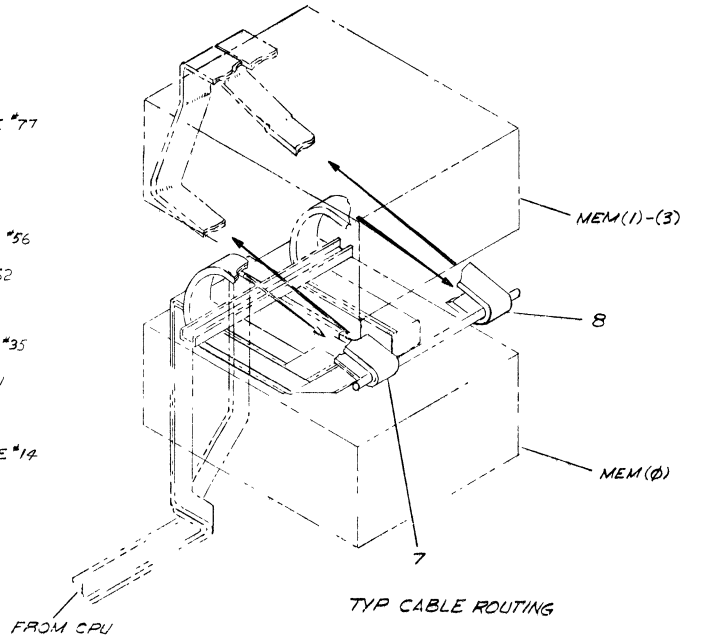
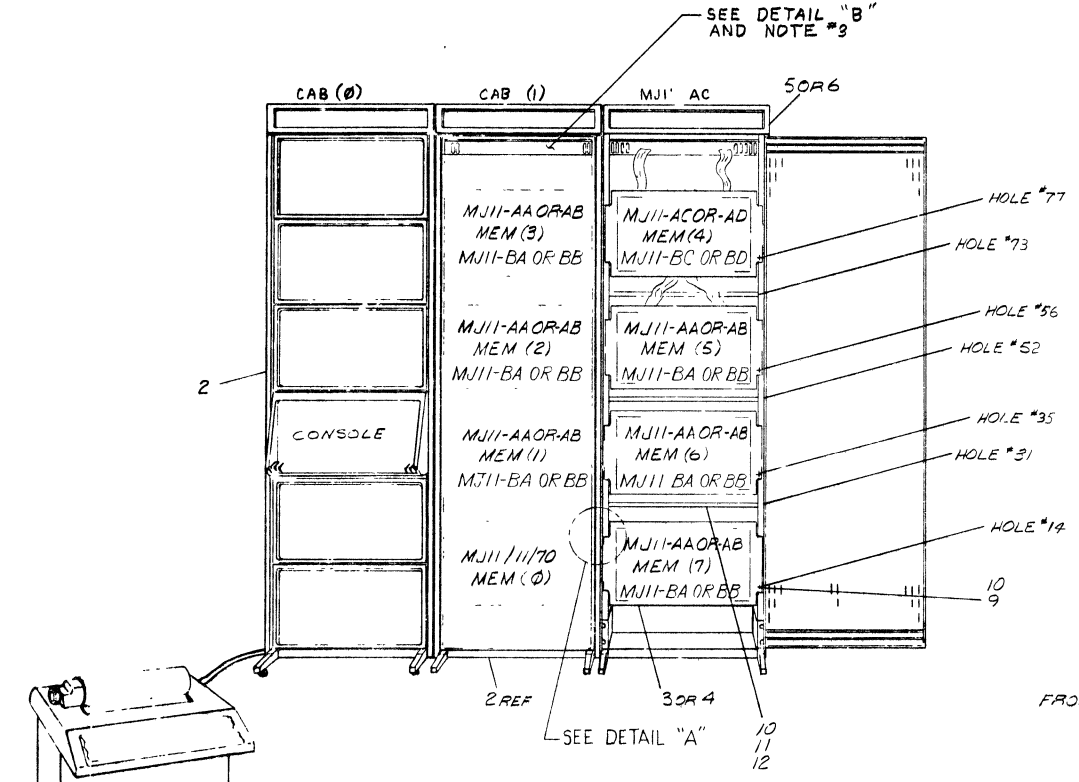
FIRST USED ON OPTION/MODEL RP04		QTY		DESCRIPTION		PART NO		ITEM NO	
PARTS LIST									
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN <i>[Signature]</i>		DATE 2-22-74		EQUIPMENT CORPORATION		REV C	
DECIMALS xxx - 005	ANGLES xx - 02	ENG <i>[Signature]</i>	DATE 2-25-74	TITLE BC06R I/O CABLE		SIZE CODE DUA BC06R-0-0		NUMBER 1	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PROD <i>[Signature]</i>		DATE 2/27/74		SCALE NONE		SHIT 1 OF 1	
MATERIAL		NEXT HIGHER ASSY		E-1A-1000000-0-0		F-1A-1000000-0-0		DIST	
FINISH H									

REV	CHANGE NO	BY	DATE
A	1	W DUNHAM	1/17/74
B	2	L CONDON	2-7-74
C	3	[Signature]	4-1-74
D	4	[Signature]	1-17-74

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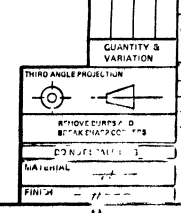
MJ11 TO B61 POWER CONNECTIONS	
MJ11	TO B61
MEMORY 0	PHASE 3-CAB 1
MEMORY 1	PHASE 1-CAB 1
MEMORY 2	PHASE 2-CAB 1
MEMORY 3	PHASE 3-CAB 1
MEMORY 4	PHASE 1-CAB MJ11-AC, BC
MEMORY 5	PHASE 2-CAB MJ11-AC, BC
MEMORY 6	PHASE 3-CAB MJ11-AC, BC
MEMORY 7	PHASE 1-CAB MJ11-AC, BC

- NOTES:
1. SYSTEM EXPANSION WILL FOLLOW THESE RULES: (A) ALL TUB OPTIONS WILL TAKE POSITIONS TO THE RIGHT OF 1170 MEM. UNIBUS INTERFACE WILL BE LEFT OF CPU 2 CAB MAX, FOLLOWED BY R504, R503 AND LIKE OPTIONS.
 2. SHIPPING BRKT TO BE USED IN THE FOLLOWING HOLE LOCATIONS IF APPLICABLE: IF BOTTOM HOLE OF MEM SLIC 15 = 14 BRKT #16 WILL BE MTD IN HOLE # 22, IF #35 HOLE, BRKT MTD IN HOLE # 43 IF #43 HOLE, BRKT MTD IN HOLE # 56 IF #77 HOLE, BRKT MTD IN HOLE # 85.
 3. ADDITIONAL CABLE TROUGH ASSY #7011027 SUPPLIED WITH MJ11-AC OR AD ASSY TO BE ATTACHED TO CAB 1 PER DETAIL B.
 4. FOR CABLE ROUTING IN CABLE TROUGHS BETWEEN CAB 1 & MJ11-AC OR AD SEE DETAIL "C".
 5. INSTALL (B61-D HARNESS) SUPPLIED WITH MJ11 FROM 3 PIN CONN. LOCATED ON B61-D OR E (FRONT) TO MJ11-AC 3 PIN CONN. LOCATED ON B61-D OR E (FRONT) OF CAB 1.
 6. JUMPER ASSY SUPPLIED WITH MJ11 TO BE GROUNDED TO GROUND STUD ON CAB 1 USING PART # JPL21FD.
 7. THIS DRAWING COVERS 1170 SYSTEM EXPANSION FOR THE 1A, 1A-MR, 1A-MR-D VARIATIONS ONLY. FOR THE 1170-DME AND ME VARIATIONS SEE B-AR-D750A-0-0.
 8. NOTES 3, 4 & 5 APPLY TO MJ11-RC #14.



REV	DATE	DESCRIPTION	BY	CHKD
1	11/70	ISSUE	R. BOULDER	
2	11/70	REVISED	R. BOULDER	
3	11/70	REVISED	R. BOULDER	
4	11/70	REVISED	R. BOULDER	
5	11/70	REVISED	R. BOULDER	
6	11/70	REVISED	R. BOULDER	
7	11/70	REVISED	R. BOULDER	
8	11/70	REVISED	R. BOULDER	
9	11/70	REVISED	R. BOULDER	
10	11/70	REVISED	R. BOULDER	

UNIT ASSY	MEM	TO	FROM	QTY
UNIT ASSY MJ11	E-VA-M11-BC	0	1	1
UNIT ASSY MJ11	E-VA-M11-R	0	1	1
UNIT ASSY MJ11	E-VA-M11-R	0	1	1
2-0 CHECK LIST				
SCR. BUL. TRUSS HD				
3-38 BUL. TRUSS HD				
MEM (1)-(3)				
MEM (4)				
MEM (5)-(7)				
MEM (0)				



1170 SYSTEM EXPANSION

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ITEM NO.	DRAWING NO./PART NO.	DESCRIPTION																	
	A-PL-KB11-B-0	16 BIT PROCESSOR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	M9-01-YH	TERMINATOR BOOT STRAP, MODULE	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	B-DD-KW11-L-0	LINE TIME CLOCK INTERFACE	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	D-UA-DL11-A-0	ASYNCRONOUS LINE INTERFACE	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-MJ11-A7-0	32K 18 BIT MEM. 115V 50/60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-MJ11-A7-0	32K 18 BIT MEM. 230V 50/60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-JA36-CE-0	DECWRITER 115V 60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-MJ11-AF-0	32K 18 BIT EXPANSION	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-LA36-CF-0	DECWRITER 230V 60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-TWU16-EA-0	MAG TAPE DRIVE 115V 60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-TWU16-EB-0	MAG TAPE DRIVE 230V 60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-RWP04-BA-0	MOVING HEAD DISK 60 HZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	E-UA-TWU16-FC-0	MAG TAPE DRIVE 115V 50 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-RWP04-DB-0	MOVING HEAD DISK 50 HZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	E-UA-TWU16-ED-0	MAG TAPE DRIVE 230V 50 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	A-PL-KB11-C-0	16 BIT PROCESSOR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-LA36-CH-0	DECWRITER 115 50 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-LA36-CJ-0	DECWRITER 230 50 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-MJ11-BY-0	64K 18 BIT MEM 115V 50/60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-MJ11-BZ-0	64K 18 BIT MEM 230V 50/60 HZ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	E-UA-RWP05-DA-0	MOVING HEAD DISK 60 HZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	E-UA-RWP05-DB-0	MOVING HEAD DISK 50 HZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CHG 11/70-0006 A
 I. NORTON
 11/70-0009 B
 R. BOUCHER
 11/70-0011 C
 R. BOUCHER
 11/70-0012 D

FIRST USED ON OPTION/MODEL
11/70

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES

DECIMALS ± .005 FRACTIONS ± 1/32 ANGLES ± 0.03

FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS

DATE: 11/77

BY: D. HEALY

DATE: 11/77

BY: D. HEALY

DATE: 11/77

BY: D. HEALY

DATE: 11/77

BY: D. HEALY

DIGITAL EQUIPMENT CORPORATION
MALDEN, MASSACHUSETTS

SYSTEM EXPANSION OPTION LIST
(11/77)

11/77-0-1

C

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