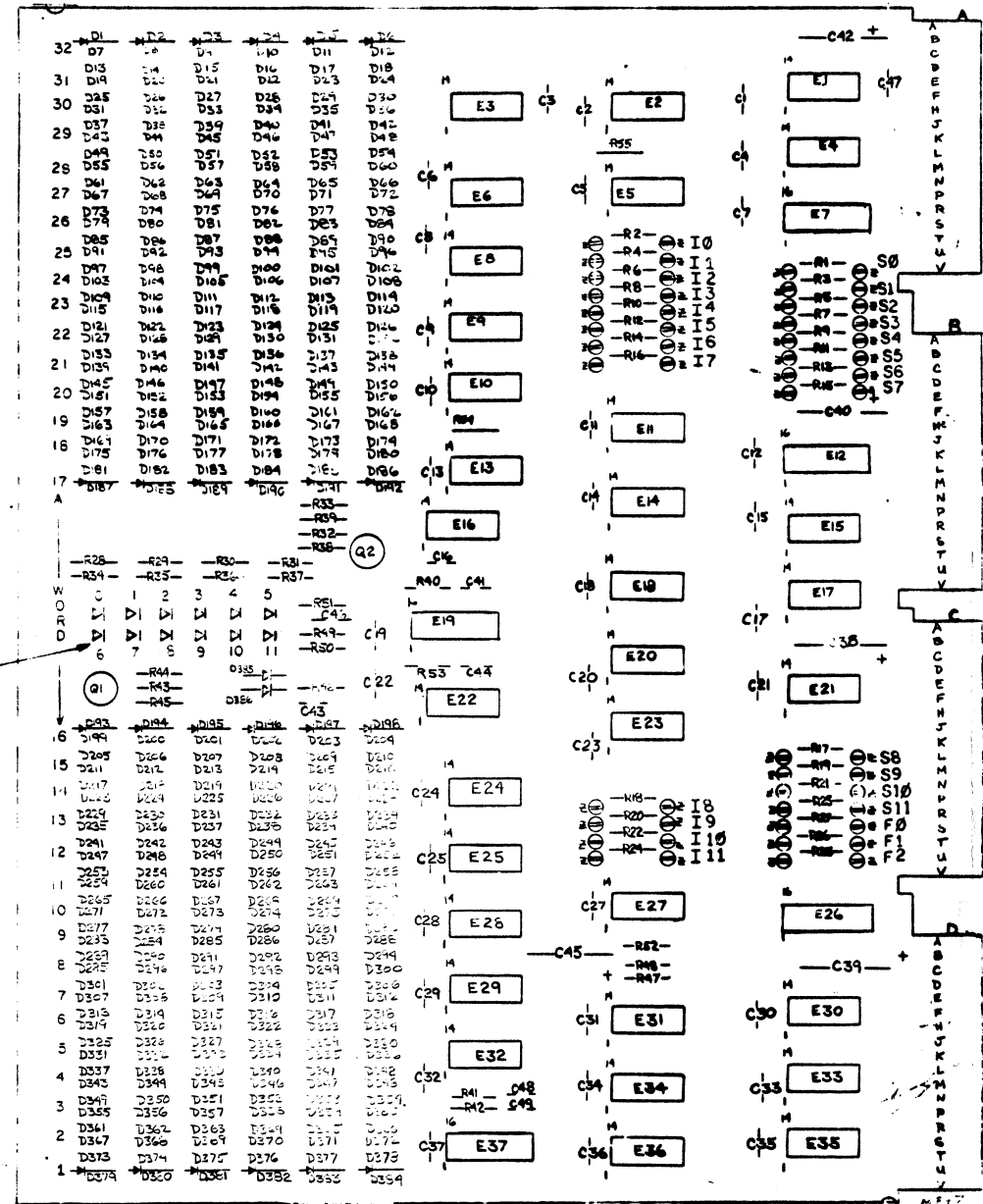
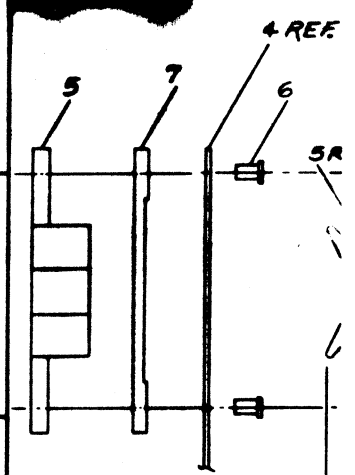


✓
M18-E hardware
bootstrap loader
engineering drawings

MASTER DRAWING LIST

[illegible][illegible]



SEE DETAIL A
ON SHEET NO. 4
ZONE 7-B.

REF	QTY	DESCRIPTION
Q1	1	DIODE D1
Q2	1	DIODE D2
Q3	1	DIODE D3
Q4	1	DIODE D4
Q5	1	DIODE D5
Q6	1	DIODE D6
Q7	1	DIODE D7
Q8	1	DIODE D8
Q9	1	DIODE D9
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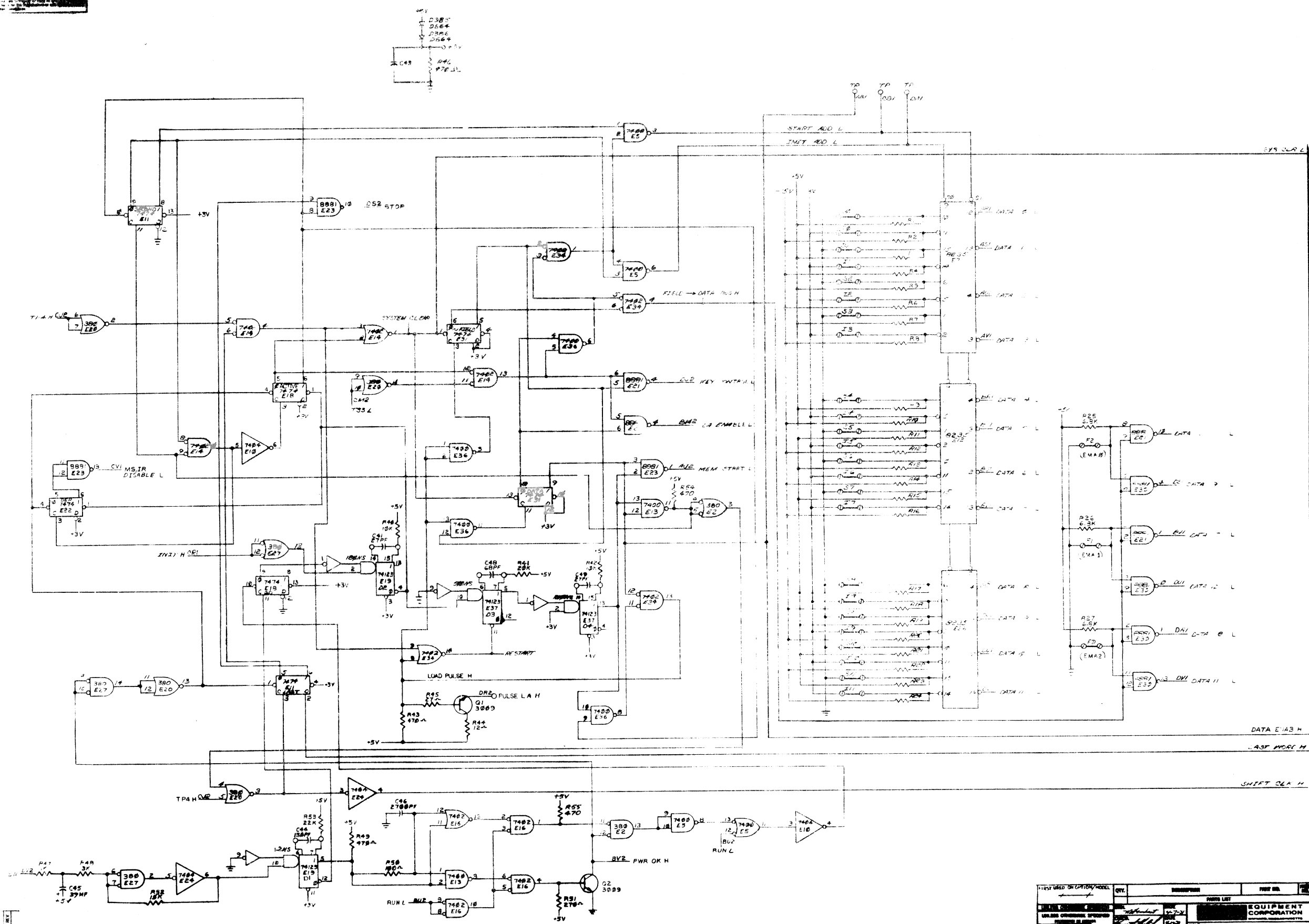
SEE NOTES 2 & 3

- NOTES:
1. DIODES ARE D664 UNLESS OTHERWISE INDICATED.
 2. CUT JUMPER OR DIODE TO ENCODE A 1.
 3. I JUMPERS DEFINE INITIAL LOADING ADDRESS.
 - 5 JUMPERS DEFINE PROGRAM STARTING ADDRESS.
 - F JUMPERS DEFINE INSTRUCTION, DATA FIELD.
- CAUTION: F2, F1 F2, CORRESPOND TO EMA0, EMA1, EMA2, RESPECTIVELY.
4. QUANTITY OF COMPONENTS REMAIN THE SAME EXCEPT OF THE AMOUNT OF DIODES, SHOWN ON PARTS LIST BELOW.

M47 VERSIONS									
YM	YL	YK	YJ	YH	YF	YE	YD	YC	YA
275	186	39	249	142	175	171	72	42	94
1	R52	RESISTOR 15K 1/4W 5%	1300436	17					
1	R48	RESISTOR 3K 1/4W 5%	1300432	17					
1	R47	RESISTOR 1K 1/4W 5%	1300365	17					
1	R50	RESISTOR 100 1/4W 5%	1300229	17					
1	R51	RESISTOR 270 1/4W 5%	1301972	17					
1	R53	RESISTOR 22K 1/4W 5%	1301808	17					
1	R41	RESISTOR 20K 1/4W 5%	1302391	17					
1	R45	RESISTOR 27 1/4W 10%	1301425	17					
1	R44	RESISTOR 12 1/4W 10%	1301430	17					
9	R43, R46, R49, R55	RESISTOR 470 1/4W 10%	1300317	18					
2	R40, R42	RESISTOR 10K 1/4W 5%	1300479	17					
12	R28-R39	RESISTOR 5.6K 1/4W 5%	1301874	16					
27	R1-R27	RESISTOR 6.8K 1/4W 5%	1301423	16					
1	C46	CAP. 2700PF 100V 5%	1001637	13					
1	C45	CAP. 33PF 10V 10%	1000076	13					
1	C44	CAP. 150PF 100V 5%	1000019	12					
1	C43	CAP. 68PF 100V 5%	1000072	12					
1	C41	CAP. 27PF 100V 5%	1000019	12					
1	C40	CAP. 6.8PF 100V 5%	1000072	12					
1	C39	CAP. 27PF 100V 5%	1000019	12					
1	C38	CAP. 6.8PF 100V 5%	1000072	12					
1	C37	CAP. 27PF 100V 5%	1000019	12					
1	C36	CAP. 6.8PF 100V 5%	1000072	12					
1	C35	CAP. 27PF 100V 5%	1000019	12					
1	C34	CAP. 6.8PF 100V 5%	1000072	12					
1	C33	CAP. 27PF 100V 5%	1000019	12					
1	C32	CAP. 6.8PF 100V 5%	1000072	12					
1	C31	CAP. 27PF 100V 5%	1000019	12					
1	C30	CAP. 6.8PF 100V 5%	1000072	12					
1	C29	CAP. 27PF 100V 5%	1000019	12					
1	C28	CAP. 6.8PF 100V 5%	1000072	12					
1	C27	CAP. 27PF 100V 5%	1000019	12					
1	C26	CAP. 6.8PF 100V 5%	1000072	12					
1	C25	CAP. 27PF 100V 5%	1000019	12					
1	C24	CAP. 6.8PF 100V 5%	1000072	12					
1	C23	CAP. 27PF 100V 5%	1000019	12					
1	C22	CAP. 6.8PF 100V 5%	1000072	12					
1	C21	CAP. 27PF 100V 5%	1000019	12					
1	C20	CAP. 6.8PF 100V 5%	1000072	12					
1	C19	CAP. 27PF 100V 5%	1000019	12					
1	C18	CAP. 6.8PF 100V 5%	1000072	12					
1	C17	CAP. 27PF 100V 5%	1000019	12					
1	C16	CAP. 6.8PF 100V 5%	1000072	12					
1	C15	CAP. 27PF 100V 5%	1000019	12					
1	C14	CAP. 6.8PF 100V 5%	1000072	12					
1	C13	CAP. 27PF 100V 5%	1000019	12					
1	C12	CAP. 6.8PF 100V 5%	1000072	12					
1	C11	CAP. 27PF 100V 5%	1000019	12					
1	C10	CAP. 6.8PF 100V 5%	1000072	12					
1	C9	CAP. 27PF 100V 5%	1000019	12					
1	C8	CAP. 6.8PF 100V 5%	1000072	12					
1	C7	CAP. 27PF 100V 5%	1000019	12					
1	C6	CAP. 6.8PF 100V 5%	1000072	12					
1	C5	CAP. 27PF 100V 5%	1000019	12					
1	C4	CAP. 6.8PF 100V 5%	1000072	12					
1	C3	CAP. 27PF 100V 5%	1000019	12					
1	C2	CAP. 6.8PF 100V 5%	1000072	12					
1	C1	CAP. 27PF 100V 5%	1000019	12					

BOOTSTRAP
LOADER

M47-9-1



PARTS LIST		EQUIPMENT CORPORATION	
QTY.	DESCRIPTION	QTY.	DESCRIPTION
1	7400	1	7400
1	7401	1	7401
1	7402	1	7402
1	7403	1	7403
1	7404	1	7404
1	7405	1	7405
1	7406	1	7406
1	7407	1	7407
1	7408	1	7408
1	7409	1	7409
1	7410	1	7410
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1	7412	1	7412
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1	7498	1	7498
1	7499	1	7499
1	7500	1	7500

BOOTSTRAP LOADER

ECM847-0-1

SVS CLK L

H

F

E

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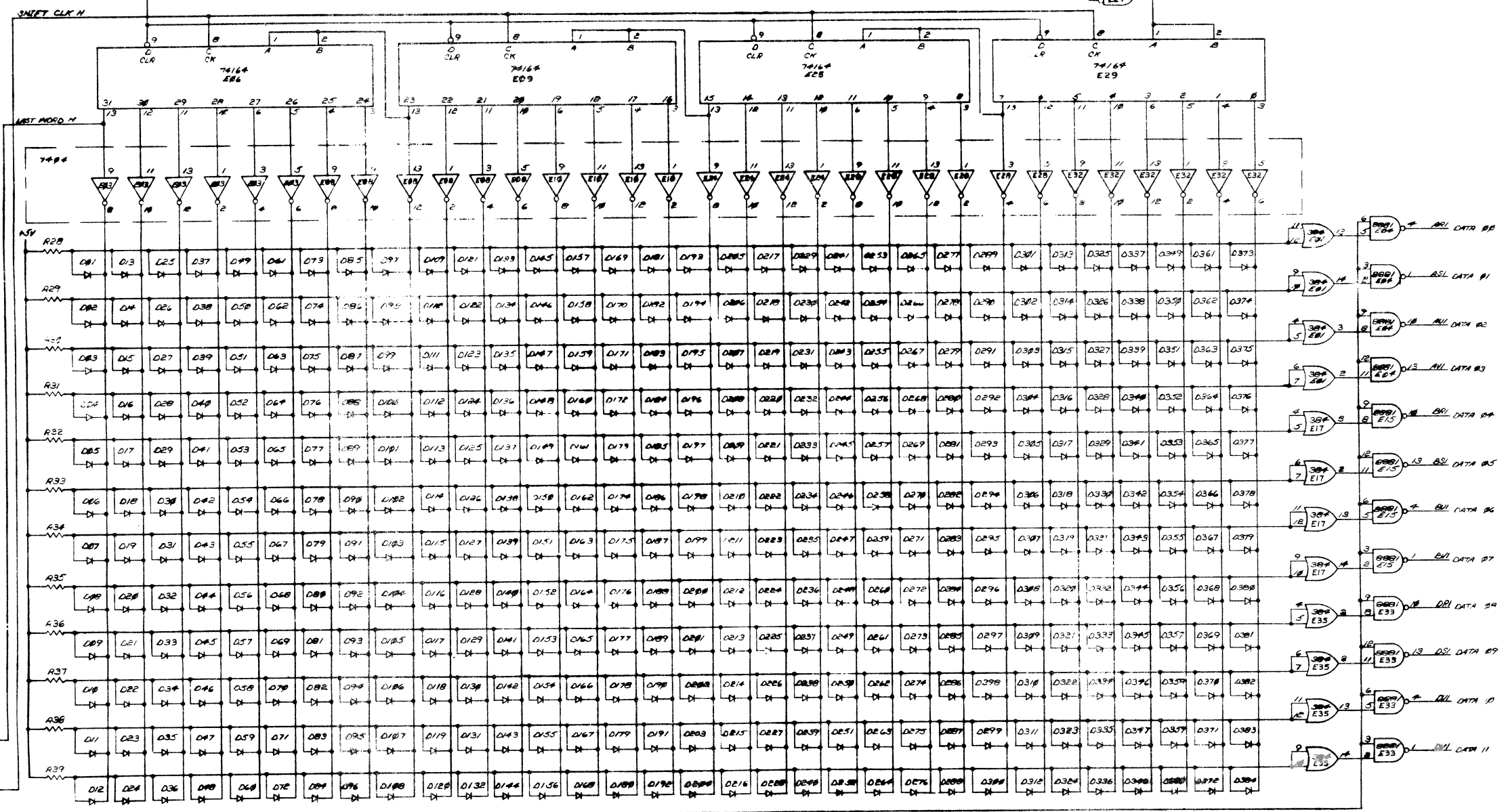
E

D

C

B

A



REV	DESCRIPTION	REV NO.	DATE
1	BOOTSTRAP LOADER	1	11/1/71

EQUIPMENT CORPORATION

CS M847-0-1

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X = REMOVE JUMPER OR DIODE
O = INSTALL " " "

MODULE: M847YA (OPTION MI8-EA) (HIGH, LOW RIM)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
0X	X0	0X	00	X0	XX	0X	XX	X0	X0	X0	X0	X0	X0	X0	0X	0X	XX	0X	0X	XX	XX	0X	XX	0X	XX	0X	X0	X0	XX	00	
0X	X0	XX	X0	XX	00	0X	00	XX	X0	XX	00	0X	00	XX	XX	XX	00	XX	0X	0X	XX	XX	XX	XX	XX	XX	XX	XX	XX	00	
X0	X0	0X	XX	X0	0X	X0	XX	0X	0X	XX	0X	XX	0X	XX	0X	X0	XX	XX	0X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	00	
X0	XX	X0	X0	X0	00	00	X0	00	00	00	00	X0	X0	X0	X0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
00	XX	XX	XX	XX	0X	00	XX	0X	0X	0X	0X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	00	
00	0X	0X	XX	0X	0X	X0	0X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	00	

III I0
XXXX X0XXXXXX (# OF X's = 22)
000XXXXX X0XXXXXX (# OF O's = 5)
F2 F0 SII S0

MODULE: M847YC (OPTION MI8-EC) (TC08 DECTAPE)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0X	XX	X0	XX	XX	XX	XX	X0	X0	X0	X0	X0	XX	XX	XX	XX	00	00	XX	XX
0X	XX	X0	XX	XX	X0	0X	00	XX	00	XX	X0	XX	X0	XX	0X	0X	00	X0	XX
0X	X0	XX	00	0X	0X	0X	XX	XX	XX	XX	XX	00	XX	XX	XX	XX	00	X0	XX
0X	XX	X0	XX	0X	00	00	00	0X	X0	0X	00	XX	XX	XX	XX	XX	00	00	0X
0X	0X	0X	XX	0X	0X	0X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	00	0X	XX
00	0X	0X	0X	XX	0X	00	0X	XX	0X	XX	0X	0X	0X	XX	XX	00	00	XX	XX

00XX 0XX0XXXX (# OF X's = 13)
00000XX 0XX0XXXX (# OF O's = 11)

MODULE: M847YD (OPTION MI8-ED) (RK8 DISK)

1	2	3	4	5	6	7
0X	XX	XX	0X	0X	0X	0X
0X	0X	0X	X0	0X	XX	X0
00	X0	00	0X	0X	X0	XX
X0	0X	XX	X0	00	0X	00
X0	0X	0X	00	0X	XX	00
X0	XX	XX	X0	00	XX	X0

ALL "X"

ALL "X"

XX00 X0000000 (# OF X's = 2)
000XX00 X0000000 (# OF O's = 21)

MODULE: M847YE (OPTION MI8-EE) (TYPESET RIM)

1	2	3	4	5	6	7	8	9	10	11	12	13
XX	0X	0X	XX	0X	0X	0X	0X	XX	XX	XX	X0	XX
XX	0X	0X	X0	0X	0X	0X	XX	00	00	00	XX	00
XX	X0	X0	0X	0X	0X	X0	0X	XX	XX	X0	XX	X0
0X	X0	00	00	X0	X0	00	0X	X0	XX	X0	00	X0
0X	00	00	0X	X0	X0	X0	00	XX	XX	XX	XX	XX
XX	00	X0	0X	0X	00	00	XX	0X	0X	XX	0X	XX

ALL "X"

ALL "X"

0XXX 0XXXXXXX (# OF X's = 19)
000000X XXXXXXXX (# OF O's = 8)

6	▽	▽	0
7	▽	▽	1
8	▽	▽	2
9	▽	▽	3
10	▽	▽	4
11	▽	▽	5

DETAIL A
BIT LOCATIONS
IN EACH WORD

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	REV.
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		DRN 78/10/71	DATE 9/10/71	PARTS LIST	
DECIMALS	ANGLES	CHK'D 9/10/71	DATE 9/10/71	TITLE	
.XX = .006	±0° 30'	ENG. 9/10/71	DATE 9/10/71	BOOTSTRAP LOADER	
.XX = .02		PROD/ENG. 9/10/71	DATE 9/10/71		
.X = .1		PROD. 9/10/71	DATE 9/10/71		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL		NEXT HIGHER ASSY.		SIZE CODE	NUMBER
				DCS	M847-0-1
FINISH		SCALE NOTE		DIST.	REV.
		SHEET 4 OF 6			M

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION		PART NO.		ITEM NO.	
+ +			PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		DRN.	DATE					
		CHK'D.	DATE					
DECIMALS	ANGLES	ENG.	DATE					
.XXX = .006	±0° 30'	PROJ. ENGR.	DATE					
.XX = .02		PRD'D.	DATE					
.X = .1								
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓		TITLE						
		ECOTSTRAP LOADER						
MATERIAL		NEXT HIGHER ASSY.		SIZE CODE		NUMBER		REV.
+ +		+ +		D CS		M847 - 0 - 1		M
FINISH		SCALE		DIST				
+ +		SHEET 5 OF 6						

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MODULE: M847YM

(OPTION M18-EM)

(TYPESET DECTAPE)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

xx	xo	xx	xx	xo	xo	xo	xx	xx	oo	xx	xo	xx	xx	xx	xx	ox
xx	oo	oo	cx	oo	cx	oo	oo	oo	oo	xx	cx	xx	oo	oo	oo	oo
xo	ox	oo	cx	xx	xx	xx	oo	xx	oo	oo	xx	xo	ox	oo	oo	oo
xx	xo	oo	oo	oo	oo	oo	oo	oo	oo	xx	ox	oo	xx	oo	oo	oo
cx	xx	ox	oo	xx	ox	xx	oo	xx	oo	xx	ox	oo	ox	oo	oo	oo
ox	xx	xx	oo	xx	xx	cx	xx	xx	oo	ox	xx	xx	cx	xx	xx	oo

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

oo	oo	ox	ox	ALL O's							
oo	oo	ox	ox								
oo	oo	ox	ox								
oo	oo	ox	ox								
oo	oo	ox	ox								
oo	oo	ox	ox								
oo	oo	ox	ox								

(# OF X's = 10)
(# OF O's = 275)

ooox	xoxxxxxx
ooooox	xcxxxxxx

(# OF X's = 10)
(# OF O's = 11)

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.		
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN JACK LEARSON DATE 2/9/73	CHK'D JACK LEARSON DATE 2/9/73	digital EQUIPMENT CORPORATION ROLYARD MASSACHUSETTS		
DECIMALS .XXX = .006 .XX = .02 .X = .1	ANGLES 10° 30'	DATE 8-2-73			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROJ. ENG. JACK LEARSON DATE 8-2-73	DATE 8-2-73			
MATERIAL	NEXT HIGHER ASSY.	DATE			
FINISH	SCALE NONE	SHEET 6 OF 6	SIZE CODE DCS	NUMBER M847-0-1	REV. N

PARTS LIST

QUANTITY / VARIATION

SECTION

1

ISSUED SECT.

1

MI8-E * (ALL)

1

ECO NO.
MIBE -
00003

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

TITLE MI8-E PDP8/E BOOTSTRAP LOADER

DATE 12/10/71

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	MI8E 00003	KENT	3/73	<i>[Signature]</i>	5/6/73

ENG	<i>[Signature]</i>	APPD	<i>[Signature]</i>	SIZE	CODE	NUMBER	REV
	<i>[Signature]</i>			A	SP	MI8-E-1	A

DEC FORM NO. 107
DRA 107

1 OF 3

ENGINEERING SPECIFICATION

TITLE MI8-E PDP8/E BOOTSTRAP LOADER

CONTINUATION SHEET

2.4 Environmental Specifications

- A. Temperature: 32° to 130°F (0° to 55°C)
- B. Humidity: Maximum 90% Rel. No condensation.
- C. Power: +5 @ 710 ma
-15 @ 32 ma

2.5 General Performance Specification
Refer to 1971 and 1972 Small Computer Handbook

3.0 Specification of Vendor Supplied Equipment
Refer to Purchase Specification for component in question.

4.0 Programming

A. Non-programmable

5.0 Interface Specifications

Interfaces to the OMNIBUS.

6.0 RELATED MODULES

In addition to the SW switch on the 8 console, the MI8-E can be started using a G753 Initialize Module and a suitable external switch. These are not supplied with or necessary for operation of the MI8-E.

ENGINEERING SPECIFICATION

TITLE MI8-E PDP8/E BOOTSTRAP LOADER

CONTINUATION SHEET

1.0 Overall Description

The MI8-E option is a bootstrap loader for the PDP8/E. It automatically initializes the system, loads a Memory Address, a Field Address, deposits 32 words sequentially into memory, then loads a new Memory Address, the same Field Address and starts the 8/E.

The loading of the Memory Address, Field Address, 32 words, and the new Memory Address, are all encoded by the clipping or insertion of diodes and jumpers. Removing a diode or jumper, in any case, place a "1" on the bus for that particular address or word.

The MI8-E has been encoded for several versions of bootstraps. These versions are designated as i.e. MI8-EA, MI8-EC, MI8-ED, MI8-EF and so on. The documentation concerning these variations is available in the MI8-E or M847 print set (Reproduction).

2.0 General Description

2.1 Definition of Basic System

- A. One M847 module

2.2 List of Included Options

Option	Designation
MI8-E	Unencoded
MI8-EA	Paper Tape
MI8-EC	DECTape
MI8-ED	REF
MI8-EE	Typeaset
MI8-EF	EDU Sys. Low
MI8-EG	EDU Sys. High
MI8-EH	TD8-E
MI8-EJ	RK8-E
MI8-EK	CR8-F (DC72 FIELD 1)
	Mechanical Packaging

- A. 8 1/2" by 10 1/2" Quad board

DEC FORM NO 16-1022 DRA 108	SIZE	CODE	NUMBER	REV
	A	SP	MI8-E-1	A

SHEET 2 OF 3

ACCESSORY LIST

D DOCUMENT
DN DOCUMENT CHANGE
NOTICE

PA	PAPER TAPE ASCII
PB	PAPER TAPE BINARY
PM	PAPER TAPE READ-IN-MODE

All Versions

WIT CHECK

DATE _____

INSTAL | ATION CHECK

BY DATE

SECTION

PROD *R. K. Ash*
DATE *2-29-72*

ISSUED SECT.

DWG NO. / PART NO.

DESCRIPTION

1	E-CS-M847-0-1	Bootstrap Loader
2	Dec-8E-HR28-D-MI8	MI8-E Maintenance Manual
3	LibKit-8E-MI8E	Library Kit, MI8-E
4	A-ML-MI8-E	Print Set

THE

MI8-E ACCESSORY List

ASSY. NO.

SHEET 1 OF 1

SIZE	CODE
------	------

AAL

DIST.

NUMBER

MI 8-E-2

REV.	ECO NO
------	--------

DATE 2/29/72

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG
R. ALLEN

APPD
R. K. Allen

SIZE	CODE
A	SE

NUMBER
MIS-E-3

REV

CONTINUATION SHEET

TITLE MI8-E TEST PROCEDURE

To define the procedure in testing an MI8-E Bootstrap Loader.

1. A PDP8/E computer (4K)
2. ASR-33 Teletype
3. ME47 to be tested

Maindec-8E-D1IB

1. Make sure M847 has latest ECO installed.
2. Check for date, code, and ECO Rev letter (stamps on module handle).
3. Check for obvious Q.C. violations of module.
4. Install M847 to be tested in PDP8/E.
5. Load Maindec-8E-D11B via Binary Loader. Refer to Diagnostic document for starting procedure.
6. Run the MI8-E for the minimum of five passes.
7. Run MI8-E under heat for thirty minutes. During the thirty minute duration, run MI8-E for another five passes using the Maindec program. Run at 130°F.
8. MI8-E is considered accepted after running the above procedure correctly.

SIZE A	CODE SP
-------------------------	--------------------------

NUMBER
MI8-E-3

REV

SHEET 2 OF 2

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