VT8-E
video display control
engineering drawings

digital equipment corporation · maynard, massachusetts

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

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POT ASSEMBLY	D-AD-7007232	
CURSOR BOARD KEYBOARD	B-DD-5410224-0	

THIS IS PRINT SET

UNIT VARIATIONS

VAR	TITLE	PRINT SET VT8-E
VT8-EA	ALPHA GRAPHIC TERMINAL	
	64 CHAR 60 HZ, 115V	X
VT8-EB	ALPHA GRAPHIC TERMINAL	
	64 CHAR 60 HZ, 230V	X
VT8-EC	ALPHA GRAPHIC TERMINAL	
	64 CHAR 50 HZ, 115V	X
VT8-ED	ALPHA GRAPHIC TERMINAL	
	64 CHAR 50 HZ, 230V	X
VT8-EE	ALPHA GRAPHIC TERMINAL	
	32 CHAR 60 HZ, 115V	X
VT8-EF	ALPHA GRAPHIC TERMINAL	
	32 CHAR 60 HZ, 230V	X
VT8-EH	ALPHA GRAPHIC TERMINAL	
	32 CHAR 50 HZ, 115V	X
VT8-EJ	ALPHA GRAPHIC TERMINAL	
	32 CHAR 50 HZ, 230V	X

REVISIONS: REV | CHG. NO. | DATE

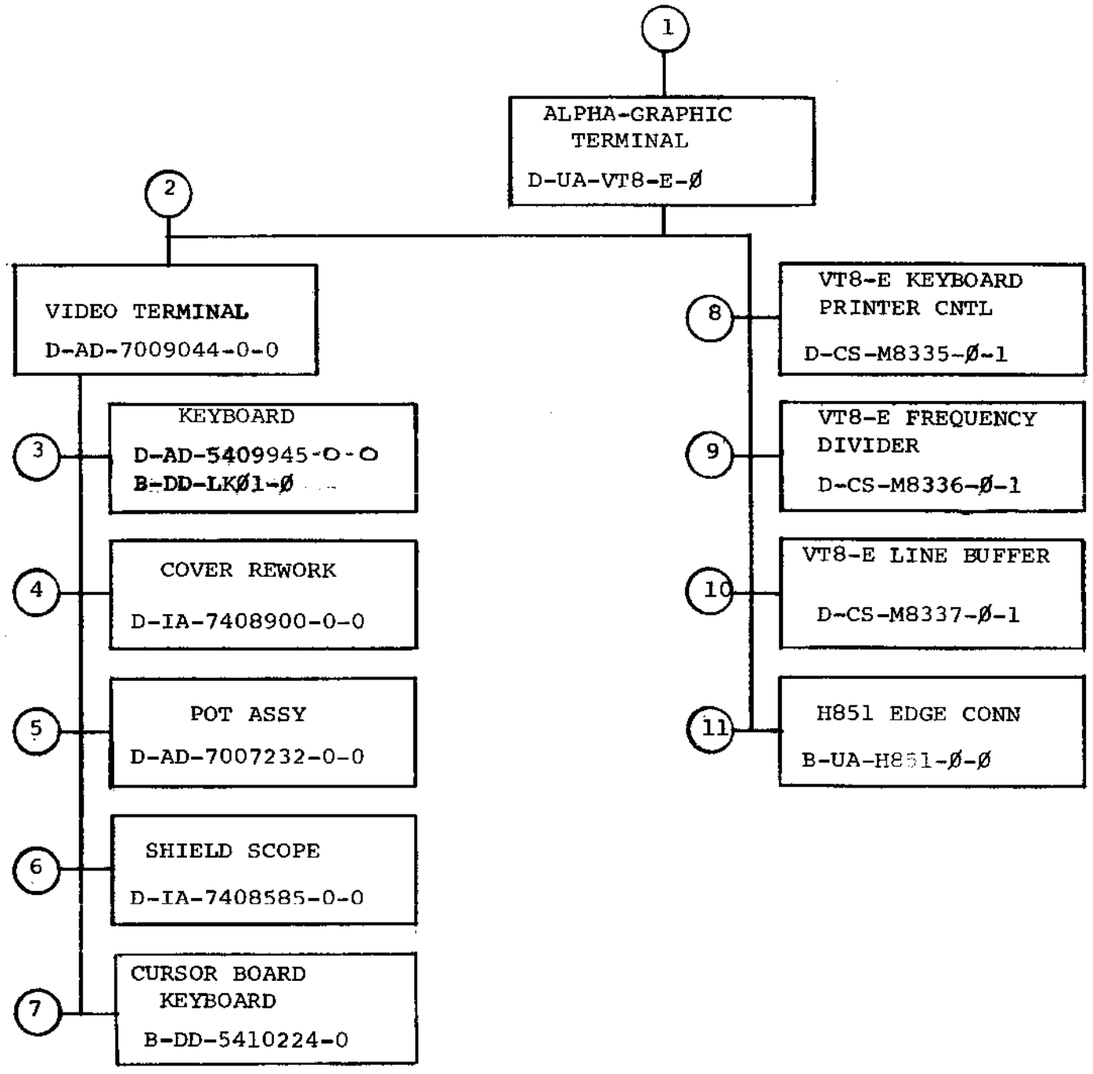
USED ON OPTION/MODEL	
VT8-E	

SHEET 1 OF 4

DRN. ROBICHARD	DATE 12/28/72	TITLE: ALPHA-GRAPHIC TERMINAL
CHK'D. G.FLANDERS	DATE 1/8/73	
PROJ. ENG. [signature]	DATE 1/19/73	
PROD. [signature]	DATE 1/19/73	SIZE B / CODE DD / NUMBER VT8-E / REV
FIELD SERV. [signature]	DATE 1/22/73	DIST

DRB 106

DEC 16-(325)-1062-1A-R972



TITLE		SIZE	CODE	NUMBER	REV
ALPHA GRAPHIC TERMINAL	SHEET 2 OF 4	B	DD	VT8-E	

CUSTOMER PRINT SET	MFG SET	ELECTRICAL					
VT8-E		FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	D-UA-VT8-E-Ø			ALPHA-GRAPHIC TERMINAL	
X			E-BD-VT8-E-1		1	VT8-E BLOCK DIAGRAM	
X			D-IC-VT8-E-2		1	VT8-E PWR & SIGNAL WIRING	
X			A-SP-VT8-E-3		31	ENG SPEC	
X			A-SL-VT8-E-4		1	SOFTWARE LIST	
X			A-AL-VT8-E-5		1	ACCESSARY LIST	
X			A-AP-VT8-E-6		11	VT8-E IN HOUSE ACC PROC	
X			A-FI-VT8-E-7		6	VT8-E FIELD INSTAL & ACC PROC	
		2	D-AD-7009044-0-0		3	VIDEO TERMINAL	
			D-CS-3010326-0-0		2	VTØ5 RASTER DISPLAY	
X		8	D-CS-M8335-Ø-1		6	VT8-E KEYBOARD PRINTER CNTL	
			K-CO-M8335-Ø-4		1	X-Y COORDINATE HOLE LOCATION	
			D-AH-M8335-Ø-5		1	ASSY/DRILLING HOLE LAYOUT	
			B-MH-M8335-Ø-6		1	MODULE ECO HISTORY	
			A-WL-M8335-Ø-8		5	WIRE LIST M8335	
X		9	D-CS-M8336-Ø-1		5	VT8-E FREQUENCY DIVIDER	
			K-CO-M8336-Ø-4		1	X-Y COORDINATE HOLE LOCATION	
			D-AH-M8336-Ø-5		1	ASSY/DRILLING HOLE LAYOUT	
			B-MH-M8336-Ø-6		1	MODULE ECO HISTORY	
			C-IA-7009054-0-0		1	CABLE, MODULE	
			A-WL-M8336-0-8		4	WIRE LIST M8336	
X		10	D-CS-M8337-Ø-1		6	VT8-E LINE BUFFER	
			K-CO-M8337-Ø-4		1	X-Y COORDINATE HOLE LOCATION	
			D-AH-M8337-Ø-5		1	ASSY/DRILLING HOLE LAYOUT	
			B-MH-M8337-Ø-6		1	MODULE ECO HISTORY	
			A-WL-M8337-Ø-8		6	WIRE LIST M8337	

CUSTOMER PRINT SET	MFG SET	ELECTRICAL					
VT8-E		FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
		11	B-UA-H851-Ø-Ø		1	EDGE CONN H851	
			B-CS-H851-Ø-1		1	EDGE CONN.	

CUSTOMER PRINT SET CODES

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

TITLE		SIZE	CODE	NUMBER	REV
ALPHA-GRAPHIC TERMINAL	SHEET 3 OF 4	B	DD	VT8-E	

DRB 108

CUSTOMER PRINT SET				MFG. SET	MECHANICAL						OPTION NO./FILE DATE
VT8-E					FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION		
X					1	D-UA-VT8-E-Ø		1	ALPHA-GRAPHIC TERMINAL		
						D-IA-7009042-0-0		1	CABLE,I/O (VT8-E)		
X					2	D-AD-7009044-0-0		3	VIDEO TERMINAL		
						C-IA-7408638-0-0		1	KEYBOARD, BRACKET (LARGE)		
						D-IA-7408852-0-0		1	KEYBOARD, BRACKET (SMALL)		
						B-IA-7408894-0-0		1	BRACKET MTG SWITCH		
						E-MD-7408891-0-0		1	SCREEN PROTECTIVE		
X						E-IA-7008979-0-0		1	POWER HARNESS		
						C-IA-7008432-9-0		1	POWER CORD REWORK (230V)		
						C-IA-7008502-9-0		1	POWER CORD REWORK (115V)		
						D-SC-1210479-0-0		1	VTØ5 SCOPE MASK		
						B-SC-1210348-0-0		1	BUTTON ROCKER SWITCH		
						B-SC-1210349-0-0		1	BUTTON ROCKER SWITCH		
						C-IA-7008612-0-0		1	CABLE KEYBOARD INTERCONN.		
						B-MD-7409285-0-0		1	INSULATOR		
						D-MD-7605976-0-0		1	BASEBOARD MOUNTING		
						D-IA-7409806-0-0		1	PLATE, BACK		
						E-PS-1210913-0-0		5	PLASTIC BASE (VTØ5)		
						A-PS-3611183-0-0		1	DECAL, TV CONTROLS		
C					3	B-DD-LKØ1-Ø		3	KEYBOARD		
						D-AD-5409945-0-0		3	KEYBOARD ASS'Y		
						A-PL-5409945-0-0		3	KEYBOARD ASS'Y (PL)		
					4	D-IA-7408900-0-0		1	COVER REWORK		
						E-SC-1210221-0-0		1	COVER		

CUSTOMER PRINT SET				MFG SET	MECHANICAL						OPTION NO./FILE DATE
VT8-E					FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION		
X					5	D-AD-7007232-0-0		1	POT ASSY		
						A-PL-7007232-0-0		1	POT ASSY (PL)		
						C-SC-1210227-0-0		1	KNOB 1" DIA.		
						C-MD-7408564-0-0		1	BRACKET POTS MTG.		
					6	D-IA-7408585-0-0		1	SHIELD, SCOPE		
						A-SS-7408585-0-1		1	SILK SCREEN		
						C-SS-7408585-0-2		1	SILK SCREEN		
C					7	B-DD-5410224-0		2	CURSOR BOARD KEYBOARD		
					9	D-CS-M8336-0-1		5	VT8-E FREQUENCY DIVIDER		
					X	C-IA-7009054-0-0		1	CABLE MODULE		
					11	B-UA-H851-0-0		1	H851 EDGE CONN		
						B-MD-5509071-0-0		1	RECEP 36 PIN REWORK		
						D-IA-5008903-0-0		1	ETCH BOARD		

CUSTOMER PRINT SET CODES		TITLE		SIZE	CODE	NUMBER	REV
	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED	ALPHA-GRAPHIC TERMINAL	SHEET 4 OF 4	B	DD	VT8-E	

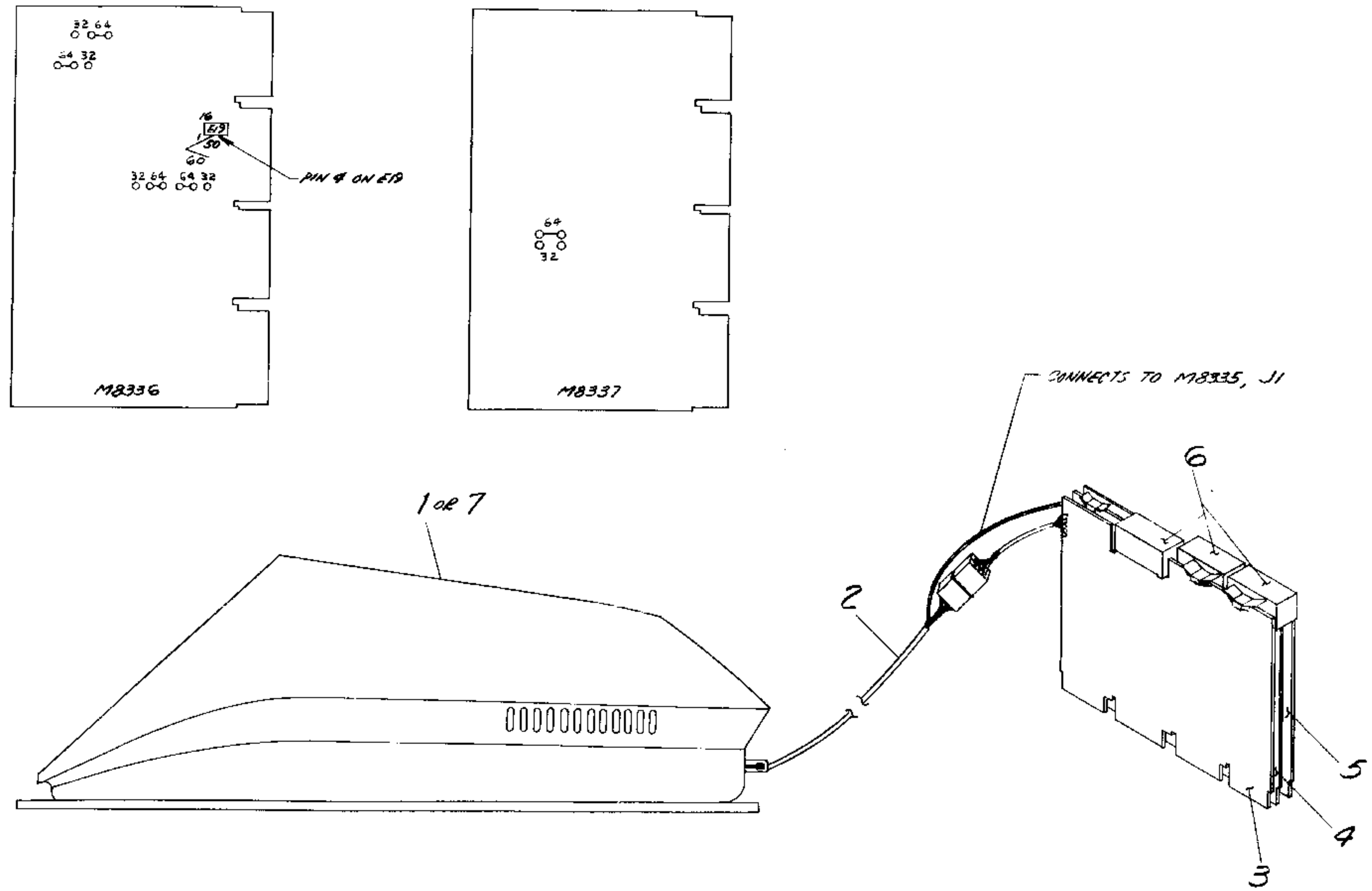
DRB 108

DEC 16-(325)-1062-2B-R972

VARIATION	POSITION OF JUMPER FOR 64/32 JUMPER SETS	POSITION OF JUMPER FOR 60/50 HZ JUMPER SET	POSITION OF 60/50 HZ SELECTION WIRE
VT8-EA,EB	64	60	60
VT8-EC,ED	64	50	50
VT8-EE,EF	32	60	60
VT8-EH,EJ	32	50	50

NOTES:

1. JUMPERS ON THE M8336 AND M8337 MUST BE ARRANGED TO DETERMINE THE 64/32 CHARACTER AND 60/50 HZ VARIATIONS.
   M8336 HAS: FOUR SETS OF 64/32 SELECTION JUMPERS, ONE SET OF 60/50 HZ SELECTION JUMPERS AND ONE 60/50 HZ SELECTION WIRE.
   M8337 HAS ONE SET OF 64/32 SELECTION JUMPERS.



VT8-EA / VT8-EE	VT8-EB / VT8-EF	VT8-EC / VT8-EH	VT8-ED / VT8-EJ	DESCRIPTION	PART NO	ITEM NO.
A/R	A/R	A/R	A/R	#30 AWG SOLID WIRE (YEL)	9105740-44	9
A/R	A/R	A/R	A/R	BUS WIRE #22	9107560-1	8
—	1	—	1	VIDEO TERMINAL	D-AD-7009099-2	7
3	3	3	3	EDGE CONN	B-UA-H851-0-0	6
1	1	1	1	VT8-E KEYBOARD PRINTER CONTROL	D-CS-M8335-0-1	5
1	1	1	1	VT8-E LINE BUFFER	D-CS-M8337-0-1	4
1	1	1	1	VT8-E FREQUENCY DIVIDER	D-CS-M8336-0-1	3
1	1	1	1	CABLE I/O (VT8-E)	D-IA-7009092-0-0	2
1	—	1	—	VIDEO TERMINAL	D-AD-7009049-1	1

QTY | DESCRIPTION | PART NO | ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: VT8-E

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS .XXX ±.005 .XX ±.02 | ANGLES ±0°30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL: —

FINISH: —

DRN DATE 12-27-72
CHK'D DATE 1/4/73
ENG DATE
PROJ ENG DATE
PROD DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: ALPHA-GRAPHIC TERMINAL

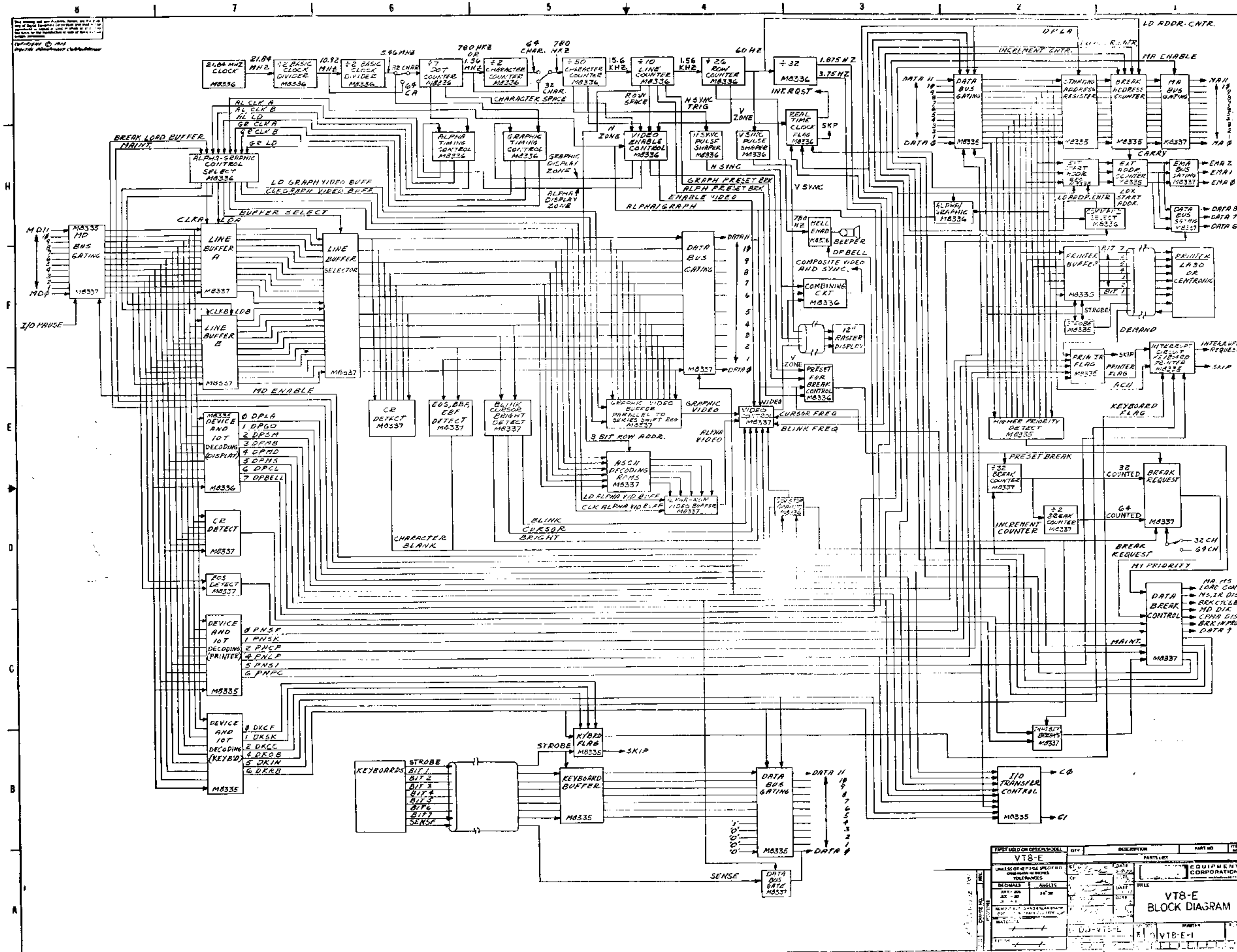
NEXT HIGHER ASSY: B-DD-VT8-E

SIZE D | CODE UA | NUMBER VT8-E-0 | REV

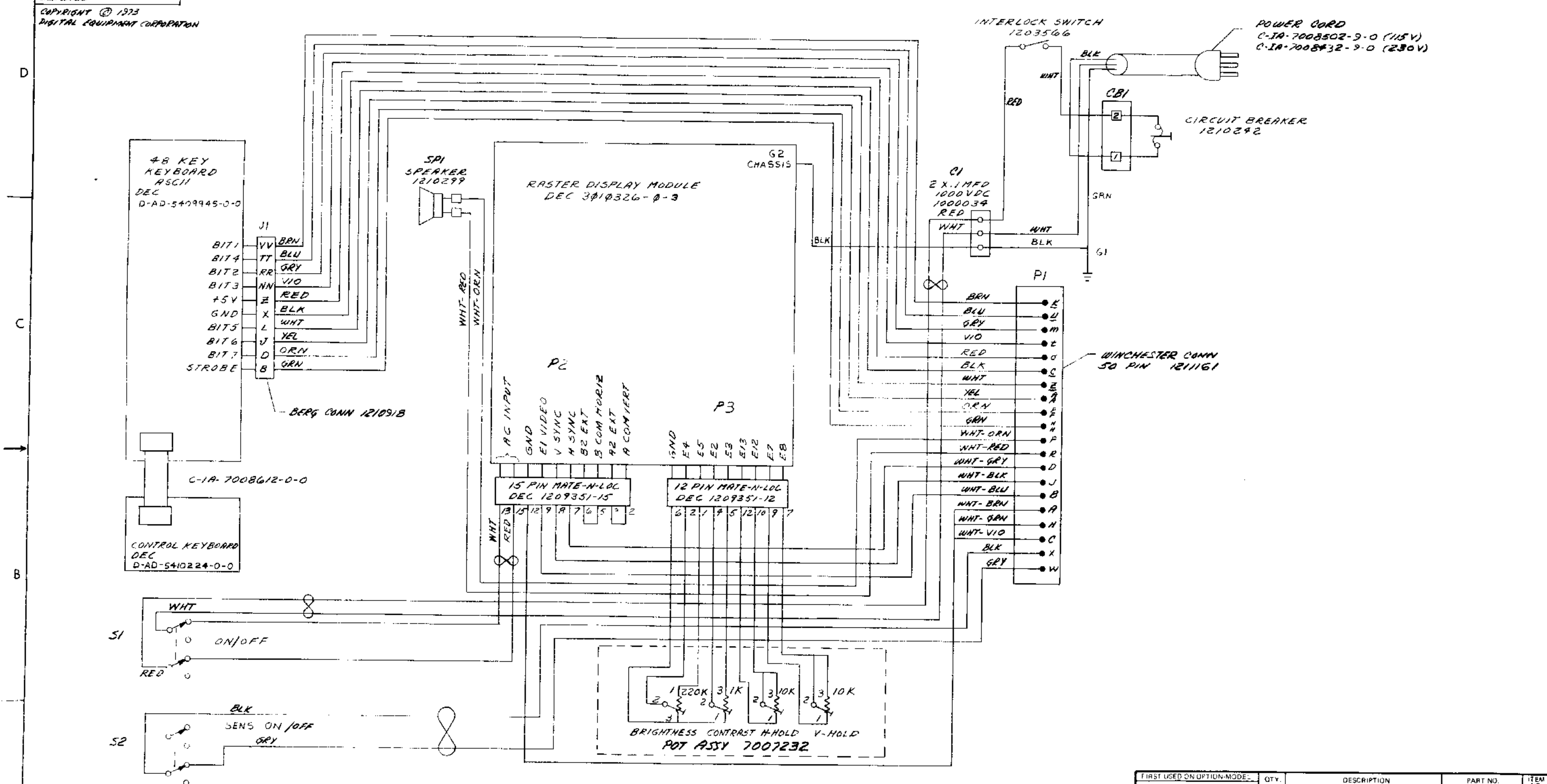
SCALE NONE

SHEET 1 OF 1

DIST



21.84 MHZ CLOCK M8336
÷2 BASIC CLOCK DIVIDER M8336
÷2 BASIC CLOCK DIVIDER M8336
÷7 DOT COUNTER M8336
÷2 CHARACTER COUNTER M8336
÷50 CHARACTER COUNTER M8336
÷10 LINE COUNTER M8336
÷26 ROW COUNTER M8336
÷32 M8336
INT RQST
REAL TIME CLOCK FLAG M8336
SKP
ALPHA TIMING CONTROL M8336
GRAPHIC TIMING CONTROL M8336
VIDEO ENABLE CONTROL M8336
H SYNC PULSE SHAPER M8336
V SYNC PULSE SHAPER M8336
BREAK LOAD BUFFER
MAINT.
ALPHA-GRAPHIC CONTROL SELECT M8336
LD GRAPH VIDEO BUFF
CLK GRAPH VIDEO BUFF
BUFFER SELECT
GRAPH PRESET BRK
ALPH PRESET BRK
ENABLE VIDEO
ALPHA/GRAPH
MD BUS GATING M8335 M8337
I/O PAUSE
LINE BUFFER A M8337
LINE BUFFER B M8337
LINE BUFFER SELECTOR M8337
MD ENABLE
DATA BUS GATING M8337
CR DETECT M8337
EOS, BBF, EBF DETECT M8337
BLINK CURSOR BRIGHT DETECT M8337
GRAPHIC VIDEO BUFFER PARALLEL TO SERIES SHIFT REG M8337
GRAPHIC VIDEO
VIDEO CONTROL M8337
CURSOR FREQ
BLINK FREQ
ALPHA VIDEO
3 BIT ROW ADDR.
ASCII DECODING ROMS M8337
LD ALPHA VID BUFF
CLK ALPHA VID BUFF
BLINK
CURSOR
BRIGHT
CHARACTER BLANK
DEVICE AND IOT DECODING (DISPLAY) M8336
0 DPLA
1 DPGO
2 DPSM
3 DPMB
4 DPMD
5 DPMS
6 DPCL
7 DPBELL
CR DETECT M8337
EOS DETECT M8337
DEVICE AND IOT DECODING (PRINTER) M8335
0 PNSF
1 PNSK
2 PNCF
4 PNLP
5 PNSI
6 PNPC
DEVICE AND IOT DECODING (KEYB'D) M8335
0 DKCF
1 DKSK
2 DKCC
4 DKRB
5 DKIN
6 DKRB
KEYBOARDS
STROBE
BIT 1
BIT 2
BIT 3
BIT 4
BIT 5
BIT 6
BIT 7
SENSE
KYBD FLAG M8335
SKIP
KEYBOARD BUFFER M8335
DATA BUS GATING M8335
DATA BUS GATE M8337
BELL ENAB M8336
BEEPER
DP BELL
COMPOSITE VIDEO AND SYNC.
COMBINING CKT M8336
12" RASTER DISPLAY
PRESET FOR BREAK CONTROL M8336
DATA BUS GATING M8335
STARTING ADDRESS REGISTER M8335
BREAK ADDRESS COUNTER M8335
MA BUS GATING M8337
LD ADDR. CNTR.
INCREMENT CNTR.
MA ENABLE
CARRY
EXT START ADDR REG M8335
EXT ADDR COUNTER M8335
EMA BUS GATING M8337
EMA 2
EMA 1
EMA 0
LDX START ADDR.
ALPHA/GRAPHIC M8336
LOAD ADDR. CNTR
DATA BUS GATING M8337
DATA 8
DATA 7
DATA 6
PRINTER BUFFER M8335
STROBE M8335
DEMAND
PRINTER LA30 OR CENTRONIX
PRINTER FLAG M8335
SKIP
PRINTER FLAG
ACK
INTERRUPT CIRCUIT KEYBOARD PRINTER M8335
INTERRUPT REQUEST
SKIP
KEYBOARD FLAG
HIGHER PRIORITY DETECT M8335
PRESET BREAK
÷32 BREAK COUNTER M8337
÷2 BREAK COUNTER M8337
32 COUNTED
64 COUNTED
INCREMENT COUNTER
BREAK REQUEST M8337
32 CH
64 CH
BREAK REQUEST
MY PRIORITY
DATA BREAK CONTROL M8337
MA, MS LOAD CONT
MS, IR DIS
BRK CYCLE
MD DIR
CPMA DIS
BRK IN PROG
DATA 7
MAINT.
INHIBIT BREAK M8337
I/O TRANSFER CONTROL M8335
C0
C1
VT8-E
VT8-E BLOCK DIAGRAM
VT8-E-1


INTERLOCK SWITCH
1203566
POWER CORD
C-IA-7008502-9-0 (115V)
C-IA-7008432-9-0 (230V)
CB1
CIRCUIT BREAKER
1210242
48 KEY
KEYBOARD
ASCII
DEC
D-AD-5409945-0-0
SP1
SPEAKER
1210299
RASTER DISPLAY MODULE
DEC 3010326-0-3
G2
CHASSIS
C1
2 X .1MFD
1000VDC
1000034
J1
BIT 1
BIT 4
BIT 2
BIT 3
+5V
GND
BIT 5
BIT 6
BIT 7
STROBE
BERG CONN 1210918
P1
WINCHESTER CONN
50 PIN 1211161
P2
P3
AC INPUT
GND
E1 VIDEO
V SYNC
H SYNC
B2 EXT
B COM HORIZ
A2 EXT
A COM VERT
15 PIN MATE-N-LOC
DEC 1209351-15
12 PIN MATE-N-LOC
DEC 1209351-12
C-IA-7008612-0-0
CONTROL KEYBOARD
DEC
D-AD-5410224-0-0
S1
ON/OFF
S2
SENS ON/OFF
BRIGHTNESS
CONTRAST
H-HOLD
V-HOLD
POT ASSY 7007232
220K
1K
10K
10K

FIRST USED ON OPTION-MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VT8 E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS: .XXX ± .005, .XX ± .02, .X ± .1 — ANGLES ± 1/2°

REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY ✓

MATERIAL — FINISH —

DRN / CHKD / ENG / PROJ. ENG / PROD. — DATE

NEXT HIGHER ASSY: D-UA-VT8-E

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: VT8-E POWER AND SIGNAL WIRING

SIZE	CODE	NUMBER	REV
D	IC	VT8-E-2	

SCALE — SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 12/26/72

TITLE VT8-E ENGINEERING SPECIFICATION

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
Paul Kotschenreuther		A	SP	VT8-E-3	

DEC 16-(392)-1079-N971
DRA 107

ENGINEERING SPECIFICATION [redacted] CONTINUATION SHEET

TITLE VT8-E ENGINEERING SPECIFICATION

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- 2.2 Physical Specifications
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  - 2.2.2 I/O Cable
  - 2.2.3 Control Modules
- 2.3 Power Requirements
  - 2.3.1 Video Terminal
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- 2.5 Performance Specifications
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  - 2.5.3 Blemishes
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  - 2.5.5 Character Receive Codes
  - 2.5.6 Character Font
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3.0 Specifications of Vendor Supplied Equipment

4.0 Programming

- 4.1 Device Codes
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- 4.3 Keyboard Instruction Set
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SIZE	CODE	NUMBER	REV
A	SP	VT8-E-3	

DEC FORM NO DEC 16-(381)-1022-N370
DRA 108

4.6.1 Display, Alpha-Numeric Data
4.6.2 Display, Graphic Data
4.6.3 Display, Extended Addr. Cntr. Data
4.6.4 Keyboard
4.6.5 Printer

4.7 Timing of Signals Available to Programmer
4.8 Operator's Controls

5.0 Interface Specifications

1.0 General Description

The VT8-E Alpha-numeric, Graphic video display terminal is a PDP8/E,M,F peripheral. It provides high speed, low cost video presentation of alpha-numeric or graphic data. It also provides keyboard data input to the processor and driving capability for an optional hard copy device. The VT8-E consists of the terminal (keyboard, display, housing and cable) with the associated control logic, and a parallel printer interface.

The display control logic supplies video, audio (beep), and sync pulses to the display monitor, while constantly refreshing from a data buffer in PDP8/E,M,F memory via single cycle data breaks. The keyboard control transfers parallel 8-bit ASCII code from the keyboard to the AC of the processor. The printer control transfers parallel 7-bit ASCII code from the AC to an optional printer (LS8-E or LA30A-PA).

The VT8-E can display 20 lines of alpha-numeric information. Sixty-four normal size characters or 32 enlarged characters can be displayed per line (jumper selectable). The VT8-E is also capable of displaying graphic information on a 189 x 200 dot matrix. Alpha and graphic display modes are program selectable. A line frequency (50 Hz or 60 Hz) real time clock is available to the programmer in the form of interrupts or a skip flag.

2.0 System Specifications

2.1 Basic System Components

1 - Video terminal (keyboard, display, housing) 7009044
1 - I/O cable 7009042
3 - Control modules M8336, M8337, M8335

2.2 Physical Specifications

2.2.1 Video terminal

Height: 12"
Width: 19"
Depth: 30"
Weight: 38 lbs.
Shipping Weight: 53 lbs.

2.2.2 I/O cable - Standard length - 15'
Optional length - 50'
(No other lengths available)

2.2.3 Control modules - Three quad (10½" x 8¼") modules which occupy adjacent slots in the OMNIBUS.

2.3 Power Requirements

2.3.1 Video terminal

Operation is possible under one of four power combinations:

7009044-1	100 to 130 VAC, 60 Hz.
7009044-2	200 to 260 VAC, 60 Hz.
7009044-1	100 to 130 VAC, 50 Hz.
7009044-2	200 to 260 VAC, 50 Hz.

Frequency tolerance: ±0.5%
Power consumption: 55 watt at 115 VAC
65 watt at 230 VAC

Power cord is terminated by a standard 3-prong, male, wall-type plug.

115V	DEC#	IA 7008502-9	7009044-1
230V	DEC#	IA 7008432-9	7009044-2

The slide switch on the monitor must be set in the appropriate 115/230 Volt position.

2.3.2 Control modules

+ 5.0V	3.7	Amps
-15 V	.130	Amps
+15 V	.082	Amps

2.4 Environmental Specifications

2.4.1 Video terminal

Operating temperature: 5°C to 43°C (41°F to 110°F)
Storage temperature: -10°C to 60°C (15°F to 140°F)
Humidity (non-condensing) 10 to 95%

2.4.2 Control modules

Operating temperature: 0°C to 55°C (32°F to 130°F)
Humidity (non-condensing): 10 to 95%

2.5 Performance Specification

2.5.1 Display - Alphanumeric Mode
Screen size: 10 1/8" W x 7 5/8" H
Characters per line: 64 normal or 32 enlarged (jumper selectable)
Number of lines: 20
Number of characters displayable: 1280 - Normal
640 - Enlarged
Display area: 8" W x 6¼" H - Enlarged
8" W x 4¼" H - Normal
Character size: .093" W x .150" H - Normal
.185" W x .220" H - Enlarged
Character spacing horiz.: 40% character width
.037" - Normal
.074" - Enlarged
Character spacing vert.: 43% character height
.064" - Normal
.094" - Enlarged
Characters per inch horiz.: 8 ch/in - Normal
4 ch/in - Enlarged
Characters per inch vert.: 4½ ch/in - Normal
3 ch/in - Enlarged
Deflection type: Magnetic
Deflection method: Raster scan
Character generation method: 5 x 7 dot matrix
Display refresh rate: 60 Hz or 50 Hz corresponding to AC supplied.
Geometry distortions: Less than ±1/8" over a centered 8" x 6¼" rectangle.
Phosphor type: P4 (white)

2.5.2 Display-Graphic Mode

Screen size: Same
Display area: 6.95" W x 6¼" H if adjusted for enlarged character.
6.95" W x 4¼" H if adjusted for normal character.
Display format: 189 dot W x 200 dot H dot matrix
Deflection type: Same
Deflection method: Same
Display refresh rate: Same
Phosphor type: Same

2.5.3 Blemishes

The glass and plastic filter in front of the CRT shall have no more than six defects including scratches of no greater than 0.1 inches wide within a centered 8" x 6¼" area.

2.5.4 VT8-E Transmit Codes

ASCII codes generated by the VT8-E keyboard are listed in Tables I, II, III and IV. Tables I & II indicate which key combinations generate a desired code. Tables III & IV indicates which code is generated for a given key combination.

With an internal select switch on the keyboard, the keyboard can be set to generate codes according to Tables I & III (upper and lower case codes) or according to Table II & IV (upper case codes only). The VT8-E, however, is capable of displaying only upper case characters.

2.5.5 VT8-E Receive Codes

Table V lists the character displayed for a given ASCII code.

2.5.6 Character Font

Figure 1 shows the character Font for the 64 displayable characters.

TABLE I

VT8-E

TRANSMIT CODES

FULL ASCII

Bit No. 8 7 6 5 / 4 3 2 1	1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1
0000	↑ @ / ↑	↑ P / ↑ P	Any Space	Any ø
0001	↑ A / ↑ A	↑ Q / ↑ Q	!	↑ 1 / 1 ↑ !
0010	↑ B / ↑ B	↑ R / ↑ R	"	↑ 2 / 2 ↑ "
0011	↑ C / ↑ C	↑ S / ↑ S	#	↑ 3 / 3 ↑ #
0100	↑ D / ↑ D	↑ T / ↑ T	$	↑ 4 / 4 ↑ $
0101	↑ E / ↑ E	↑ U / ↑ U	%	↑ 5 / 5 ↑ %
0110	↑ F / ↑ F	↑ V / ↑ V	&	↑ 6 / 6 ↑ &
0111	↑ G / ↑ G	↑ W / ↑ W	'	↑ 7 / 7 ↑ '
1000	Any C ← / ↑ H ↑ H	Any C → / ↑ X ↑ X	(	↑ 8 / 8 ↑ (
1001	Any TAB / ↑ I ↑ I	↑ Y / ↑ Y	)	↑ 9 / 9 ↑)
1010	Any LF / ↑ J ↑ J	Any C ↑ / ↑ Z ↑ Z	*	↑ : / : ↑ *
1011	Any C ↓ / ↑ K ↑ K	Any ALT / ↑ [↑ {	+	↑ ; / ; ↑ +
1100	↑ L / ↑ L	↑ \ / ↑ |	↑ ,	↑ < / <
1101	Any CR / M ↑ M ↑ =	Any HOME / ↑] ↑ }	-	=
1110	↑ N / ↑ N	Any EOL / ↑ ^ ↑ ~	↑ .	↑ > / >
1111	↑ O / ↑ O	Any EOS / ↑ _ ↑ —	↑ /	↑ ? / ?

▨ Indicates Shifted Character

↑ Indicates Control Character

Table I (Cont)

VT8-E

TRANSMIT

CODES

FULL ASCII

Bit No. 8 7 6 5 / 4 3 2 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
0000	@	P	↑	P
0001	A	Q	A	Q
0010	B	R	B	R
0011	C	S	C	S
0100	D	T	D	T
0101	E	U	E	U
0110	F	V	F	V
0111	G	W	G	W
1000	H	X	H	X
1001	I	Y	I	Y
1010	J	Z	J	Z
1011	K	[	K	{
1100	L	\	L	|
1101	M	]	M	}
1110	N	^	N	~
1111	O	—	O	Any Rub Out

Indicates Shifted Character

↑ Indicates Control Character

Table II

VT8-E

TRANSMIT

CODES

HALF ASCII

Bit No. 8 7 6 5 / 4 3 2 1	1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1
0000	↑@ / ↑	↑P / ↑P	Any Space	Any Ø
0001	↑A / ↑A	↑Q / ↑Q	!	1 / ↑1
0010	↑B / ↑B	↑R / ↑R	"	2 / ↑2 / ↑"
0011	↑C / ↑C	↑S / ↑S	#	3 / ↑3 / ↑#
0100	↑D / ↑D	↑T / ↑T	$	4 / ↑4 / ↑$
0101	↑E / ↑E	↑U / ↑U	%	5 / ↑5 / ↑%
0110	↑F / ↑F	↑V / ↑V	&	6 / ↑6 / ↑&
0111	↑G / ↑G	↑W / ↑W	'	7 / ↑7 / ↑'
1000	any C← / ↑H / ↑H	any C→ / ↑X / ↑X	(	8 / ↑8 / ↑(
1001	any TAB / ↑I / ↑I	↑Y / ↑Y	)	9 / ↑9 / ↑(
1010	any LF / ↑J / ↑J	any C↑ / ↑Z / ↑Z	*	: / ↑: / ↑*
1011	any C↓ / ↑K / ↑K	any ALT / ↑[/ ↑{	+	; / ↑; / ↑+
1100	↑L / ↑L	↑, / ↑,	, / ↑,	< / ↑<
1101	any CR / ↑M / ↑M / ↑= / ↑-	any HOME / ↑] / ↑}	-	=
1110	↑N / ↑N	any EOL / ↑^ / ↑~	. / ↑.	> / ↑>
1111	↑O / ↑O	any EOS / ↑_ / ↑_	/ / ↑/	? / ↑?

Indicates Shifted Character

↑ Indicates Control Character

Table II (Cont.)

VT8-E TRANSMIT CODES

HALF ASCII

Bit No. 8 7 6 5 / 4 3 2 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
0000	@	P		
0001	A	Q		
0010	B	R		
0011	C	S		
0100	D	T		
0101	E	U		
0110	F	V		
0111	G	W		
1000	H	X		
1001	I	Y		
1010	J	Z		
1011	K	[		
1100	L	\		
1101	M	]		
1110	N	^		
1111	O	—		Any RUBOUT

▨ Indicates Shifted Character

↑ Indicates Control Character

KEY CAP CONFIGURATION

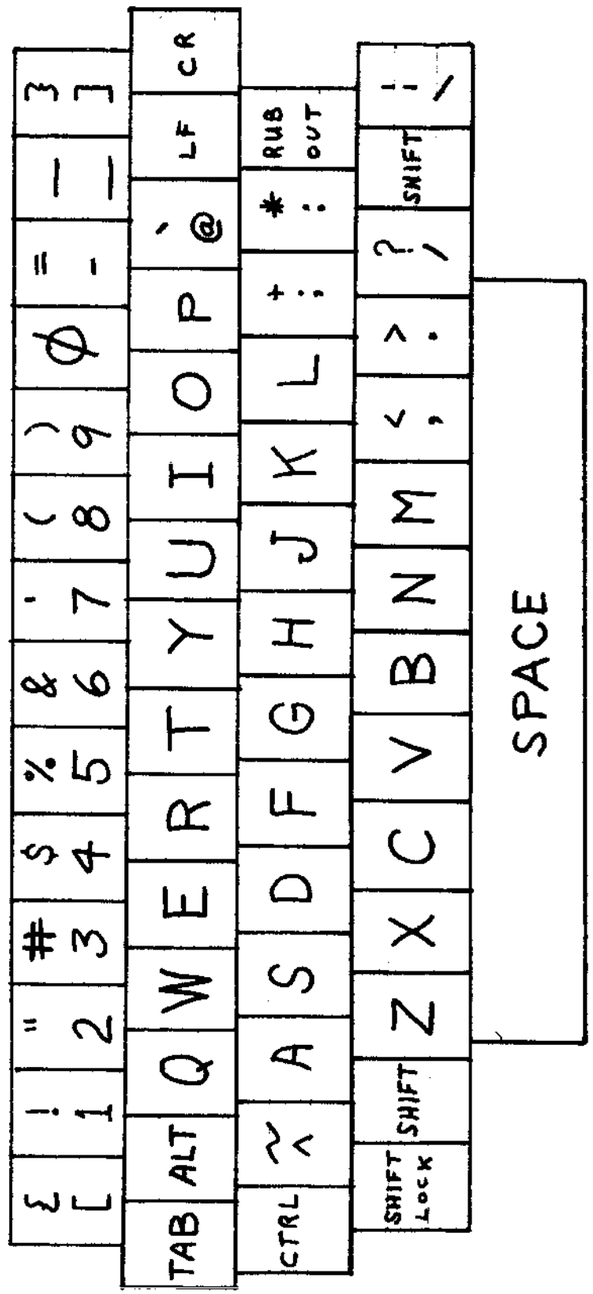


Table III

VT8-E
Transmit Codes
(full ASCII)

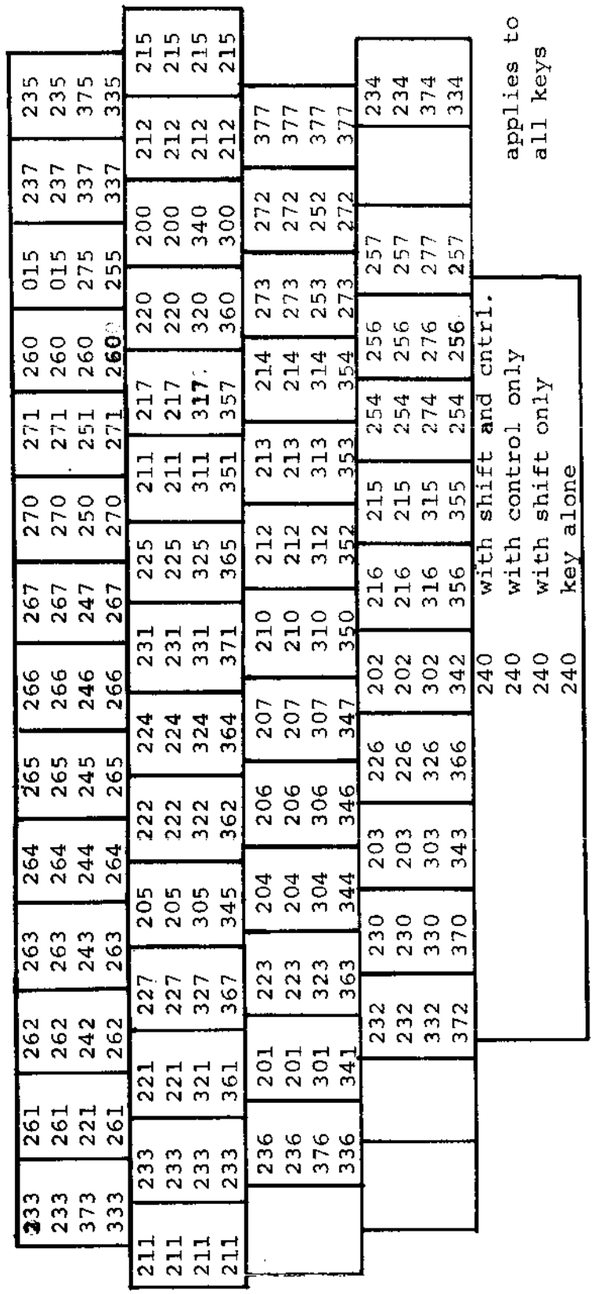


Table IV
VT8-E Transmit
Codes (half ASCII)

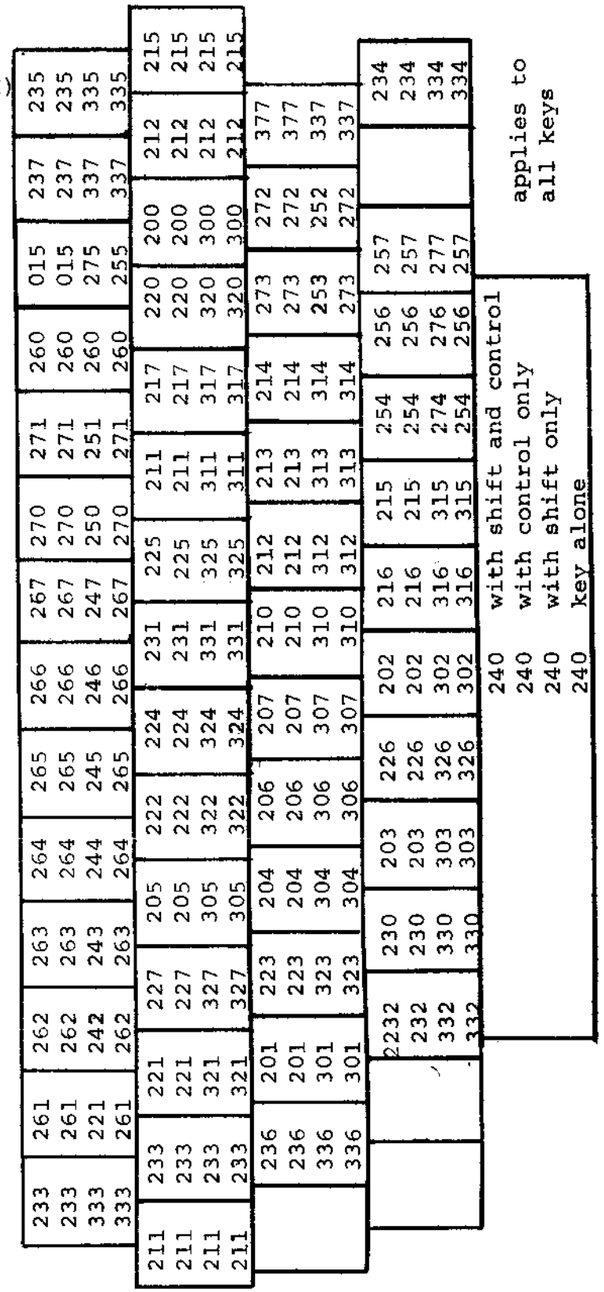


Table V

VT8-E

RECEIVE

CODES

Bit 7 6 5 / 4321	0 0 0	0 0 1	0 1 0	0 1 1
0000	@	P	Space	ø
0001	A	Q	!	1
0010	B	R	"	2
0011	C	S	#	3
0100	D	T	$	4
0101	E	U	Z	5
0110	F	V	&	6
0111	G	W	'	7
1000	H	X	(	8
1001	I	Y	)	9
1010	♠	Z	*	:
1011	K	[	+	;
1100	L	\	,	<
1101	♥	]	-	=
1110	N	⌒	.	>
1111	O	_	/	?

Indicates Shifted Character

↑ Indicates Control Character

Table V

VT8-E

RECEIVE

CODES

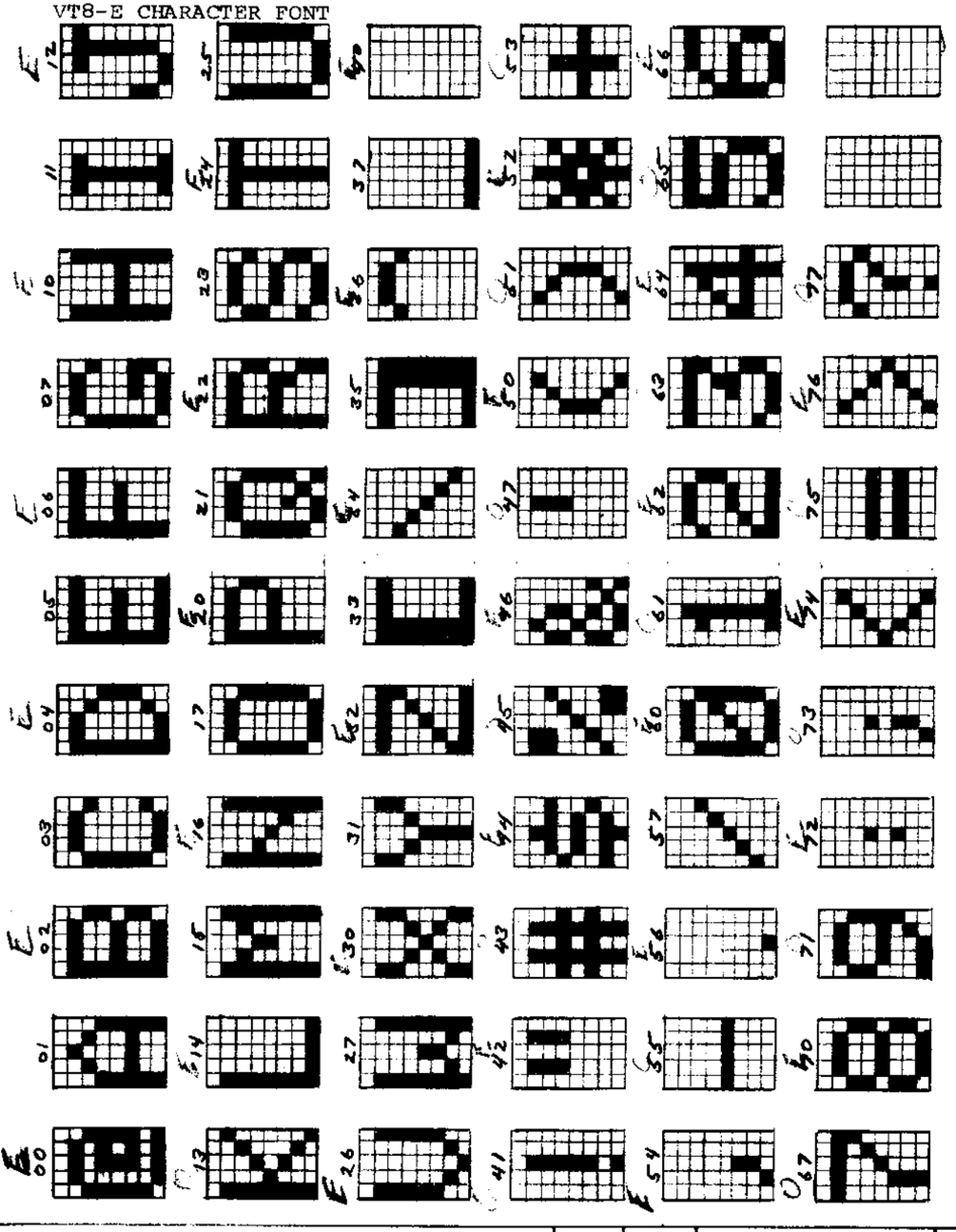
CONT.

Bit 7 6 5 / 4321	1 0 0	1 0 1	1 1 0	1 1 1
0000	@	P	SPACE	0
0001	A	Q	!	1
0010	B	R	"	2
0011	C	S	#	3
0100	D	T	$	4
0101	E	U	%	5
0110	F	V	&	6
0111	G	W	'	7
1000	H	X	(	8
1001	I	Y	)	9
1010	J	Z	*	:
1011	K	[	+	;
1100	L	\	,	<
1101	M	]	-	=
1110	N	⌒	.	>
1111	O	_	/	?

Indicates Shifted Character

↑ Indicates Control Character

Figure 1
VT8-E CHARACTER FONT



2.5.7 Buffer Size

A full screen alpha-numeric display requires 1280_{10} = 2400_8 core locations for 64 characters per line. 640_{10} = 1200_8 core locations for 32 characters per line. Graphic mode displays 3200_{10} = 6200_8 words from core.

2.5.8 Processor Loading - each VT8-E

Alpha numeric, 64 characters per line full screen display uses approximately 9% processor time. Alpha numeric, 32 characters per line, full screen display uses approximately 4.5% of processor time. Graphic display uses approximately 25% of processor time.

2.6 Variations

The VT8-E is available in the following eight variations.

VT8-EA 64 normal characters per line, 60 HZ, 115V

VT8-EB 64 normal characters per line, 60 HZ, 230V

VT8-EC 64 normal characters per line, 50 HZ, 115V

VT8-ED 64 normal characters per line, 50 HZ, 230V

VT8-EE 32 enlarged characters per line, 60 HZ, 115V

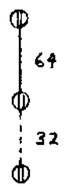
VT8-EF 32 enlarged characters per line, 60 HZ, 230V

VT8-EH 32 enlarged characters per line, 50 HZ, 115v

VT8-EJ 32 enalarged characters per line, 50 HZ, 230V

Control modules are manufactured in the 64 character, 60 Hz configuration. Jumpers on the M8336, M8337 allow the control to be changed to any of the other three variations. The video terminal power line differs between the 50 Hz and 60 Hz configurations.

On the M8336 there are four sets of jumpers, which together select 64 or 32 character operation. A jumper set looks like this



or this

If all 64/32 jumper sets are set in the 64 position as shown above, the VT8-E will display normal size characters. There is also one 64/32 jumper set on the M8337 module.

50 Hz or 60 Hz operation is selected by two sets of jumpers on the M8336.

Jumper set locations and jumper positions are shown on the cover sheets and physical of the M8336 and M8337.

Priority Selection

The VT8-E can be operated on any of the three lowest priorities 9, 10, 11. Priority is selected by jumpers. On the M8337 a jumper in location W1, W2, or W3 corresponds to priorities 9, 10, and 11. On the M8335 there are four possible jumper positions F10, F10', F9, F9'. These should be arrainged as indicated by the table below. Care must be taken to select the same priorities for both modules.

Priority	M8337 jumper inserted	M8335 jumpers
9	W1	F9 F10
10	W2	F9' F10
11	W3	F9' F10'

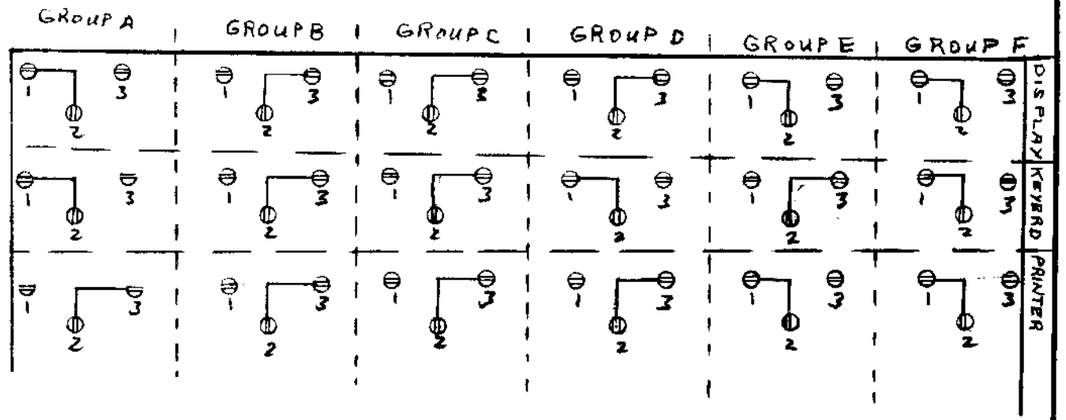
3.0 Specifications of Vendor Supplied Equipment

Refer to Purchase Specifications

Raster Display Module DEC #3010326 Purchase Spec A-PS-3010326-0
LK01 Keyboard DEC #3010166-0 Purchase Spec A-PS-3010166-0
Auxiliary Keyboard DEC #2010166-1 Purchase Spec A-PS-3010166-0

4.0 Programming

4.1 Device codes are originally set to 05 for the display, 03 for the keyboard, and 04 for the printer. However, split lugs and jumpers allow selection of any device code between 00 and 77 for the display, keyboard and printer. The device code selection jumpers are on the M8335. They are arranged as shown below. The device codes indicated are the standard 05, 03, and 04.



Jumper positions for all 64 device codes are listed in the following table. This table indicates which split lugs are to be connected in each of the six groups (A-F) for any desired device code. Each of the three devices has a row of split lug groups. The table is used for all three devices. Care must be taken that the row of split lugs altered is for the correct device. Refer to the cover sheet for the M8335 for split lug locations.

Device Code	Group A	Group B	Group C	Group D	Group E	Group F
00	2-3	2-3	2-3	2-3	2-3	2-1
01	2-1	2-3	2-3	2-3	2-3	2-1
02	2-3	2-3	2-3	2-1	2-3	2-1
03	2-1	2-3	2-3	2-1	2-3	2-1
04	2-3	2-3	2-3	2-3	2-1	2-1
05	2-1	2-3	2-3	2-3	2-1	2-1
06	2-3	2-3	2-3	2-1	2-1	2-1
07	2-1	2-3	2-3	2-1	2-1	2-1
10	2-3	2-3	2-1	2-3	2-3	2-1
11	2-1	2-3	2-1	2-3	2-3	2-1
12	2-3	2-3	2-1	2-1	2-3	2-1
13	2-1	2-3	2-1	2-1	2-3	2-1
14	2-3	2-3	2-1	2-3	2-1	2-1
15	2-1	2-3	2-1	2-3	2-1	2-1
16	2-3	2-3	2-1	2-1	2-1	2-1
17	2-1	2-3	2-1	2-1	2-1	2-1
20	2-3	2-1	2-3	2-3	2-3	2-1
21	2-1	2-1	2-3	2-3	2-3	2-1
22	2-3	2-1	2-3	2-1	2-3	2-1
23	2-1	2-1	2-3	2-1	2-3	2-1
24	2-3	2-1	2-3	2-3	2-1	2-1
25	2-1	2-1	2-3	2-3	2-1	2-1
26	2-3	2-1	2-3	2-1	2-1	2-1
27	2-1	2-1	2-3	2-1	2-1	2-1
30	2-3	2-1	2-1	2-3	2-3	2-1
31	2-1	2-1	2-1	2-3	2-3	2-1
32	2-3	2-1	2-1	2-1	2-3	2-1
33	2-1	2-1	2-1	2-1	2-3	2-1
34	2-3	2-1	2-1	2-3	2-1	2-1
35	2-1	2-1	2-1	2-3	2-1	2-1
36	2-3	2-1	2-1	2-1	2-1	2-1
37	2-1	2-1	2-1	2-1	2-1	2-1
40	2-3	2-3	2-3	2-3	2-3	2-3
41	2-1	2-3	2-3	2-3	2-3	2-3

Device Code	Group A	Group B	Group C	Group D	Group E	Group F
42	2-3	2-3	2-3	2-1	2-3	2-3
43	2-1	2-3	2-3	2-1	2-3	2-3
44	2-3	2-3	2-3	2-3	2-1	2-3
45	2-1	2-3	2-3	2-3	2-1	2-3
46	2-3	2-3	2-3	2-1	2-1	2-3
47	2-1	2-3	2-3	2-1	2-1	2-3
50	2-3	2-3	2-1	2-3	2-3	2-3
51	2-1	2-3	2-1	2-3	2-3	2-3
52	2-3	2-3	2-1	2-1	2-3	2-3
53	2-1	2-3	2-1	2-1	2-3	2-3
54	2-3	2-3	2-1	2-3	2-1	2-3
55	2-1	2-3	2-1	2-3	2-1	2-3
56	2-3	2-3	2-1	2-1	2-1	2-3
57	2-1	2-3	2-1	2-1	2-1	2-3
60	2-3	2-1	2-3	2-3	2-3	2-3
61	2-1	2-1	2-3	2-3	2-3	2-3
62	2-3	2-1	2-3	2-1	2-3	2-3
63	2-1	2-1	2-3	2-1	2-3	2-3
64	2-3	2-1	2-3	2-3	2-1	2-3
65	2-1	2-1	2-3	2-3	2-1	2-3
66	2-3	2-1	2-3	2-1	2-1	2-3
67	2-1	2-1	2-3	2-1	2-1	2-3
70	2-3	2-1	2-1	2-3	2-3	2-3
71	2-1	2-1	2-1	2-3	2-3	2-3
72	2-3	2-1	2-1	2-1	2-3	2-3
73	2-1	2-1	2-1	2-1	2-3	2-3
74	2-3	2-1	2-1	2-3	2-1	2-3
75	2-1	2-1	2-1	2-3	2-1	2-3
76	2-3	2-1	2-1	2-1	2-1	2-3
77	2-1	2-1	2-1	2-1	2-1	2-3

4.2 Display Instruction Set

Mnemonic	Code	Function
DPLA	6050	Load starting Address register with the contents of AC 0-11 and clear the AC. (AC) ⟶ SAR 0 ⟶ AC
DPGO	6051	Load the extended starting address register with the contents of AC 6-8 and GO in Alpha or Graphic mode, with real time clock interrupt enabled or disabled as specified by the contents of AC 10, 11. AC 10 AC 11 Ø Ø Alpha, interupt disabled Ø 1 Alpha, interrupt enabled 1 Ø Graphic, interrupt disabled 1 1 Graphic, interrupt enabled Clear the AC (AC 6-8) ⟶ XSAR GO 0 ⟶ AC
DPSM	6052	Stop the display. Inhibit video and device initiated data breaks. Enter Maintenance mode and if AC11 = 1 Load extended starting address register with the contents of AC 6-8.

		AC11 = Ø Transfer contents of starting address registers to the address counters. Prepare for a maintenance break. Ø ⟶ AC
DPMB	6053	Maintenance instruction. Perform one, one-cycle data break. The contents of the location specified by the address counter is transferred to the data buffer, and the address counter is incremented by one.
DPMD	6054	Maintenance instruction. Jam transfer the output of the data buffer to the AC. (Data Buffer) ⟶ AC
DPMS	6055	Maintenance instruction. Read the contents of the extended address counter into AC 6-8 and the state of the sense switch into AC Ø. (XAC) ⟶ AC 6-8 Sense Sw ⟶ AC Ø
DPCL	6056	Skip next sequential instruction if real time clock flag is set and clear the flag.
DPBL	6057	Generate a half second audible tone for use as a BELL.

4.3 Keyboard Instruction Set

Mnemonic	Code	Function
DKCF	6030	Clear keyboard flag.
DKSK	6031	SKip next sequential instruction if keyboard flag is set.
DKCC	6032	Clear keyboard flag and clear the AC.
	6033	Not used.
DKOB	6034	Logically OR the contents of the keyboard buffer with AC 5-11 and deposit in AC 5-11. Transfer a 1 to AC 4. AC 0-3 remains unchanged. (Key Buf) 'OR' AC 5-11 ⟶ AC 5-11 1 ⟶ AC 4 (AC 0-3) ⟶ AC 0-3
DKIN	6035	Enable keyboard-printer interrupt if AC 11 = 1. Disable if AC 11 = Ø.
DKRB	6036	Read keyboard buffer. Jam transfer the contents of keyboard buffer to AC 5-11. Set AC 4. Clear AC Ø-3. Clear keyboard flag.

4.4 Printer Instruction Set

Mnemonic	Code	Function
PNSF	6040	Set printer flag.
PNSK	6041	SKip next sequential instruction if print done flag is set.
PNCF	6042	Clear printer flag.
	6043	Not used.
PNLP	6044	Load printer buffer from AC 5-11 and print . [redacted]C.
PNSI	6045	Skip if about to interrupt. Skip if interrupt is enabled and either the keyboard flag or print done flag is set.
PNPC	6046	Load printer buffer from AC 5-11. Clear printer done flag and print. [redacted]C.

4.5 Maintenance Features

The maintenance instructions enable the programmer to verify the correct operation of the extended starting address register, extended address counter, sense switch, data break control, data buffer, starting address register, and address counter. The VT8-E diagnostics MAINDEC-08-DAVTA-A-PB and MAINDEC-08-DHVTB-A-PB) exercise the VT8-E in all display modes and aid in troubleshooting.

Description of Maintenance Instructions:

DPSM This instruction stops the display and sets maintenance mode by blanking the screen, inhibiting display initiated data breaks, inhibiting clocking of data buffer and locking the data buffer into the load state. During maintenance mode, the programmer can force a data break at any address thus shifting known data

into the data buffer, using instruction DPMB. As the data is shifted out of the buffer (31 or 63 shifts after it is shifted in) the data can be verified via instruction DPMD.

DPSM prepares for a single one-cycle data break by

1) Loading extended starting address register with the contents of AC 6-8 if AC Ø = 1.

2) Transferring the contents of the starting address registers to the address counters if AC Ø = Ø. DPSM clears the AC.

DPMB This instruction initiates a single one-cycle data break. One data word is transferred from the address specified by the address counter to the data buffer. This shifts the previous contents of the data buffer one position closer to the data buffer output. The DPMB also causes the address counter to be incremented. This instruction is inhibited unless in maintenance mode.

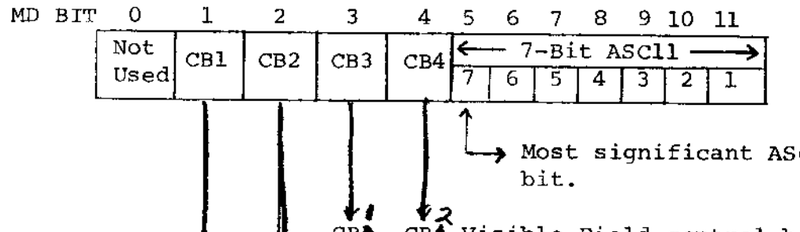
DPMD This instruction reads the output of the data buffer into the AC.

DPMS This instruction reads the contents of the extended address counter into AC 6-8 and the state of the sense switch into AC Ø.
Sense ON AC Ø = 1
Sense OFF AC Ø = Ø
The sense switch is a rocker switch located below the power ON/OFF switch on the auxiliary keyboard.

Maintenance mode is always entered by DPSM and can be left only by DPGO. DPSM also doubles as STOP DISPLAY.

4.6 Data Format

4.6.1 Display, Alpha-numeric Data

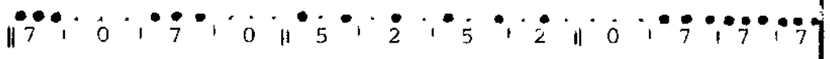


CB3	CB4		
Ø	Ø	NOP	If in visible field, display character in bits 5-11 according to CB3, CB4.
Ø	1	EBF	End blank field. Enable video starting with this character.
1	Ø	BBF	Begin blank field. Disable video for this character and those following. Blank field can be terminated by EBF control code.
1	1	EOS	End of screen. The previous character is the last to appear on the screen. Video and data breaks are inhibited until the next vertical retrace. This allows abreviated display buffers when it is not desired to use the entire screen. This saves core buffer space & reduces processor loading.

CB3	CB4		Character Display Mode Control Bits
Ø	Ø	Normal	Display the character in bits 5-11 at normal intensity if in visible zone.
Ø	1	Blink	Blink this character at a 1.9 Hz rate (1.6 Hz for 50 Hz systems) if in visible zone.
1	Ø	Bold	Display this character at increased intensity if in visible zone.
1	1	Cursor	Display this character as a cursor if in a visible zone. The character and its dot matrix compliment are displayed alternately at a 3.7 Hz rate (3.1 Hz for 50 Hz systems).

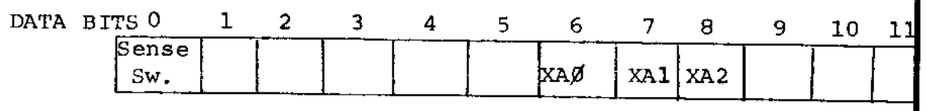
4.6.2 Display, Graphic Data

The graphic display field is a dot matrix, 189 dots wide by 200 dots high. Each dot position corresponds to a bit of a data word in the core buffer. The first word of the buffer defines the first 12 dots on the first row. Bit Ø is the first to be displayed, bit 11 the last. If a bit is a 1, a dot will be displayed; if it is a Ø, no dot is displayed. Thus, if the first three words of the buffer were 7070, 5252, 0777, the corresponding display would be

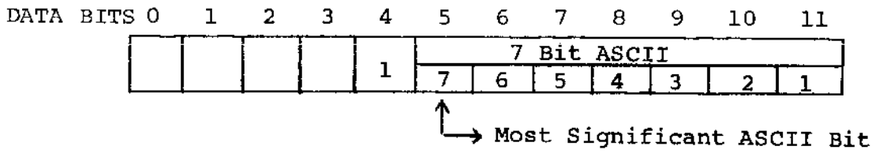


It requires 16 words to define one line of graphic data. The last three bits of the 16th word on a line are not displayed. When in graphic mode there is no way to terminate the buffer short of 3200 words; thus the entire buffer must be defined even if a major portion is blank.

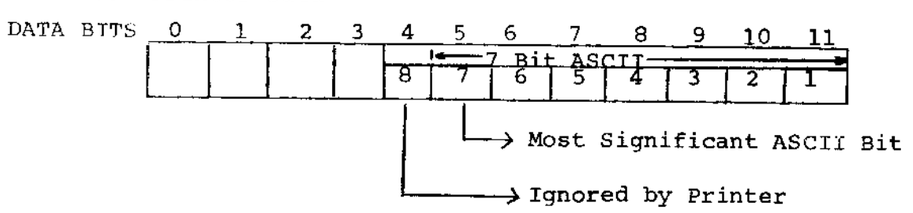
4.6.3 Display, Extended Address Counter and Sense Switch Data



4.6.4 Keyboard Data



4.6.5 Printer Data



4.7 Timing of Signals Available to Programmer

Data read into the AC during the DPMD and DPMS is gated onto the data bus during I/O Pause.

Real time clock flag sets every 16 2/3 ms. (20 ms. for 50 Hz systems). The setting of the flag corresponds to the beginning of the vertical retrace on the display. If the programmer wishes to change between alpha and graphic modes, this must be done within 150 μs. after the real time clock flag sets.

4.8 Operator's Controls

4.8.1 Volume of 'beep' is controlled by R25 on the M8336.

4.8.2 Video Terminal Controls

Horizontal Hold - Stablizes picture in horizontal direction.

Vertical Hold - Stablizes picture in vertical direction.

Brightness - Adjusts intensity of raster.

Contrast - Adjusts contrast.

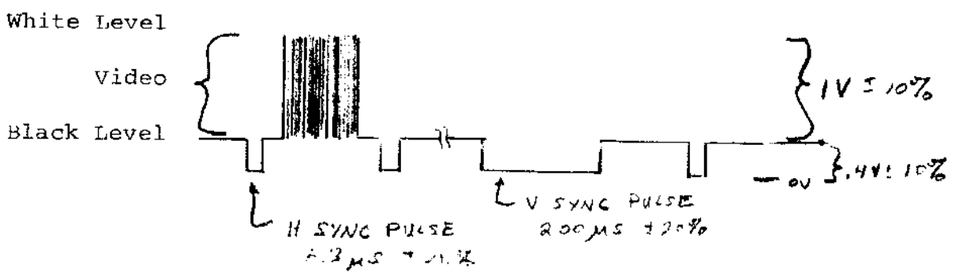
The above controls are potentiometers located on the right side of the housing.

Power ON/OFF - Applies line power to display module located on auxiliary keyboard.

Sense ON/OFF - The position of this switch is read into AC0 by the DPMS instruction ON = 1, OFF = 0. The meaning of this switch is defined by the programmer.

5.0 Interface Specifications

A composite video signal is available from J1 of the M8336. The signal appears as below.



DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

SOFTWARE LIST

MADE BY P. KOTSCHENR EUTHER DATE 1/12/73	CHECKED Flanders DATE 1/12/73	SECTION 1
ENG P. KOTSCHENREUTHER DATE 1/12/73 P. Kots.	PROD DATE	ISSUED SECT. 1

LEGEND

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

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION
1	Maindec-08-DHVTA-A-PB	VT8-E Video Display Test 1 Paper Tape Binary
2	Maindec-08-DHVTA-A-D	VT8-E Video Display Test 1 Document
3	Maindec-08-DHVTB-A-PB	VT8-E Video Display Test 2 Paper Tape Binary
4	Maindec-08-DHVTB-A-D	VT8-E Video Display Test 2 Document
5	Maindec-8E-D2FB-PB	LA30 Control/Exerciser test Paper Tape Binary
6	Maindec-8E-D2FB-D	LA30 Control/Exerciser Test Document

QUANTITY / VARIATION

KIT CHECK BY _____ DATE _____

INSTALLATION CHECK BY _____ DATE _____

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV.	ECO NO
VT8-E Software List	—//—	A	SL	VT8-E-4		
	SHEET 1 OF 1	DIST.				

DEC FORM NO.
DRA 120

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

MADE BY F. KOTCHENREU. DATE 1/12/73	CHECKED DATE 1/12/73	SECTION 1	**LEGEND** D DOCUMENT DN DOCUMENT CHANGE NOTICE PA PAPER TAPE ASCII PB PAPER TAPE BINARY PM PAPER TAPE READ-IN-MODE
ENG F. KOTSCHENREUTHER DATE 1/12/73	PROD DATE	ISSUED SECT. 1	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	VT8-EA & VT8-EE	VT8-EB & VT8-EF	VT8-EC & VT8-EH	VT8-ED & VT8-EJ				KIT CHECK BY ___ DATE ___	INSTALLATION CHECK BY ___ DATE ___
1	7009042-0-0	VT8-E I/C CABLE 15'	1	1	1	1					
2	C-IA-1210581	Nylon Machine Screw 1/4 x 20 x 3/8" Lg.	4	4	4	4					
3	C-IA-1210582	Nylon Finishing Washer	4	4	4	4					
4	A-SL-VT8-E-7	Appropriate Software Per Software List	-	–	–	–					
5	DEC-8E-HR3B-D-VT8-E	VT8-E Maintenance Manual	1	1	1	1					

TITLE VT8-E Accessory List	ASSY. NO. —	SIZE **A**	CODE **AL**	NUMBER VT8-E-5	REV	ECO NO
	SHEET 1 OF 1	DIST.				

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 01/16/73

TITLE VT8E IN HOUSE ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
P. Kotschenreuther	Jim Parker	A	AP	VT8-E-6	

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE VT8E IN HOUSE ACCEPTANCE PROCEDURE

1.0 SCOPE

1.1 This specification sets forth the procedure for inspection of the VT8E alpha/graphic display terminal and control in accordance with the Workmanship Manual, DEC Standards, ECO's, VT8E specifications and prints. The monitor shall meet the standards set forth in the purchase specifications.

Motorola #3010326

1.2 All units submitted to acceptance must successfully complete the production checkout procedure.

1.3 Any unit which fails any of the requirements of this procedure will be classified as defective and returned to production for rework.

1.4 Units submitted to Acceptance after rework may be recycled through the entire acceptance procedure or any portion thereof at the discretion of the acceptance operator.

1.5 Any unit may be checked for compliance with the engineering specifications at the discretion of Acceptance personnel.

1.6 Approximate Run Time 2½ hours.

1.7 All picture quality shall be matched with the overlay and quality picture

2.0 REQUIRED DOCUMENTS

2.1 VT8E Display Test 1 - MAINDEC-08-DHVTA-A

2.2 VT8E Display Test 2 - MAINDEC-08-DHVTB-A

2.3 LA30 MAINDEC - 8E-D2FB-PB

2.4 VT8E Engineering Specifications

2.5 MAINDEC 8E-D2FB-D

SIZE	CODE	NUMBER	REV
A	AP	VT8-E-6	

3.0 REQUIRED TEST EQUIPMENT

3.1 PDP8/E or PDP8/M

3.2 Checked out LA30A-PA

4.0 ACCEPTANCE PROCEDURE

4.1 Mechanical Inspection

4.1.1 Check unit against construction requisition.

4.1.2 Inspect modules for workmanship.

4.1.3 Check all modules for proper circuit and etch revisions and verify against ECO status sheet and key sheet.

4.1.4 Check for final inspection stamp on all modules including the H851 over the top connectors.

4.1.5 Inspect the H851's for cracks.

4.1.6 Hardware Inspection

4.1.6.1 Check switches for proper mounting and freedom of operation.

4.1.6.2 Check wiring dress, cable and mechanical connections for compliance with hardware. Assemblies Standard (A-SP-7665099-0-0).

4.1.6.2 Insure all mounting screws and bolts are installed through the base plate into casting.

4.1.6.4 Check for high voltage warning signs on the monitor and interlock switch.

4.1.6.5 Insure the unit is clean and free of all foreign material.

4.1.6.6 Insure proper alignment of control knobs.

4.0 ACCEPTANCE PROCEDURE (Continued)

4.1 Mechanical Inspection (Continued)

4.1.6 (Continued)

4.1.6.7 Insure presence of interlock switch insulating shield.

4.1.6.8 Insure proper grounding throughout unit.

4.1.6.9 Check for inspection stamps on the monitor and keyboard if applicable.

4.1.6.10 Insure all crimp connectors are secured properly.

4.1.6.11 Insure the device codes are labeled on the M8335 module.

4.1.6.12 Check to insure all device codes on the M8335 are selected correctly.

NOTE: Due to a lack of off line testing capabilities a close visual inspection of the electrical test section will have to be performed.

4.2 Electrical Test

NOTE: Halt the diagnostic programs with SW Ø=1 only. Do not use the halt switch. Turn one monitor.

4.2.0 Real Time Clock Test

Load the following program into core.

ADDRESS	
ØØØØ	ØØØØ
~~ØØØ1~~	~~131Ø~~
15ØØ	6ØØ2
15Ø1	6Ø56
15Ø2	7ØØØ
15Ø3	72Ø1

4.0 ACCEPTANCE PROCEDURE (Continued)

4.2 Electrical Test (Continued)

4.2.0 Real Time Clock Test (Continued)

ADDRESS

15Ø4	6Ø51
15Ø5	6Ø52
15Ø6	6ØØ1
15Ø7	53Ø6
151Ø	6Ø56
1511	74Ø2
1512	53ØØ

Load and start at address 15ØØ. Using a scope examine inter ROST L at CP1 on the omnibus. This should occur every 16 2/3 ms. A halt at location 1511 indicates the program could not skip on the RTC flag after an interrupt was generated. The M8335 module fails if the interrupts are observed to occur other than every 16 2/3ms or if the error halt occurs.

4.2.1 Load the alpha-numerical diagnostic, VT8E video display Test 1, MAINDEC 08-DHVTA-A using normal binary loading procedures. Program assumes normal IOT's if different use SA70 to change the device codes in the program.

4.2.2 Selected Character Test

4.2.2.1 Load Address ØØ74

Set any character code in SR 5-11. Press clear and continue. Program halts, clear all switches. Set SR 2=1 press continue. A full screen of the character selected will be shown.

4.2.2.2 Turn brightness and contrast controls fully counter-clockwise. Insure that screen is dark.

4.0 ACCEPTANCE PROCEDURE (Continued)

4.2 Electrical Test (Continued)

4.2.2 Selected Character Test (Continued)

4.2.2.3 Turn brightness control fully clockwise. Insure that screen is illuminated.

4.2.2.4 Turn brightness control counter-clockwise until screen just becomes dark. Turn contrast control clockwise until characters are visable.

4.2.2.5 Check the operation of the vertical hold control by turning it all the way clockwise and then counter-clockwise until the picture is distorted then re-adjust.

4.2.2.6 Check the operation of the horizontal hold control by turning it all the way clockwise and counter-clockwise, until the picture is distorted then readjust.

4.2.2.7 Readjust picture to correct image and put SR 2=Ø. Characters should change approximately every second. Run on complete pass through the character codes. Set sense switch on display to OFF.

4.2.3 Run the alpha-numerical diagnostic MAINDEC-08-DHVTA-A. Consult diagnostic listing for switch settings. Run for 2 passes, approximately 40 minutes. After starting, program will halt at address 0264, put sense switch to ON and continue, this checks the condition of the sense switch.

4.2.4 Run Keyboard Test

4.2.4.1 Load SA ØØ72. Start ØØØØ.

4.0 ACCEPTANCE PROCEDURE (Continued)

4.2 Electrical Test (Continued)

4.2.4 Run Keyboard Test

4.2.4.1 The keyboard test has three (3) sections to it and by depressing CR the program goes to the next section or ends the test after Section 3.

4.2.4.2 Section 1. Check lower case operation by typing all the keys on the keyboard. Do not type "CR"

4.2.4.3 Check upper case operation by depressing shift key and typing all the appropriate keys on the keyboard.

4.2.4.4 Type one complete line of any character and count the number of characters. Should be 32 or 64.

4.2.4.5 Depress "CR" for Section 2.

4.2.4.6 Check the cursor right operation by depressing the " → " key and observe the word right on the screen.

4.2.4.7 Check the cursor left operation by depressing the " ← " key and observe the word left on the screen.

4.2.4.8 Check the down cursor operation by depressing the " ↓ " key and observe the word down on the screen.

4.2.4.9 Check cursor up operation by depressing the " ↑ " key and observe the word up on the screen.

4.2.4.10 Depress the home key and observe the word home on the screen.

4.0 ACCEPTANCE PROCEDURE (Continued)

4.2 Electrical Test (Continued)

4.2.4 Run Keyboard Test (Continued)

4.2.4.11 Depress "CR" for Section 3. Depressing a key will show on the screen the ASCII code for the characters and the position of the sense switch. Depressing A shows:

A = 301 SW = 1 (Switch ON)
A = 301 SW = Ø (Switch OFF)

Check all character Codes.

Depress "CR" end of keyboard test. Program will recycle.

4.2.4.12 Check the spot burn protection circuitry of the monitor as the monitor should now be thoroughly warmed up. Turn brightness control full counter clockwise and shut the AC power off while looking at the screen. The raster should collapse to a spot which should not last more than 5 seconds. If the spot burn protection circuitry is faulty, the spot will be very bright lasting much longer than 5 seconds. Readjust brightness control.

4.2.5 Load the graphic test tape (VT8E Video Display Test 2) using normal binary loader procedures.

MAINDEC #08-DHVTB-A

4.2.5.1 Load SA Ø2ØØ with the IF and DF set to the program field. Start with SR 4 = to 60 or 50 cycles and SR6 = to characters per line.

SR4=0 = 60 cycle SR6=0 64 characters
SR4=1 = 50 cycle SR6=1 32 characters

4.0 ACCEPTANCE PROCEDURE (Continued)

4.2 Electrical Test (Continued)

4.2.5 (Continued)

4.2.5.1 Run for 30 minutes.

Ensure visual monitor meets specifications.

4.2.5.2 Check for proper execution of the particular starting addresses. Load address of each test below and follow the switch settings of Section 4.2.5.1.

ØØ72 - Full Screen
ØØ73 - Full Blank Screen
ØØ74 - Checkerboard Pattern
ØØ75 - Vertical Grid Pattern
ØØ76 - Flash a Full Screen of dots followed by a Blank Screen.
ØØ77 - Display alpha with a screen dots

ØlØØ - Display alpha with the vertical grid pattern.

Run each starting address for two (2) minutes.

4.3 Printer Control

Connect known good LA30A-PA to VT8E control. Load printer diagnostic MAINDEC 8E-D2FB-PB using normal binary loading procedures. Run printer tests referencing 8E-D2FB-D diagnostic write-up, The VT8E keyboard is used in place of the LA30 keyboard to run through the diagnostic. No errors are allowed.

4.4 System Acceptance

4.4.1 Run both diagnostics for a minimum of two passes on the VT8E video display test 1 and for a minimum of 30 minutes with VT8E video display test 2.

4.0 ACCEPTANCE PROCEDURE (Continued)

4.4 System Acceptance (Continued)

4.4.2 Run DECX8 Rev. B with the VT8E module. Insure that the system configuration meets the required standards set forth regarding the running of DECX8 on the system.

4.4.3 Run Section 4.3 if applicable.

4.5 Preparation for Shipment and Document Check

4.5.1 Insure the unit is clean and free of any foreign material.

4.5.2 Insure the foam strip, mask and protective screen are installed in the cover.

4.5.3 The cover shall meet finish specifications described in DEC Standard Ø92-ØØ1ØØ.

4.5.4 Install and secure the cover. Insure proper alignment of the keyboard and interlock switch.

4.5.5 Check for accessories in accordance with the accessory check list, drawing number A-AL-VT8E-8.

4.5.6 Check for correct diagnostic tapes and listings, with the Software Accessory Checklist, drawing number A-SL-VT8E-7.

4.5.7 Requirements for customer envelope preparation.

4.5.7.1 Construction Requisition (1 copy)

4.5.7.2 Keysheets (2 copies)

4.5.7.3 Blanket Waiver (if one) (one copy)

4.5.7.4 Waiver (all copies except yellow copy)

4.5.8 Customer Envelope Contents

4.5.8.1 Customer Acceptance Report

4.5.8.2 Keysheet (2 copies)

4.0 ACCEPTANCE PROCEDURE (Continued)

4.5 Preparation for Shipment and Document Check (Con't)

4.5.8 Customer Envelope Contents (Continued)

4.5.8.3 ECO Status Sheets (yellow copy)

4.5.9 T & I Envelope Contents (Continued)

4.5.9.1 ECO Status Sheet (2 copies)

4.5.9.2 Keysheets (3 copies, minimum)

4.5.9.3 Waiver (Yellow copy)

4.5.9.4 Blanket Waiver (1 copy)

4.5.9.5 Acceptance Log and Check Sheets.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DATE 01/16/73

TITLE VT8E FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
P Rotschenreuther	Jim Parker	A	FI	VT8-E-7	

DEC FORM NO. DRA 107A

SHEET 1 OF 6

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE VT8E FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

INSTALLATION

The VT8E Video Display and Control are installed on-site by DEC Field Service personnel. The customer should not attempt to unpack, inspect, install, checkout or service the equipment.

1.0 UNPACKING

The VT8E Display Monitor is packed in a specially designed carton to avoid damage during shipment.

NOTE: Carefully examine the VT8E for damage. Any damage should be reported immediately.

Unpack the VT8E Display Monitor as follows:

1.1 Remove the Display Monitor from the shipping container.

1.2 Remove the polyethylene cover.

1.3 Remove any tape, etc., from the display monitor cabinet.

1.4 Remove the display monitor from the shipping skid.

1.5 Install nylon screws and washers (feet) into the bottom of the display chassis.

1.6 Place the display monitor in the desired location.

2.0 SHIPPING CHECKLIST

A shipping checklist is provided with each VT8E to ensure that the following have been accomplished and/or included:

2.1 Quality Control check.

2.2 Manuals

VT8E Maintenance Manual (Part of PDP8/E, PDP8/F, PDP8/M Maintenance Manual, Volumes 1, 2 and 3).

2.3 Customer Acceptance Procedure

2.4 Interconnecting cable.

2.5 Diagnostic Software.

SIZE	CODE	NUMBER	REV
A	FI	VT8-E-7	

DEC FORM NO DEC 16-(381)-1022-N370
DRA 108

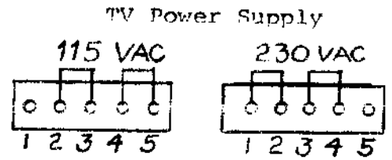
SHEET 2 OF 6

3.0 PRIMARY POWER (AC)

3.1 The VT8E uses a single (permanently connected) AC power cable to connect the site power source to the VT8E Display power supply. The VT8E operates at 100-130 VAC, 50-60 Hz, single phase or 200-260 VAC 50-60 Hz, 1A, single phase.

CAUTION: Before proceding, ensure that the VT05 power transformer windings are correctly connected (for 115V or 230 V operation) to correspond to the installation site power source as shown in Figure 2-1 and drawings D-UA-VT8E-0-0.

Figure 2-1



Sylvania

NOTE: If display monitor is Motorola check TV voltage selection switch on the side of the display chassis. Figure 2-1 does not apply in this case.

Each wire in the power cable is color-coded as shown in Table 2-1.

Table 2-1

POWER CABLE LINE IDENTIFICATION

Pigtail Information		Terminal Strip Nomenclature
Line	Wire Color	
Frame Ground	Green	Frame Ground
Neutral/ Line 2	White	Neutral or Line 2
Line 1	Black	Line 1

3.0 PRIMARY POWER (AC) (Continued)

NOTE: The green wire is the cabinet frame ground and does not carry load current but must be connected for personnel safety. The white wire is the neutral, common, AC return, or cold load and should never be used for VT8E grounding purposes.

The VT8E is normally supplied with a 15A connector. The selected AC service outlet must be capable of at least 2A, 110 VAC, 50 or 60 Hz or 1A, 200 VAC, 50 or 60 Hz single phase.

3.2 Initial Setup

3.2.1 VT8E Power Connections

Use the following procedure for the initial power check of the VT8E:

a) Ensure the main power switch on the right front of the VT8E is off.

b) Meter the wall receptacle to ensure that the hot, neutral, and ground connections conform to the VT8E requirements.

c) Turn main power on to insure display monitor is getting power.

d) Turn off main power.

4.0 MODULE AND I/O INSTALLATION

4.1 I/O Cable Installation

4.1.1 Connect J3 Winchester connector to the mating connector located at the rear of the video display terminal.

4.1.2 Connect J1 cable connector to J1 on the M8336.

4.1.3 Connect J2 cable connector to J1 on the M8335.

4.1.4 If an LA30A-PA or Centronics type line printer or equivalent type printer only device is to be installed connect the printer cable to J2 on the M8335.

4.0 MODULE AND I/O INSTALLATION (Continued)

4.1 I/O Cable Installation

NOTE: Due to space limitations, it is advisable to connect the interconnecting cables to the interface modules before inserting the modules into the omnibus.

4.2 Plug the M8336, M8337, M8335 control modules into the omnibus per the "Recommended Slot Assignment List" in the 8E, 8M, 8F Maintenance Manual Table 2-3, Volume 1. The VT8E is a non-memory option.

4.3 The VT8E modules are plugged into adjacent omnibus slots in this order:

M8336 - First
M8337 - Middle
M8335 - Last

4.4 Install the H851 top connectors between M8336H and M8337H, M8337 E and F and M8335 E and F.

4.5 When installing more then one VT8E control (up to four may be installed in one system) the next control goes into the system directly behind the first. The two controls are interconnected by an H851 top connector located at M8335 J of the first control to M8336 J of the second one.

5.0 CUSTOMER ACCEPTANCE

Customer Acceptance consists of ensuring system operation by running all diagnostic programs provided, running an operating test of the system software, inspecting the shipping checklist, and completing a physical inspection of the VT8E. There should be no physical damage, and the shipping checklist should be complete.

5.1 Customer Acceptance Procedure

Prior to running of customer acceptance, the VT8E should be installed in accordance with the procedure, in Section 1.0 and 4.5.

Enclosed with the VT8E you will find a large envelope containing the following items:

5.0 CUSTOMER ACCEPTANCE (Continued)

5.1 Customer Acceptance Prodedure (Continued)

5.1.1 Customer Acceptance Forms

Upon successful completion of acceptance, the field serviceman must list any exceptions to proper acceptance on this form. The exceptions must include missing items, incomplete shipments or specification conflicts. The customer must sign the Acceptance Form.

5.1.2 Accessory Checklist

This is a list of all items which were shipped with the VT8E and should be used to inventory the shipment. The customer should be present during this inventory. Any missing items should be noted on the Customer Acceptance Form.

Customer Acceptance is a demonstration to the customer, that the VT8E operates according to specification. The demonstration shall consist of operating the appropriate diagnostics in the customers presence.

1. Consult the supplied diagnostic write-ups for proper set-up and operation.

2. Run the diagnostic for one complete pass.

Successful completion of 1 and 2 shall constitute completion of VT8E Customer Acceptance. Discrepancies must be listed on the Customer Acceptance Form, and signed by the customer.

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS	REMARKS
2	C	
3	C	KP1
4	C	KP2
5	C	KP3
6	C	KP4

SH NO.	DATE	ENG.	ETCH REV.	ECO NO.
2	12-13-72		B	

FIRST USED ON OPTION/MODEL: VT8-E

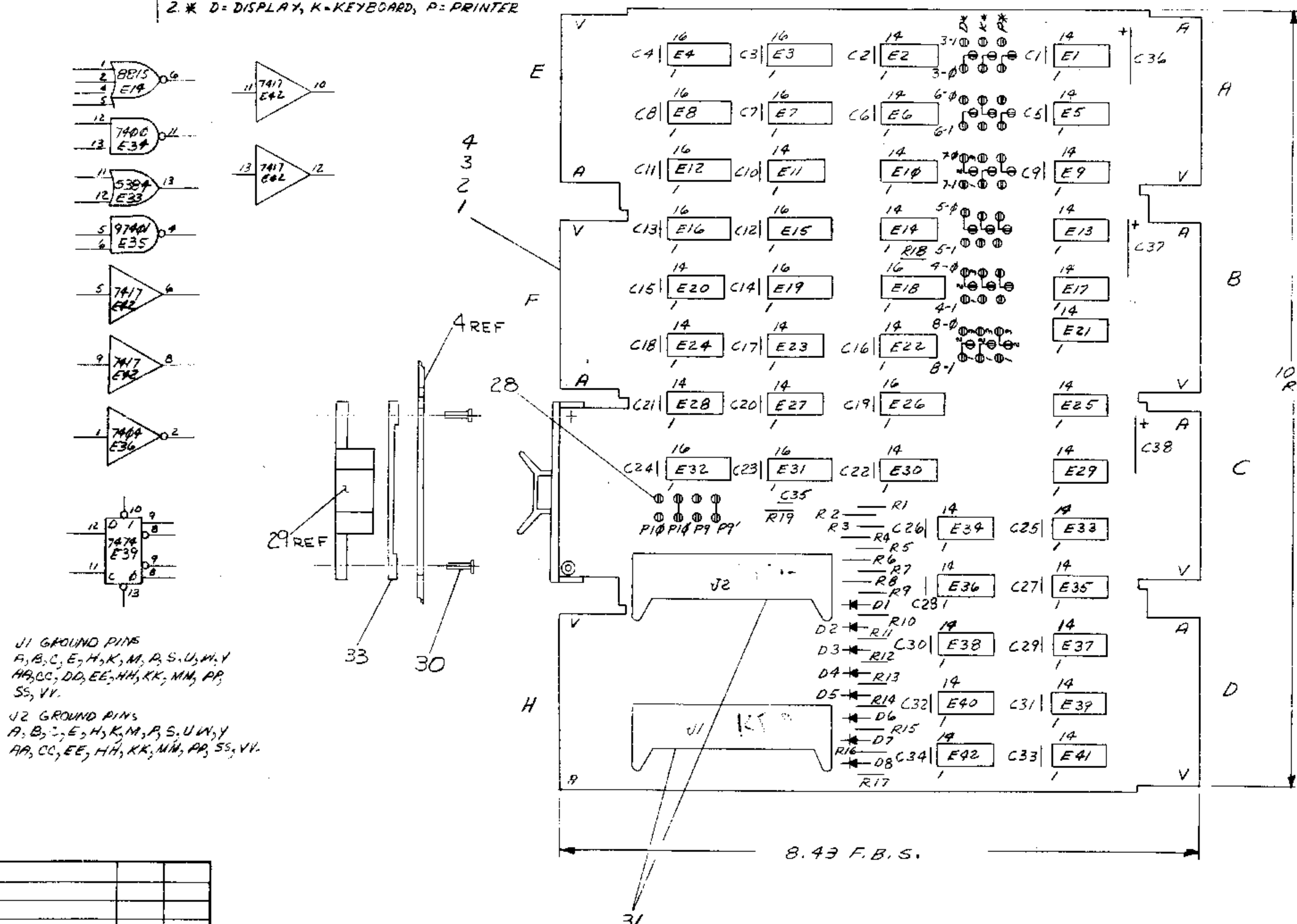
DRN. M. Painter	DATE 1-11-72	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D	DATE	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE	

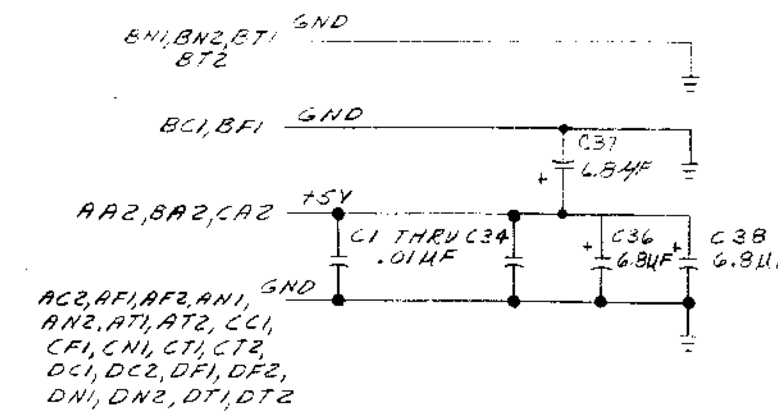
TITLE: VT8-E KEYBOARD PRINTER CONTROL

NEXT HIGHER ASSY. B-DD-VT8-E	SIZE B	CODE CS	NUMBER M8335-0-1	REV. C
SCALE				
SHEET 1 OF 6	DIST.			

NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL CAPACITORS ARE IN MICROFARADS & ALL RESISTORS ARE IN OHMS.
2. ✱ D= DISPLAY, K= KEYBOARD, P= PRINTER





QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO.
REF		WIRE LIST	A-WL-M8335-0-8	34
1		SPACER, CABLE CLAMP	1202704	33
A/R		#30 AWG SOLID WIRE (YEL)	9105740-44	32
2	J1, J2	CONN. RIGHT ANGLE HEADER	1209991	31
2		EYELET (G54-7)	9006732	30
1		HANDLE, FLIP CHIP MAGENTA	9008337-6	29
62		SPLIT LUGS	9006735	28
1	E41	I.C. DEC 7440	1905579	27
2	E40, E42	I.C. DEC 7417	1909929	26
3	E37-E39	I.C. DEC 7474	1905597	25
1	E33	I.C. DEC 5384	1910394	24
2	E30, E36	I.C. DEC 7404	1909686	23
2	E22, E29	I.C. DEC 7402	1909004	22
1	E21	I.C. DEC 74H00	1909056	21
2	E18, E26	I.C. DEC 7442	1910046	20
3	E17, E25, E34	I.C. DEC 7400	1905575	19
2	E14, E20	I.C. DEC 8815	1908713	18
4	E13, E27, E28, E35	I.C. DEC 74H01	1109773	17
3	E7, E15, E19	I.C. DEC 74174	1910652	16
4	E4, E8, E12, E16	I.C. DEC 74193	1910018	15
3	E3, E31, E32	I.C. DEC 74175	1910651	14
6	E2, E6, E10, E11, E23, E24	I.C. DEC 5380	1910392	13
3	E1, E5, E9	I.C. DEC 5314	1910391	12
1	R18	RES. 1K 1/4W 5%	1300365	11
9	R10-R17, R19	RES. 330 1/4W 5%	1300295	10
9	R1-R9	RES. 220 1/4W 5%	1300271	9
8	D1-D8	DIODE D664	1100114	8
3	C36-C38	CAP 6.8μF 35V ±20% STANT	1000067	7
1	C35	CAP. 470 PF 100V 5% DM	1000024	6
34	C1-C34	CAP. .01μF 100V ±20% DISC	1001610	5
1		ETCHED CIRCUIT BOARD	5010070	4
REF		MODULE ECO HISTORY	B-MH-M8335-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M8335-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M8335-0-4	1

PARTS LIST

IC TYPE	GND	+ 5V
DEC 74193	8	16
DEC 74175	8	16
DEC 74174	8	16
DEC 7442	8	16

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

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.
		D664	1N3606

SEMICONDUCTOR CONVERSION CHART

FIRST USED ON OPTION MODEL: VT8-E

ETCH BOARD REV: B

REVISIONS: REV B — ORIGINATED

DRN / CHK'D / ENG. / PROJ. ENG. / PROD. — DATE 6-13-72

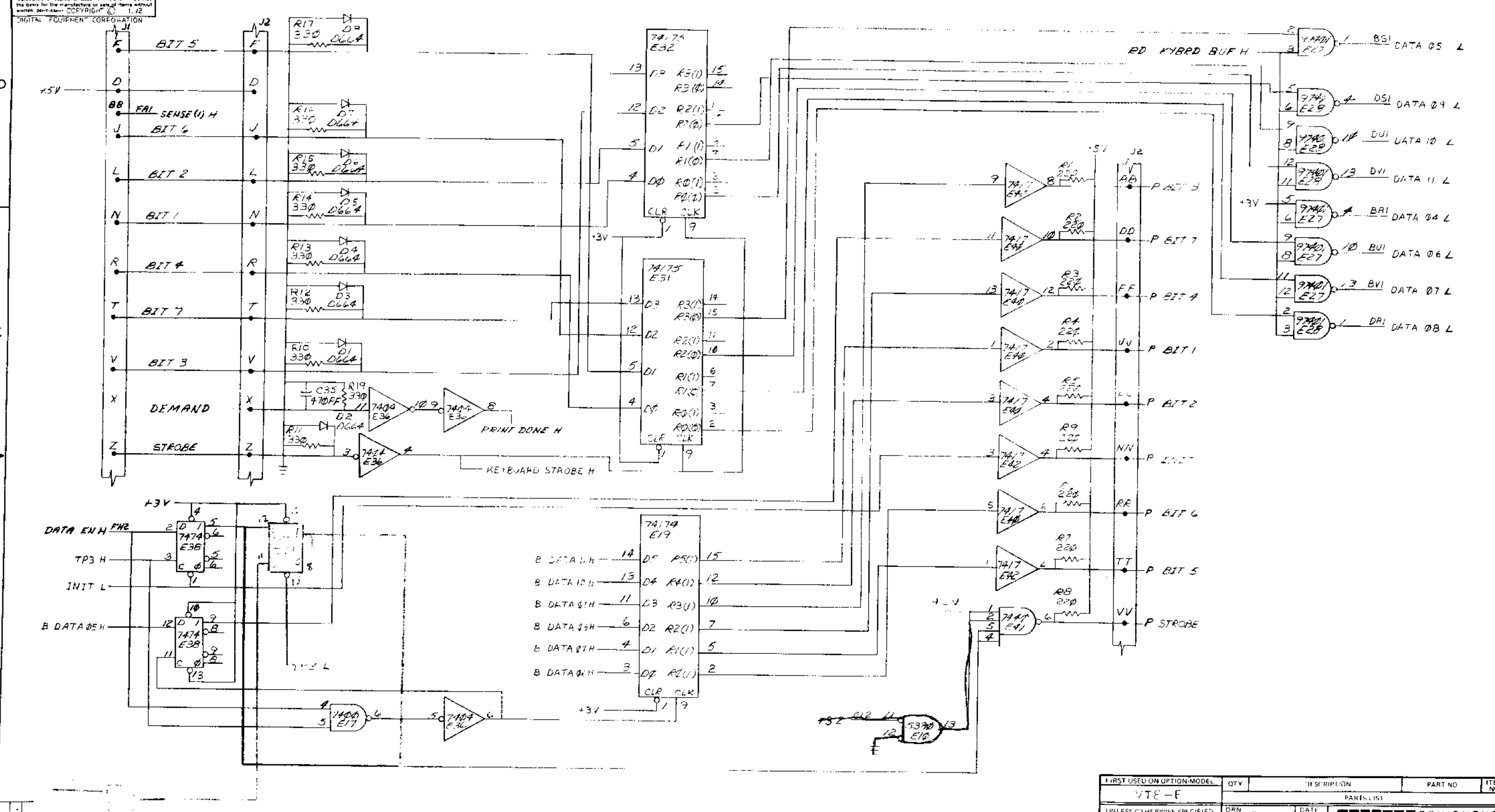
NEXT HIGHER ASSY: B-DL VT8-E

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: VT8-E KEYBOARD PRINTER CONTROL

SIZE: D CODE: CS NUMBER: M8335-0-1 REV: C

SCALE / SHEET OF / DIST



FIRST USED ON OPTION-MODEL	QTY	DESCRIPTION	PART NO	ITEM NO.
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES

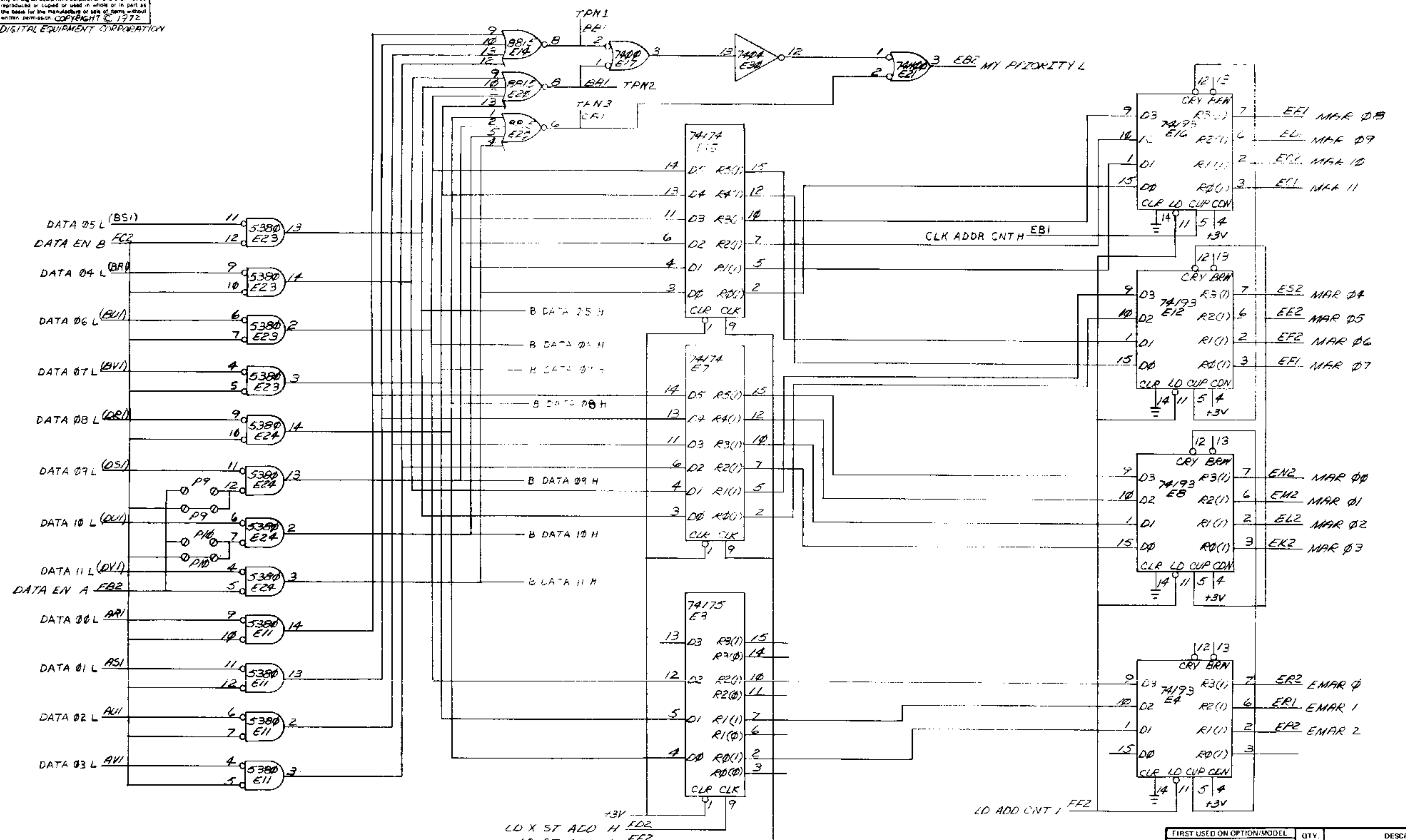
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: KEYBOARD PRINTER BOARD

NEXT HIGHER ASSY: VT8-E

SIZE: D NUMBER: CS M8335-Ø-1 REV: C

SHEET 3 OF



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO	ITEM NO
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS XXX ± .005, XX ± .02, X ± .1 — ANGLES ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN / CHKD / ENG. / PROJ. ENG. / PROD. — DATE

NEXT HIGHER ASSY. D-DD-VT8 E

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE KEYBOARD PRINTER BOARD (KP2)

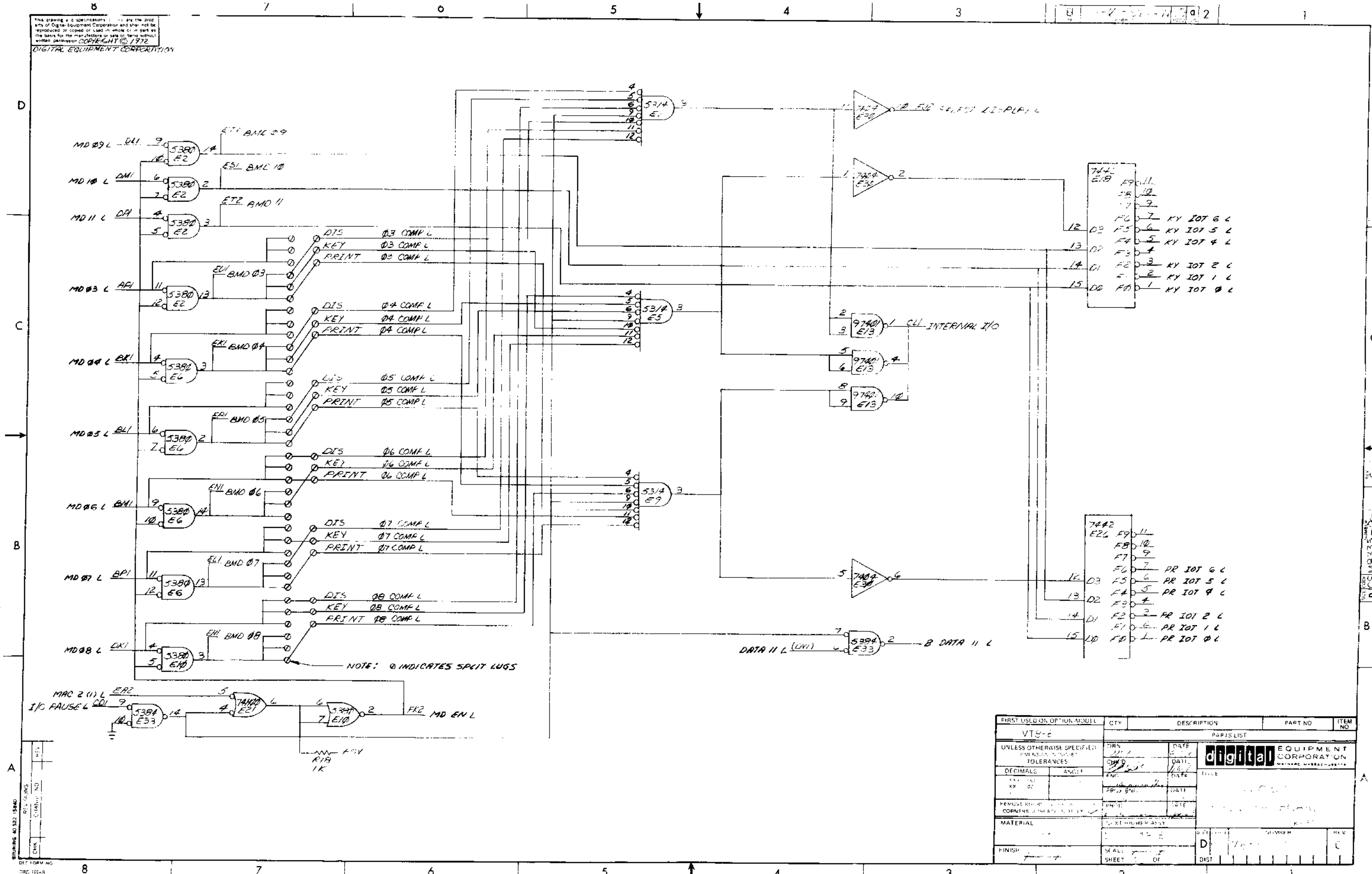
SIZE D CODE CS NUMBER M8335-0-1 REV. C

SCALE — SHEET 4 OF

DIST.

REVISIONS — REV. — CHANGE NO — CHK

DEC FORM NO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DIGITAL EQUIPMENT CORPORATION
MD Ø9 L
MD 1Ø L
MD 11 L
MD Ø3 L
MD Ø4 L
MD Ø5 L
MD Ø6 L
MD Ø7 L
MD Ø8 L
BMC Ø9
BMC 1Ø
BMD 11
BMD Ø3
BMD Ø4
BMD Ø5
BMD Ø6
BMD Ø7
BMD Ø8
DIS
KEY
PRINT
Ø3 COMP L
Ø4 COMP L
Ø5 COMP L
Ø6 COMP L
Ø7 COMP L
Ø8 COMP L
NOTE: Ø INDICATES SPLIT LUGS
MAC 2 (1) L
I/O PAUSE L
MD EN L
R18
1K
INTERNAL I/O
KY IOT 6 L
KY IOT 5 L
KY IOT 4 L
KY IOT 2 L
KY IOT 1 L
KY IOT Ø L
PR IOT 6 L
PR IOT 5 L
PR IOT 4 L
PR IOT 2 L
PR IOT 1 L
PR IOT Ø L
DATA 11 L
B DATA 11 L
FIRST USED ON OPTION/MODEL
VT8-E
UNLESS OTHERWISE SPECIFIED
TOLERANCES
DECIMALS
ANGLE
MATERIAL
FINISH
QTY
DESCRIPTION
PART NO
ITEM NO
PARTS LIST
DRN
CHK'D
ENG
PROD ENG
DATE
NEXT HIGHER ASSY
SCALE
SHEET
OF
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
TITLE
SIZE
NUMBER
REV
D
C
DIST
CS M8335-3
DEC FORM NO
DRD 102-B

TP3 H

TP 3 CH2 — 5384 E33 — 7404 E30

KY IOT 5 L
KY IOT 4 L
KY IOT 6 L
KY IOT 2 L
KY IOT 1 L
KY IOT Ø L

7402 E22 — 7400 E17 — RD KYBRD BUF H

PR IOT 5 L
PR IOT 4 L
PR IOT 2 L
PR IOT 1 L
PR IOT Ø L

7402 E29 — 7400 E25 — FH2 DATA EN H

B DATA 11 L — 7474 E37

INITIALIZE H CBI 9 — 5380 E10 — E11 INIT L

+3V — 7474 E37 — KEYBOARD STROBE H — 7402 E29 — DAI TPN 4

+3V — 7474 E39 — POINT DONE H (KPI) — DBI TPN 5

7400 E25 — 74H00 E21 — 74H00 E21 — 7404 E34

7400 E34 — 7400 E34

97401 E35 — Ø CHI Ø1
97401 E35 — CEL CØ
97401 E35 — 13 GSL SKIP L
97401 E13 — 13 CØI INT REQ L

7400 E41 — +3V

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: XXX ± .005, XX ± .02, X ± .1 — ANGLES: ± 0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

DRN [illegible] DATE 11/10/72
CHKD [illegible] DATE 11/10/72
ENG [illegible] DATE 11/10/72
PROJ ENG [illegible] DATE 11/10/72
PROD [illegible] DATE 11/10/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: KEYECARD, PRINTER BOARD (KP4)

MATERIAL —
FINISH —
NEXT HIGHER ASSY: B-DD VT8-E
SCALE —
SHEET 6 OF

SIZE D | CODE CSM8335-Ø-1 | REV C | DIST

REVISIONS: REV | CHANGE NO | CHK
DRAWING 40-322 (5840)
DEC FORM NO DRD 102-B

45

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS	REMARKS
2	B	FD1
3	B	FD2
4	B	FD3
5	B	
ECO NO.	—	
ETCH REV.	A	
ENG.	—	
DATE	12/27	

FIRST USED ON OPTION/MODEL

VT8-E

DRN. J. Vincent	DATE 1-11-73	
CHK'D	DATE 1/16/73	
ENG.	DATE 1/16/73	
PROJ. ENG.	DATE 1/16/73	
PROD.	DATE	

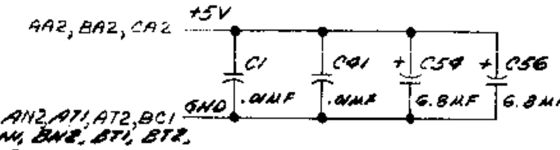
digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

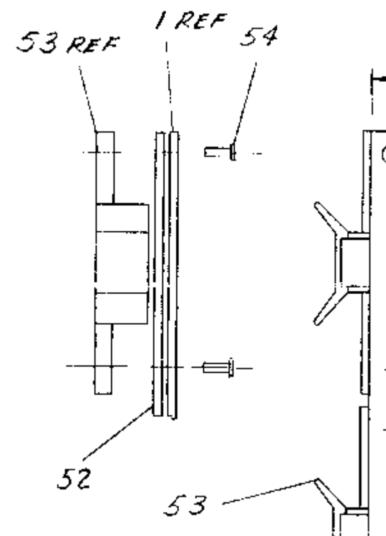
TITLE VT8-E FREQUENCY DIVIDER

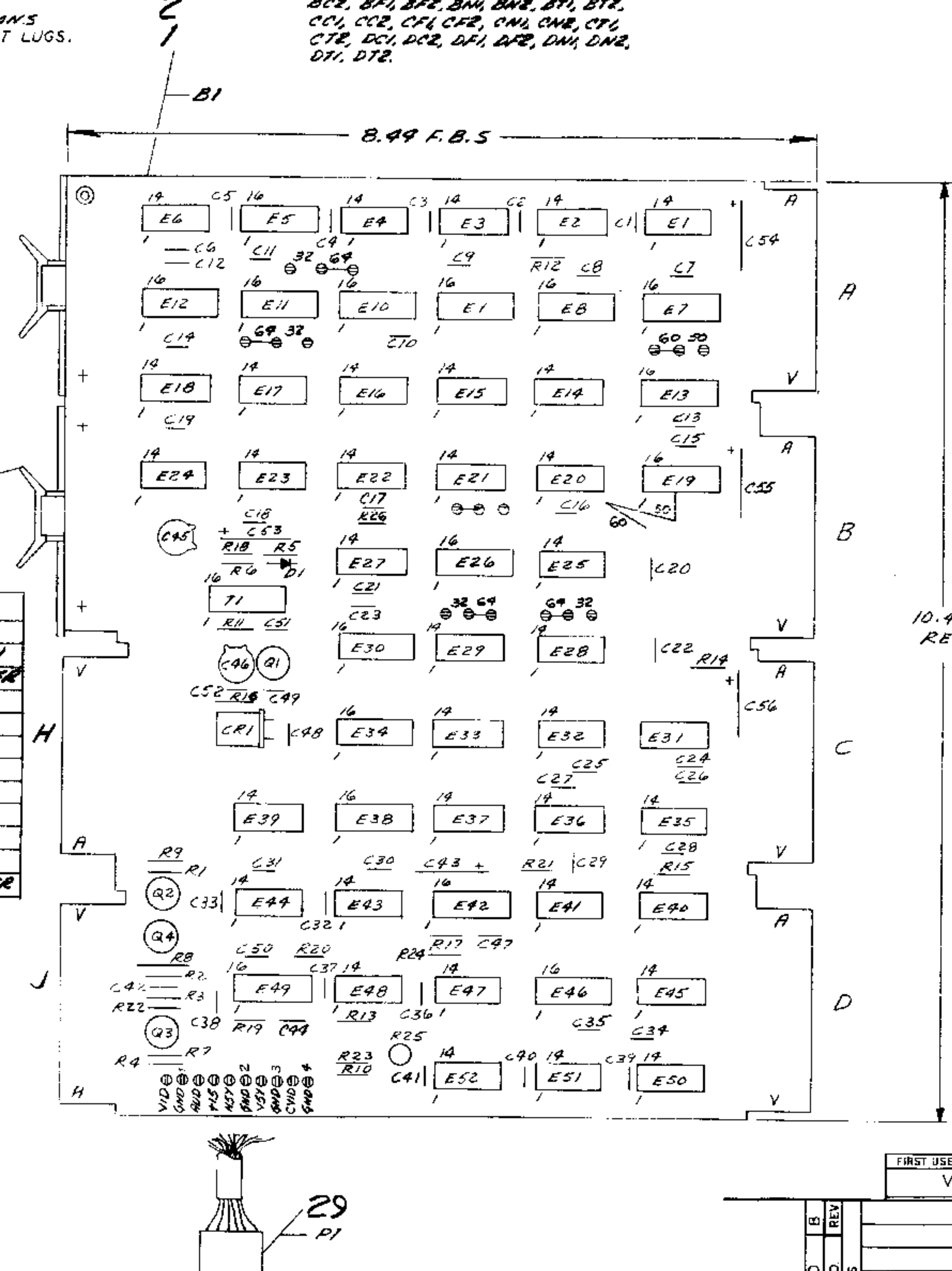
NEXT HIGHER ASSY.	SIZE	CODE	NUMBER	REV.
B-DD-VT8-E	B	CS	M8336-Ø-1	B
SCALE				
SHEET 1 OF 5	DIST.			

NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL CAPACITORS ARE IN MICROFARADS AND ALL RESISTORS ARE IN OHMS.
2. SEE WIRE TABLE FOR CONNECTIONS FROM CABLE (ITEM #29) TO SPLIT LUGS.







WIRE TABLE

ITEM NO	DESCRIPTION AWG	COLOR	FROM CONNECTION	WITH	TO CONNECTION	WITH
29	#22	BRN	P1-1	—	B1-VID	SOLDER
↑	↑	RED	P1-2	—	B1-GND 1	↑
		ORN	P1-3	—	B1-H5Y	
		YEL	P1-4	—	B1-GND 2	
		GRN	P1-5	—	B1-V5Y	
		BLU	P1-6	—	B1-GND 3	
		VIO	P1-7	—	B1-AUD	
		GRY	P1-8	—	B1-+15	
↓	↓	WHT	P1-9	—	B1-CVID	↓
#29	#22	BLK	P1-10	—	B1-GND 4	SOLDER

IC PIN LOCATIONS

IC TYPE	GND	+5V
DEC 7442	8	16
DEC 74193	8	16
DEC 8266	8	16

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

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO.
REF		WIRE LIST	[illegible]	57
A/R		*30 AWG [illegible] WIRE [illegible]	[illegible]5740 44	56
28		SPLIT LUGS (CS4-11)	9006735	55
4		EYELETS	9006730	54
2		HANDLE FLIP CHIP (MAGENTA)	9008337-6	53
2		SPACER (CABLE CLAMP)	1202709	52
1	E51	I.C. DEC 7450	1905580	51
1	E48	I.C. DEC 7416	1909928	52
2	E45, E50	I.C. DEC 5380	1910392	51
2	E42, E49	I.C. DEC 74123	1910436	50
1	E40	I.C. DEC 7437	1910071	49
1	E35	I.C. DEC 97401	1909973	48
3	E30, E34, E38	I.C. DEC 8266	1909934	47
5	E28, E29, E37, E41, E43	I.C. DEC 7474	1905587	46
1	E27	I.C. DEC 74H04	1909931	45
4	E24, E31, E32, E52	I.C. DEC 7422	[illegible]	44
2	E17, E23	I.C. DEC 7473	1905587	43
1	E16	I.C. DEC 74H00	1909056	42
2	E15, E20	I.C. DEC 7410	1905576	41
2	E14, E39	I.C. DEC 7420	1905577	40
2	E12, E46	I.C. DEC 7442	1910046	39
7	E6, E21, E22, E25, E33, E36, E47	I.C DEC 7402	1909004	38
9	E5, E7-E11, E13, E19, E26	I.C. DEC 74193	1910018	37
1	E3	I.C. DEC 8815	1909719	36
3	E2, E4, E18	I.C. DEC 7408	1910155	35
2	E1, E44	I.C. DEC 7400	1905575	34
1	CR1	CRYSTAL 21.840 MHZ	1809860-05	33
1	T1	TRANSFORMER 8010	1609651	32
4	Q1-Q4	TRANSISTOR DEC 3009B	1503100	31
1	R25	RES. 1.0K ½W 30% T.POT	1303150-03	30
1		CABLE MODULE	C-IA-7009039-0-0	29
1	R23	RES. 120 1/2W 5%	1300243	28
1	R22	RES. 820 1/4W 5%	1301775	27
1	R21	RES. 47K 1/4W 5%	1302177	26
1	R20	RES. 51K 1/4W 5%	1304839	25
1	R19	RES. 13.3K 1/8W 1%	1302412	24
1	R18	RES. 3.3K 1/4W 5%	1300437	23
2	R16, R17	RES. 10K 1/4W 5%	1300479	22
4	R14, R15, R24, R26	RES. 1K 1/4W 5%	1300365	21
1	R8	RES 150 1/4W 5%	1300250	20
2	R5, R6	RES. 470 1/4W 5%	1300316	19
2	R4, R9	RES. 33 1/4W 5%	1300147	18
1	R3	RES. 1.2K 1/4W 5%	1301320	17
7	R1, R2, R7, R10-R13	RES. 220 1/4W 5%	1300271	16
1	D1	DIODE D662	1100113	15
4	C53-C56	CAP. 6.8 UF 35V 20% S.TANT	1000067	14
1	C52	CAP. 100PF 100V 5% D.M	1000016	13
1	C51	CAP. 68 PF 100V 5% D.M	1000014	12
1	C50	CAP. 390 PF 100V [illegible]	1001631	11
1	C49	CAP. 33 PF 100V 5% D.M	1000009	10
2	C45, C46	CAP. .047 UF 16V [illegible]	[illegible]	9
1	C44	CAP. .047MF 200V 10%	[illegible]	8
1	C43	CAP. 39 UF 10V 10% S.TANT	1000076	7
3	C42, C47, C48	CAP. 10PF 100V 5% D.M.	1000006	6
41	C1-C41	CAP. .01UF 100V 20% DISC	1001610	5
1		ETCHED CIRCUIT BOARD	5012071	4
REF		MODULE ECO HISTORY	B-MH-M8336-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M8336-0-5	2
REF		X-Y COORDINATE HOLE LOC.	RCC-M8336-0-4	1

ETCH BOARD REV A

FIRST USED ON OPTION MODEL: VT8-E

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.	DEC NO.	EIA NO.
		3009B	2N5646
		D662	1N645

ORIGINATED B | CHANGE NO | REVISIONS | CHK

DRN: [illegible] DATE 6-15-72
CHK'D: [illegible] DATE [illegible]
ENG: [illegible] DATE [illegible]
PROJ ENG: [illegible] DATE [illegible]
PROD: DATE

NEXT HIGHER ASSY: B-DD-VT8-E

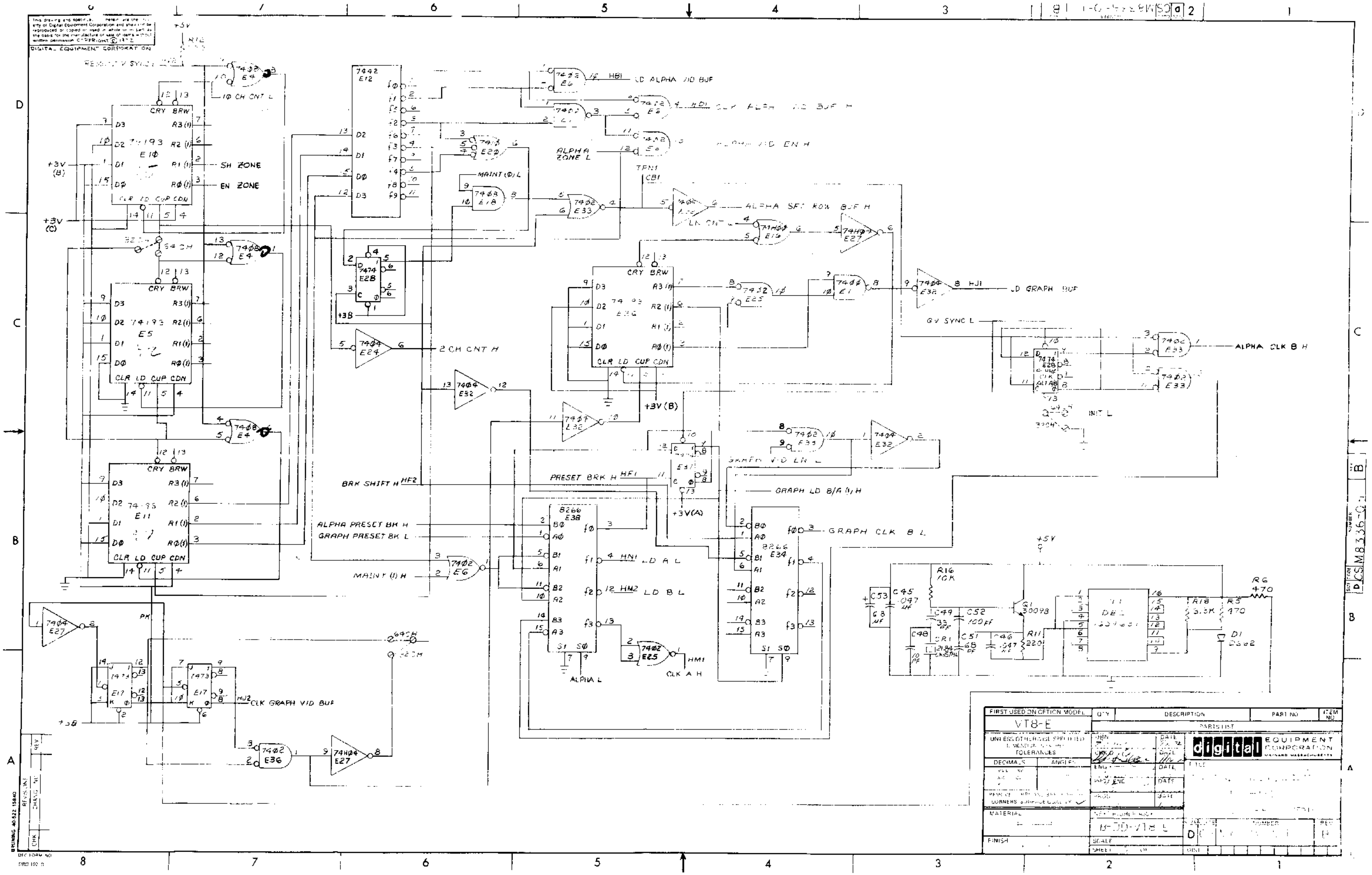
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: VT8-E FREQUENCY DIVIDER

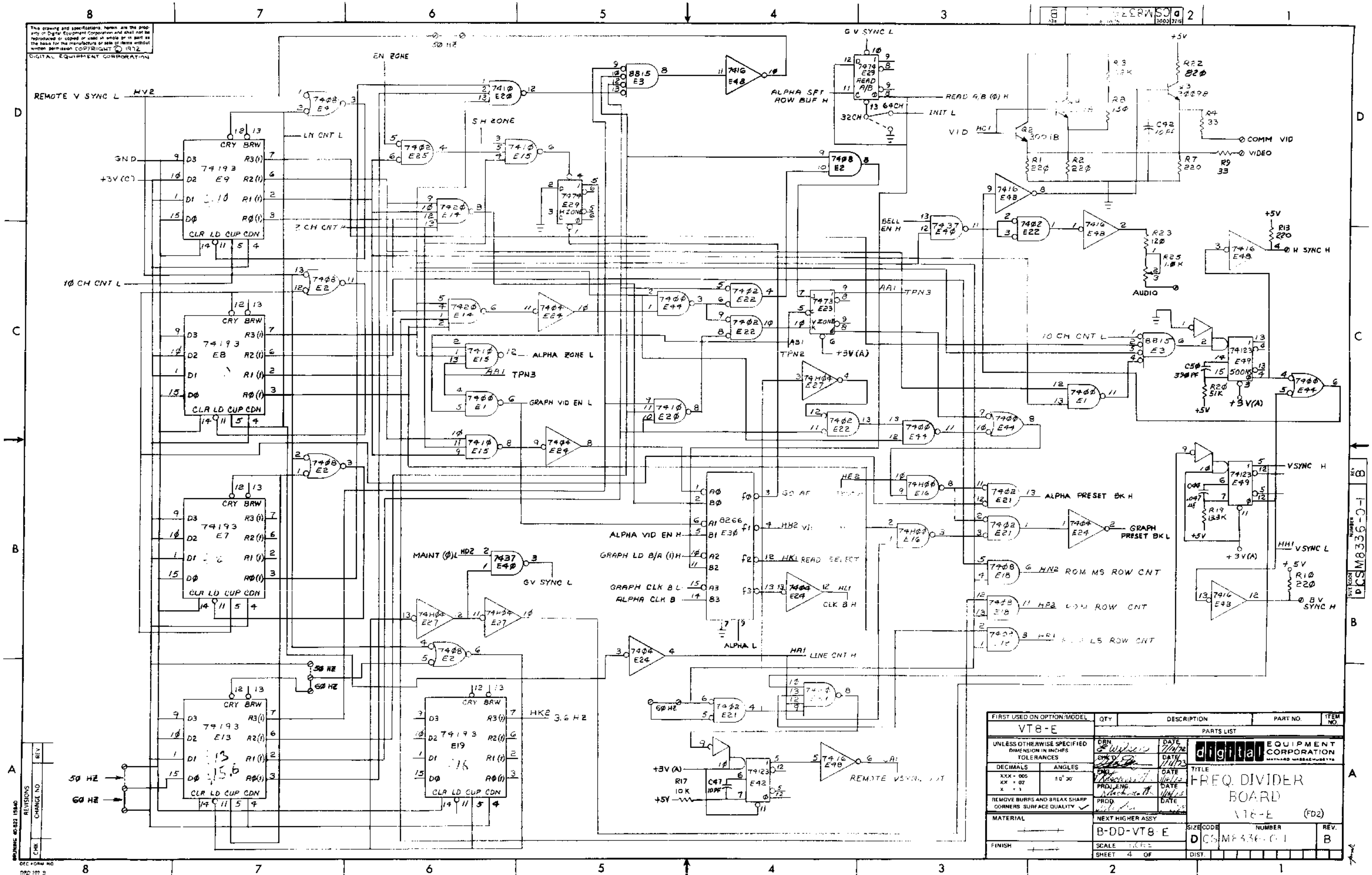
SIZE D | CODE CS | NUMBER M8336-0-1 | REV. B

SCALE | SHEET 2 OF | DIST

DEC FORM NO DRD-135A



DIGITAL EQUIPMENT CORPORATION
74193 E10
74193 E5
74193 E11
7442 E12
7474 E28
74193 E36
8266 E38
8266 E34
SH ZONE
EN ZONE
LD ALPHA VID BUF
ALPHA ZONE L
ALPHA SET ROW BUF H
LD GRAPH BUF
GV SYNC L
ALPHA CLK B H
INIT L
2 CH CNT H
10 CH CNT L
BRK SHIFT H
PRESET BRK H
ALPHA PRESET BK H
GRAPH PRESET BK L
MAINT (1) H
MAINT (0) L
GRAPH LD B/A (1) H
GRAPH CLK B L
LD A L
LD B L
CLK A H
ALPHA L
CLK GRAPH VID BUF
+3V (B)
+3V(A)
+5V
R16 10K
C45 .047 UF
C53 6.8 UF
C49 33 PF
C52 100 PF
C51 68 PF
C46 .047
R11 220
R18 3.3K
R5 470
R6 470
D1
FIRST USED ON OPTION MODEL
VT8-E
DESCRIPTION
PART NO.
EQUIPMENT CORPORATION
CS M8336-0-1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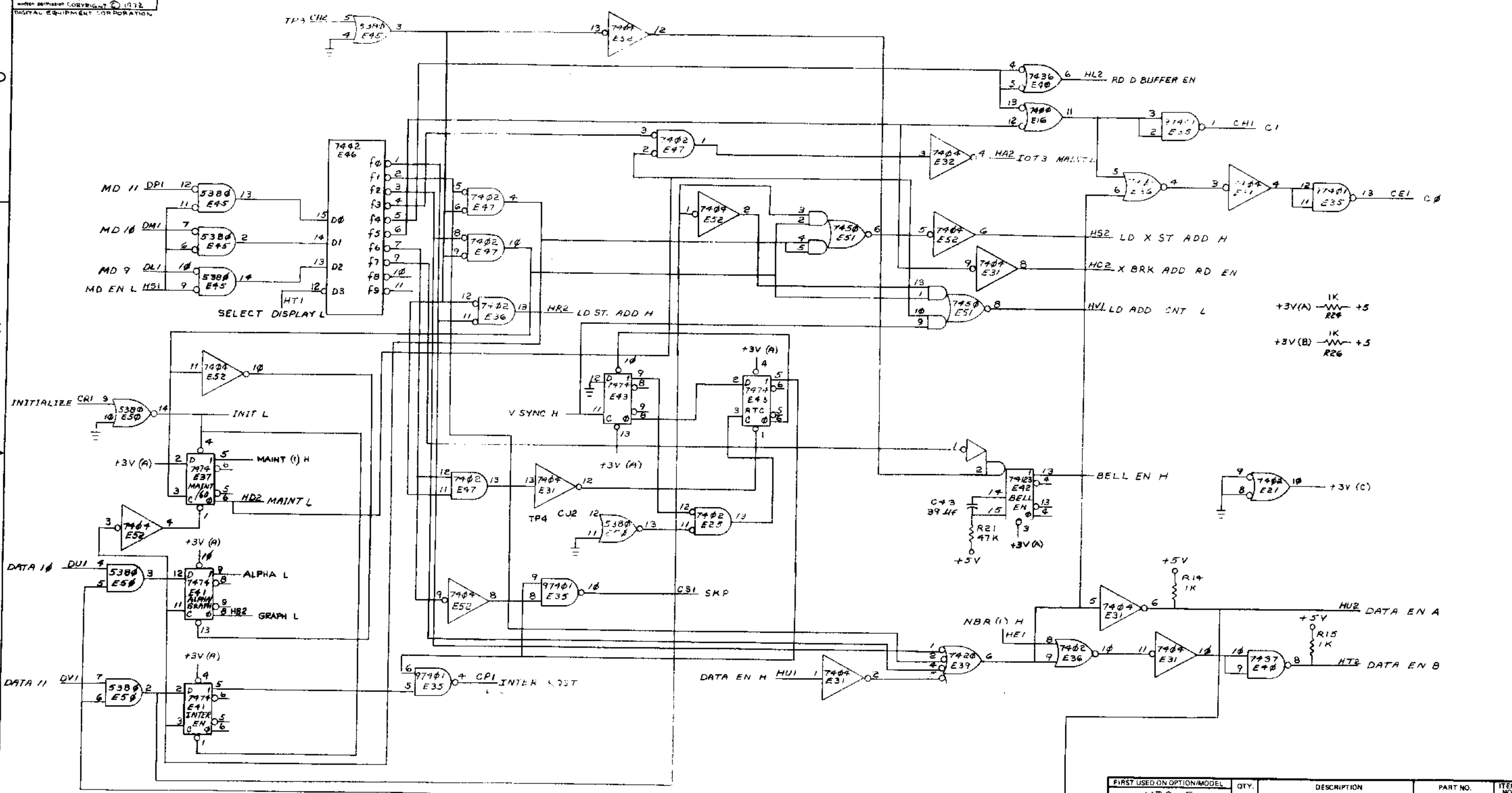
DIGITAL EQUIPMENT CORPORATION
REMOTE V SYNC L
HV2
EN ZONE
50 HZ
G V SYNC L
ALPHA SFT ROW BUF H
READ A/B (Ø) H
INIT L
32CH
64CH
VID
HC1
COMM VID
VIDEO
BELL EN H
AUDIO
H SYNC H
LN CNT L
GND
+3V (C)
SH ZONE
7 CH CNT H
10 CH CNT L
TPN3
TPN2
+3V (A)
ALPHA ZONE L
GRAPH VID EN L
ALPHA PRESET BK H
GRAPH PRESET BK L
ALPHA VID EN H
GRAPH LD B/A (1) H
GRAPH CLK B L
ALPHA CLK B
MAINT (Ø) L
GV SYNC L
ROM MS ROW CNT
LS ROW CNT
CLK B H
READ SELECT
LINE CNT H
VSYNC H
VSYNC L
B V SYNC H
50 HZ
60 HZ
3.6 HZ
REMOTE V SYNC OUT
FIRST USED ON OPTION/MODEL
VT8-E
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS
ANGLES
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
NEXT HIGHER ASSY
B-DD-VT8-E
QTY
DESCRIPTION
PART NO.
ITEM NO.
PARTS LIST
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE
FREQ. DIVIDER BOARD
VT8-E (FD2)
SIZE CODE
D
CS
NUMBER
M8336-0-1
REV.
B
SHEET 4 OF
D CS M8336-0-1



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS XXX ± .005, XX ± .02, X ± .1 — ANGLES ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL — FINISH —

DRN E. Wilson — CHKD — ENG — PROJ. ENG. — PROD.

NEXT HIGHER ASSY. B-DD-VT8-E

SCALE NONE — SHEET 5 OF

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE FREQ. DIVIDER BOARD VT8-E (FD3)

SIZE D CODE CS NUMBER M8336-0-1 REV B

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DIGITAL EQUIPMENT CORPORATION

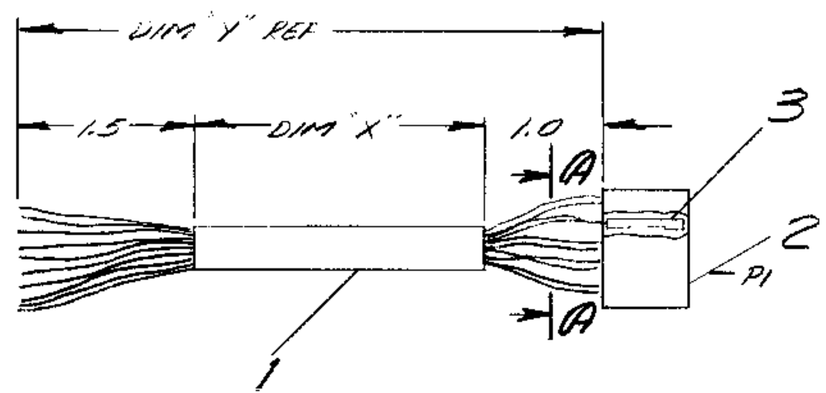
WIRE TABLE

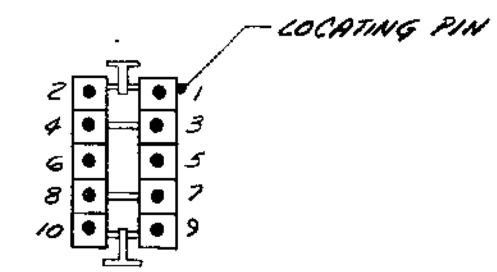
ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
1	#22	BRN	P1-1	#3	—	*
↓	↓	RED	P1-2	↓	—	*
		ORN	P1-3		—	*
		YEL	P1-4		—	*
		GRN	P1-5		—	*
		BLU	P1-6		—	*
		VIO	P1-7		—	*
		GRY	P1-8		—	*
↓	↓	WHT	P1-9	↓	—	*
1	#22	BLK	P1-10	3	—	*

* (ASTERICK) INDICATES STRIP AND TIN

LEGEND

NUMBER	VARIATION DIM "X"	VARIATION DIM "Y" (PRECUT) REF
7009054-0E	2.5 IN ±.5 IN	5.0 IN ±1.0 IN





VIEW A-A
SCALE: NONE
(REAR VIEW)

PARTS LIST

QTY.	DESCRIPTION	PART NO.	ITEM NO.
10	SOCKET CONTACT	1209379-01	3
1	CONN MATE-N-LOCK	1210821-10	2
A/R	CABLE 10 COND BELDEN #8456	9107623	1

FIRST USED ON OPTION/MODEL: VT8-E

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX ±.005, .XX ±.02, .X ±.1
ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY ✓
MATERIAL: SEE PARTS LIST
FINISH: —

DRN / DATE
CHK'D / DATE
ENG. / DATE
PROJ. ENG. / DATE
PROD. / DATE

NEXT HIGHER ASSY.: D-CS-M8337-0-1

SCALE 1-1
SHEET 1 OF 1

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: CABLE, MODULE

SIZE	CODE	NUMBER	REV
C	IA	7009054-0-0	

REVISIONS: REV / CHANGE NO. / CHK

DEC FORM NO.

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS
2	A
3	A
4	A
5	A
6	A
ECO NO.	—
ETCH REV.	B
ENG.	—
DATE	20 72

REMARKS

FIRST USED ON OPTION/MODEL: VT8-E

DRN. DATE 1-11-72
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: VT8-E LINE BUFFER

NEXT HIGHER ASSY: B-DD-VT8-E

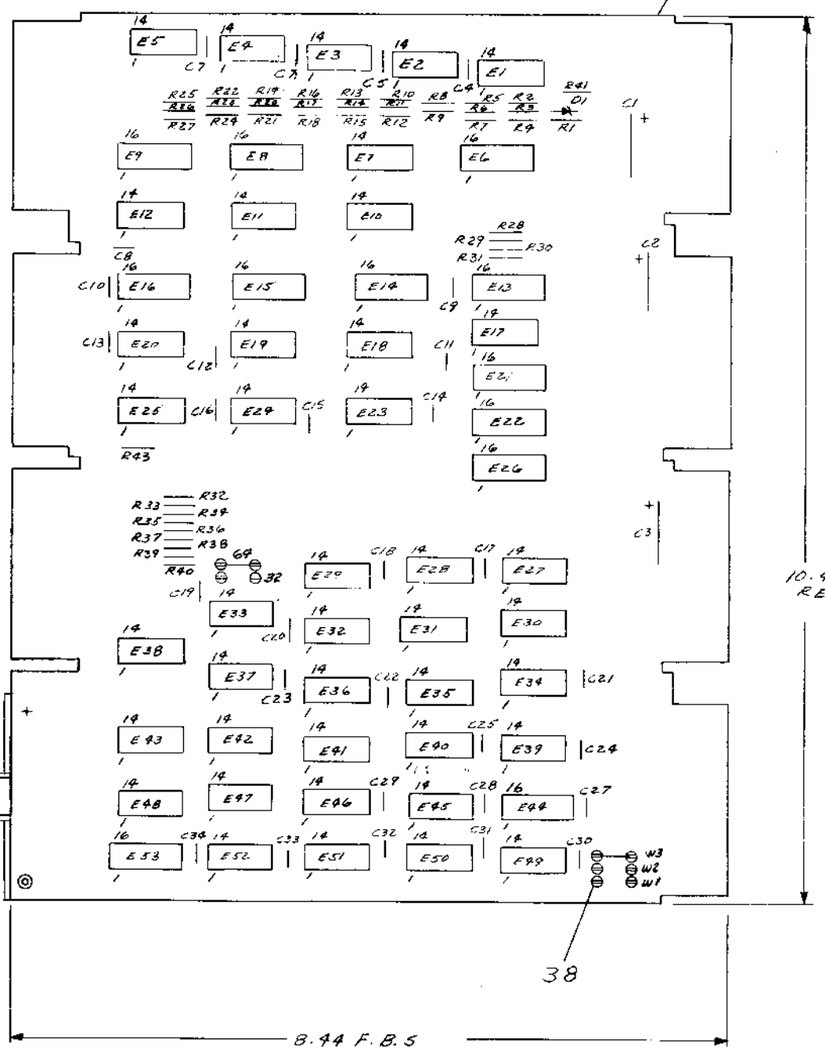
SCALE

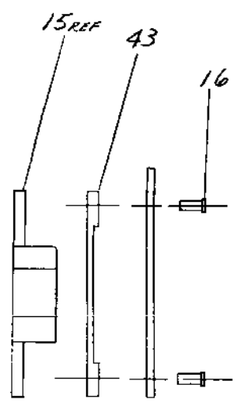
SHEET

SIZE: B | CODE: CS | NUMBER: M8337-0-1 | REV.: A

NOTES:

UNLESS OTHERWISE SPECIFIED
ALL CAPACITORS ARE IN MICROFARADS &
ALL RESISTORS IN OHMS.

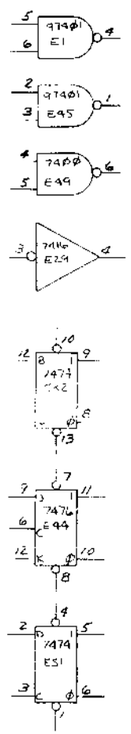




AA2, BA2, CA2 — +5V — C1 6.8MF, C2 6.8MF, C3 6.8MF — C4-C25, C27-C34 .01MF

AC2, BC1, CC1, DC1, AF1, BC2, CC2, DC2, AN1, BF1, CF1, DF1, AN2, BN1, CF2, DF2, AT1, BN2, CN1, DN1, AT2, BT1, CN2, DN2, BT2, CT1, DT1, CT2, DT2

SPARES



DEC 74157	8	16
DEC 2518	-5V PIN 12	16
DEC 5603	8	16
DEC 7496	12	5
DEC 74193	8	16
DEC 7473	11	4
DEC 7476	13	5
IC TYPE	GND	+ 5V

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

IC PIN LOCATIONS

BRUNING 40-522 16699
DEC FORM NO. GRD-139A

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		SPACER, CABLE CLAMP	1202704	43
REF		WIRE LIST	A-WL-M8337-0-8	42
1	E21	I.C. DEC 5603	23-015P2-03Y	41
1	E22	I.C. DEC 5603	23-014P2-03Y	40
1	E26	I.C. DEC 5603	23-013P2-03Y	39
10		SPLIT LUGS	9006735	38
3	E47, E48, E50	I.C. DEC 7473	1905587	37
1	E46	I.C. DEC 74H74	1909667	36
1	E44	I.C. DEC 7476	1905585	35
1	E36	I.C. DEC 5387	1910577	34
2	E35, E37	I.C. DEC 7404	1909686	33
1	E34	I.C. DEC 74H00	1909056	32
2	E31, E38	I.C. DEC 7402	1909004	31
2	E30, E52	I.C DEC 7410	1905576	30
1	E29	I.C DEC 7416	1909928	29
1	E28	I.C DEC 74H11	1909267	28
5	E27, E32, E41, E43, E51	I.C. DEC 7474	1905547	27
1	E53	I.C. DEC 74193	1910018	26
3	E18-E20	I.C. DEC 7495	1909055	25
4	E17, E33, E49, E42	I.C. DEC 7400	1905575	24
3	E14-E16	I.C. DEC 74157	1910635	23
1	E13	I.C. DEC 7496	1910363	22
1	E12	I.C. DEC 8815	1909713	21
2	E11, E39	I.C. DEC 7420	1905977	20
1	E10	I.C. DEC 5380	1910392	19
4	E6-E9	I.C. DEC 2518	2111049	18
10	E1-E5, E23, E24, E25, E40, E45	I.C. DEC 97401	1909973	17
2		EYELET STIMPSON (C54-7)	9006732	16
1		HANDLE, FLIP CHIP MAGENTA	9008337-G	15
4	R38-R40, E43	RES 220Ω 1/4W 5%	1300271	14
3	R37, R41, R42	RES 1K 1/4W 5%	1300365	13
1	R36	RES 330Ω 1/4W 5%	1300295	12
4	R32-R35	RES 10K 1/4W 5%	1300479	11
6	R8, R9, R28-R31	RES. 12K 1/4W 5%	1301320	10
24	R2-R7, R10-R27	RES. 7.5K 1/4W 5%	1301922	9
1	R1	RES. 27Ω 1/2W 5%	1302253	8
1	D1	DIODE IN4742 (ZENER)	1109502	7
30	C4-C25, C27-C34	CAP .01 UF 100V 20% STAND	1001610	6
3	C1-C3	CAP 6.8 UF 35V 20% STAND	1000067	5
1		ETCHED CIRCUIT BOARD	5010069	4
REF		MODULE ECO HISTORY	B-AH-M8337-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M8337-0-5	2
REF		X-Y COORDINATE HOLE LOC.	K-CO-M8337-0-4	1

PARTS LIST

FIRST USED ON OPTION MODEL: VT8-E
ETCH BOARD REV: B

DEC NO	EIA NO.	DEC NO	EIA NO
		1N4742	

SEMICONDUCTOR CONVERSION CHART

DRN. — DATE 6-8-72
CHK'D — DATE
ENG. — DATE
PROD. ENG. — DATE
PROD. — DATE
NEXT HIGHER ASSY: B-DD-VT9-E
SCALE — 1/1
SHEET 2 OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

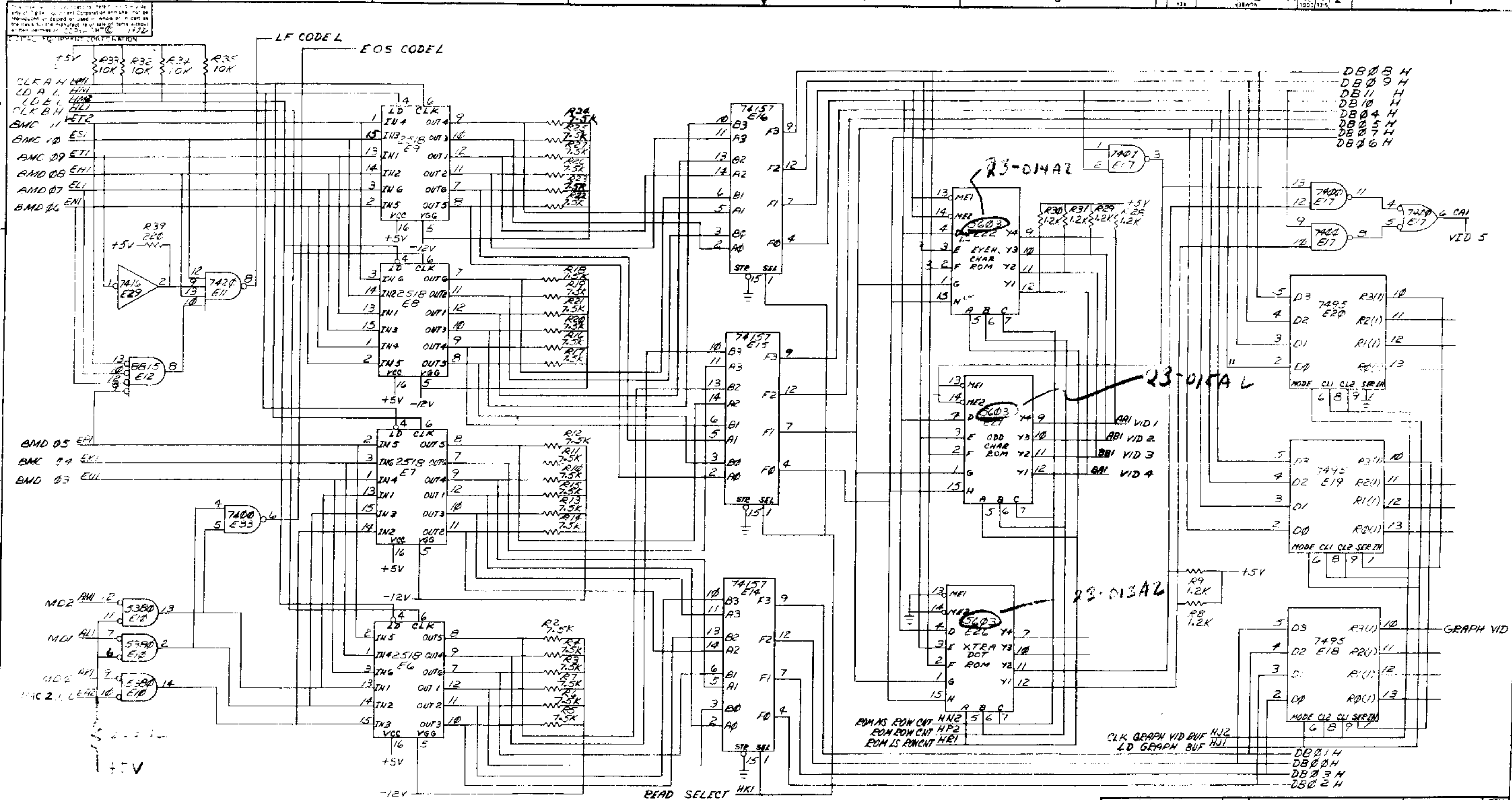
TITLE: VT8-E LINE BUFFER

SIZE D | CODE DCS | NUMBER M8337-0-1 | REV. A | DIST.

REV	CHANGE NO.	DESIGNATED
A		

CHK

REVISIONS



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO	ITEM NO
VT6-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS .XXX ± .005 .XX ± .02 — ANGLES

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL

FINISH

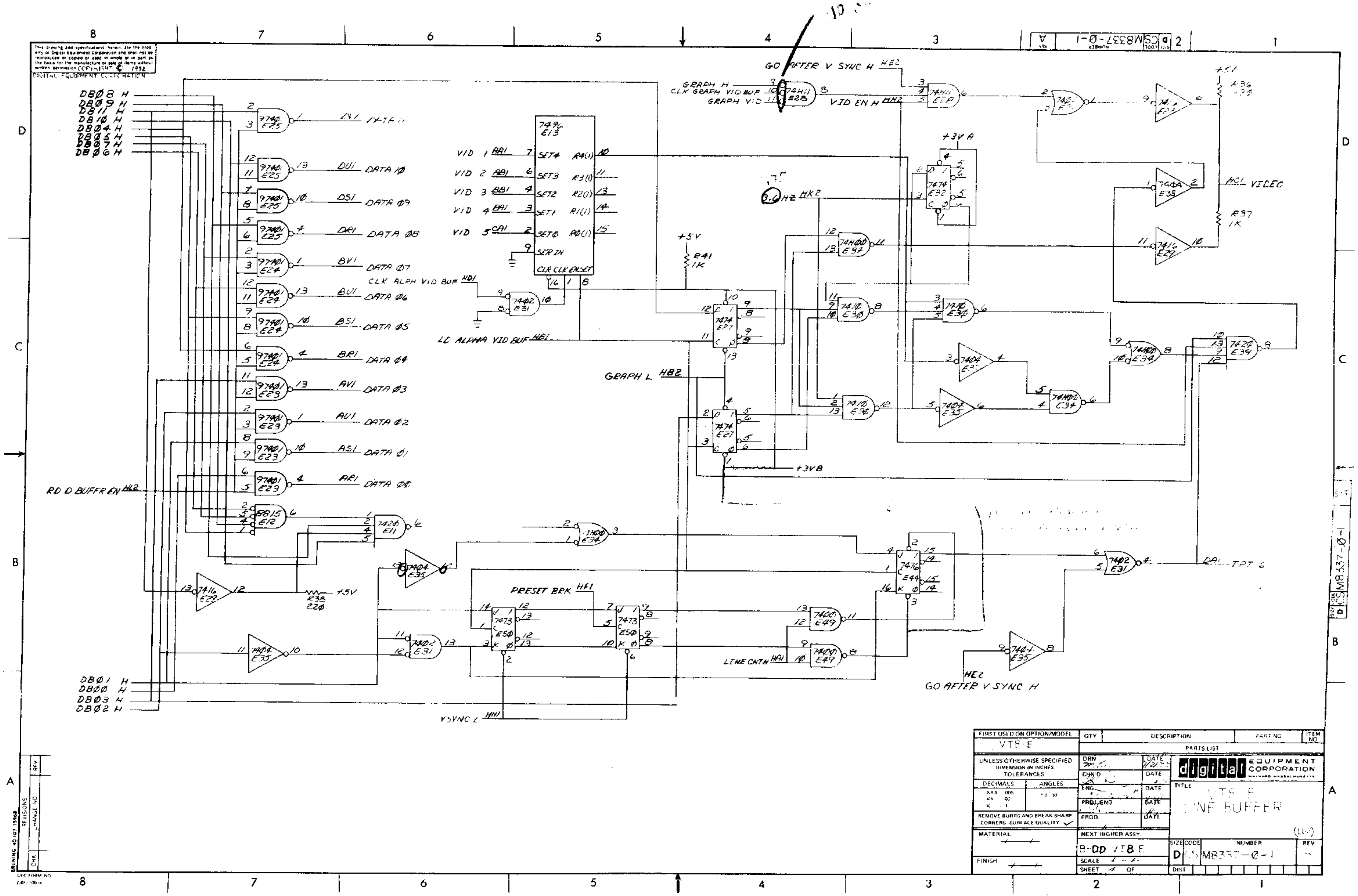
NEXT HIGHER ASSY: B-DL-VT6-E

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

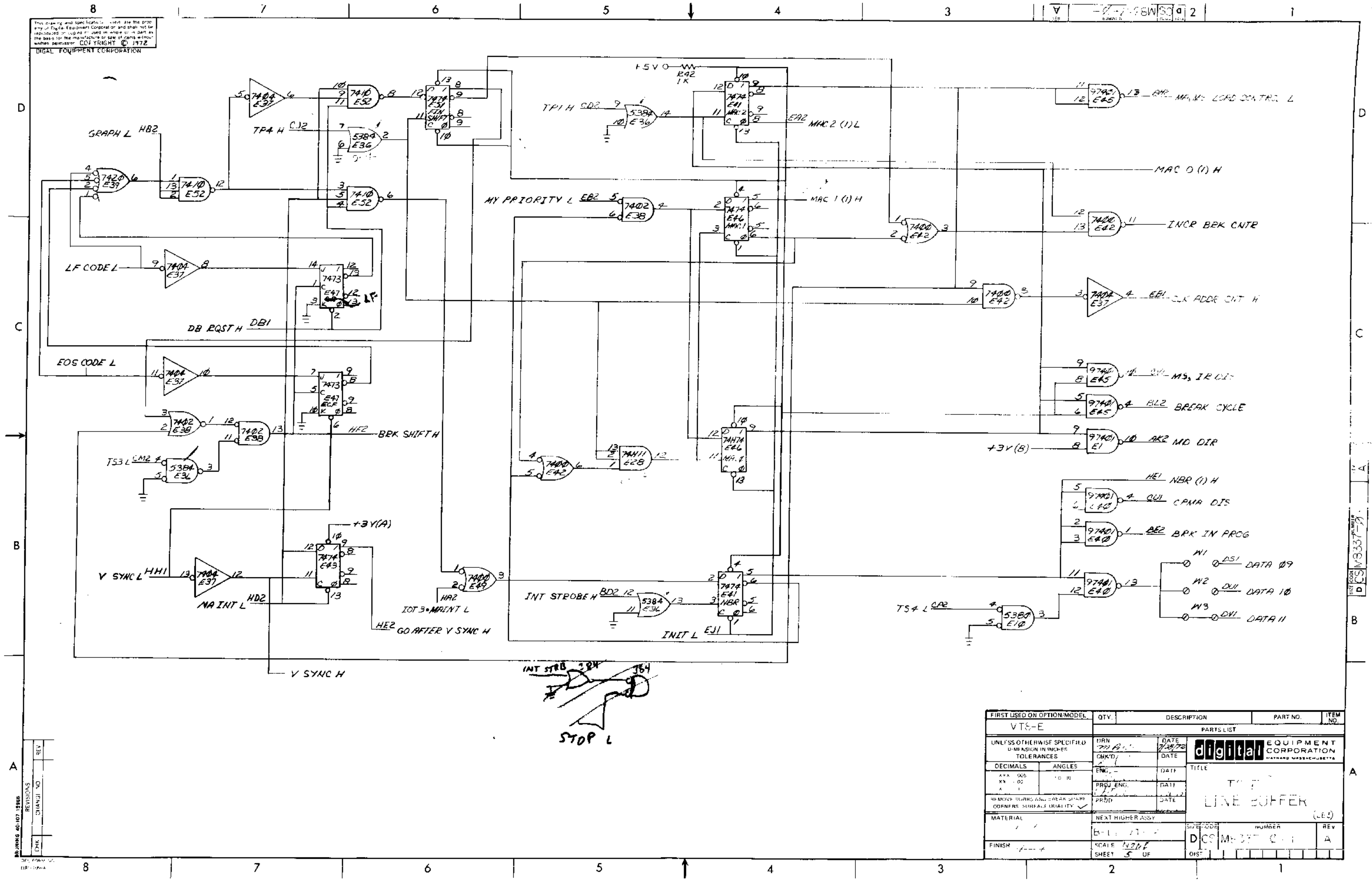
TITLE: VT6-E LINE BUFFER

SIZE: D | NUMBER: M8337-0-1 | REV: A

SHEET 3 OF



DB08 H
DB09 H
DB11 H
DB10 H
DB04 H
DB05 H
DB07 H
DB06 H
DATA 10
DATA 09
DATA 08
DATA 07
DATA 06
DATA 05
DATA 04
DATA 03
DATA 02
DATA 01
DATA 00
RD D BUFFR EN
DB01 H
DB00 H
DB03 H
DB02 H
VSYNC L
PRESET BRK
LINE CNTH
GO AFTER V SYNC H
GRAPH H
CLK GRAPH VID BUF
GRAPH VID
VID EN H
CLK ALPH VID BUF
LC ALPHA VID BUF
GRAPH L
+3V A
+3V B
+5V
VIDEO
FIRST USED ON OPTION/MODEL
VT8-E
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
NEXT HIGHER ASSY.
B-DD VT8 E
digital EQUIPMENT CORPORATION
TITLE
VT8-E
LINE BUFFER
CS M8337-0-1


GRAPH L
LF CODE L
DB RQST H
EOS CODE L
TS3 L
V SYNC L
MAINT L
V SYNC H
GO AFTER V SYNC H
BRK SHIFT H
IOT 3 • MAINT L
TP4 H
TP1 H
+5 V
MY PRIORITY L
INT STROBE H
INIT L
MAC 2 (1) L
MAC 0 (1) H
MAC 1 (1) H
INCR BRK CNTR
BREAK CYCLE
MD DIR
+3 V (B)
+3 V (A)
NBR (1) H
CPMA DIS
BRK IN PROG
DATA Ø9
DATA 1Ø
DATA 11
TS4 L
INT STRB
STOP L
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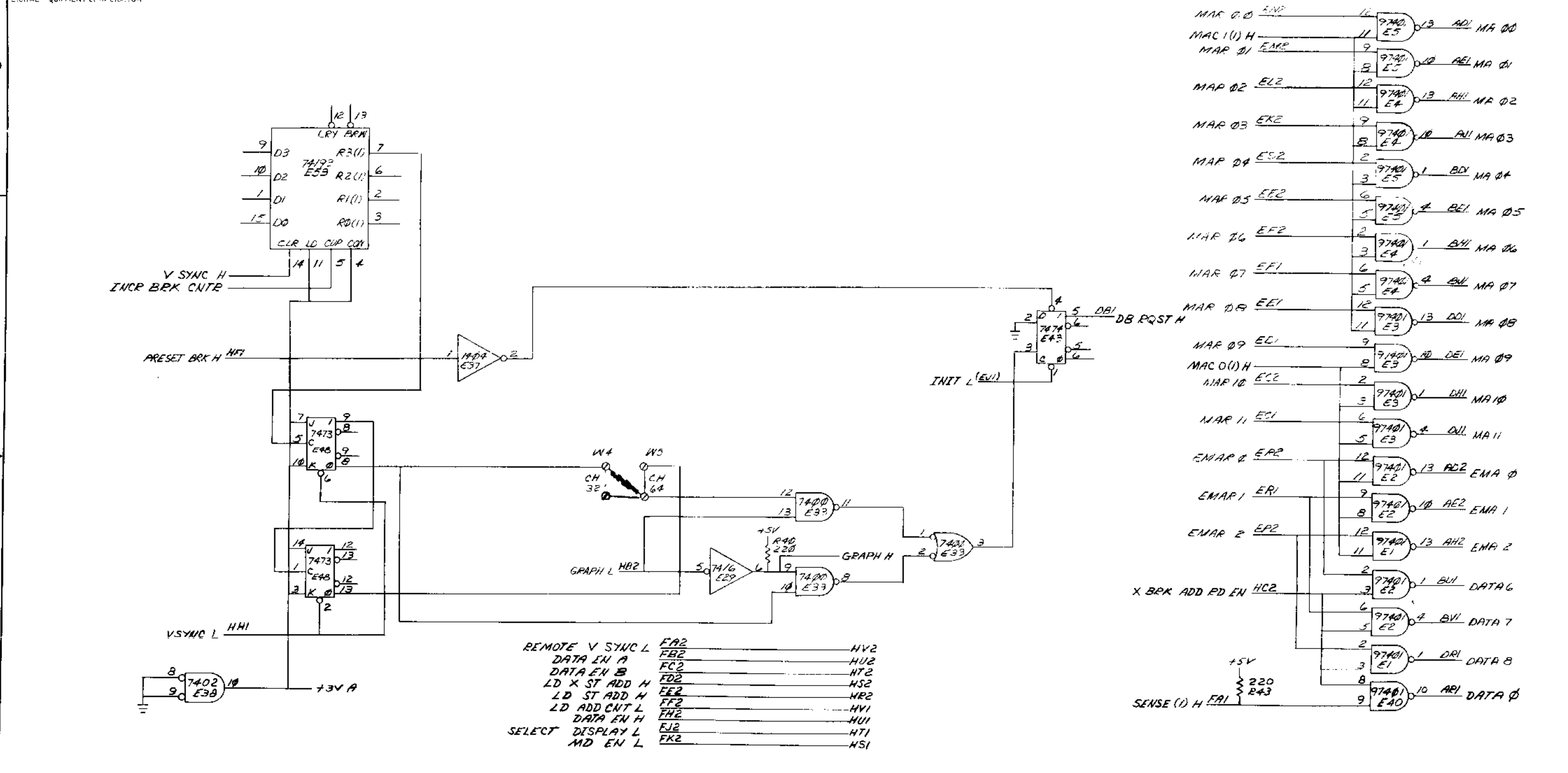
DIGITAL EQUIPMENT CORPORATION
FIRST USED ON OPTION/MODEL
VT8-E
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS
ANGLES
MATERIAL
FINISH
QTY.
DESCRIPTION
PART NO.
ITEM NO.
PARTS LIST
DRN
CHK'D
ENG.
PROJ. ENG.
PROD.
DATE
NEXT HIGHER ASSY
SCALE NONE
SHEET 5 OF
digital EQUIPMENT CORPORATION
TITLE
LINE BUFFER
SIZE CODE
NUMBER
REV
A
REVISIONS



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS XXX ± .005, XX ± .02, X ± .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —
DRN. / CHKD. / ENG. / PROJ. ENG. / PROD. — DATE
NEXT HIGHER ASSY. B-UD-VT8-E
SCALE —
SHEET 6 OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
VT8-E
LINE BUFFER
(LB4)

SIZE D CODE CS NUMBER M8337-Ø-1 REV A

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LEGEND

NUMBER	VARIATION	
	DIM "X"	DIM "Y" REF
7009042-15	15FT ± 3IN	15FT 4IN ± 3IN

WIRE TABLE

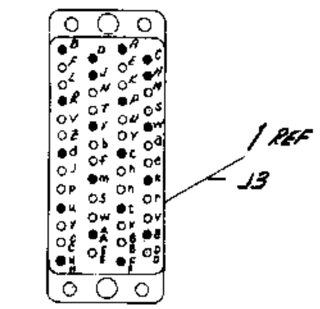
ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH	CUT POINT
9	#22	GRN	J2-F	#4	J3-g	#2	3
↕	TWP	RED	J2-J	↕	J3-AA	↕	4
↕	#22	BLK	J2-T	↕	J3-FF	↕	8
9	TWP	ORN	J2-Z	#4	J3-HH	#2	10
11	#22	BLK	ITEM #7	—	J1-2	6	—
12	#22	WHT	ITEM #7	—	J1-1	6	—

WIRE TABLE

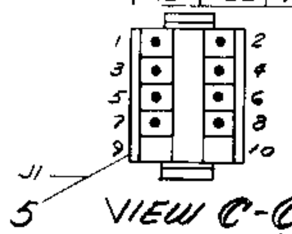
ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH	CUT POINT
11	#22	BLK	ITEM #7	—	J3-A	#2	—
9	#22	BLK	J1-4	#6	J3-C	↕	—
↕	TWP	WHT	J1-3	↕	J3-D		—
	#22	BLK	J1-6		J3-H		—
	TWP	RED	J1-5		J3-J		—
	#22	WHT	J1-7	↕	J3-P		—
	TWP	RED	J1-8	#6	J3-R		—
	#22	BLK	J2-DD	#4	J3-W		12
	TWP	BRN	J2-BB	↕	J3-X		11
	#22	BLK	J2-C		J3-c		1
	TWP	YEL	J2-D		J3-d		2
	#22	BLK	J2-N		J3-k		6
	TWP	BLU	J2-L		J3-m		5
↕	#22	BLK	J2-V	↕	J3-t	↕	9
9	TWP	GRN	J2-R	#4	J3-u	↕	7
12	#22	WHT	ITEM #7	—	J3-B	#2	—

NOTES:

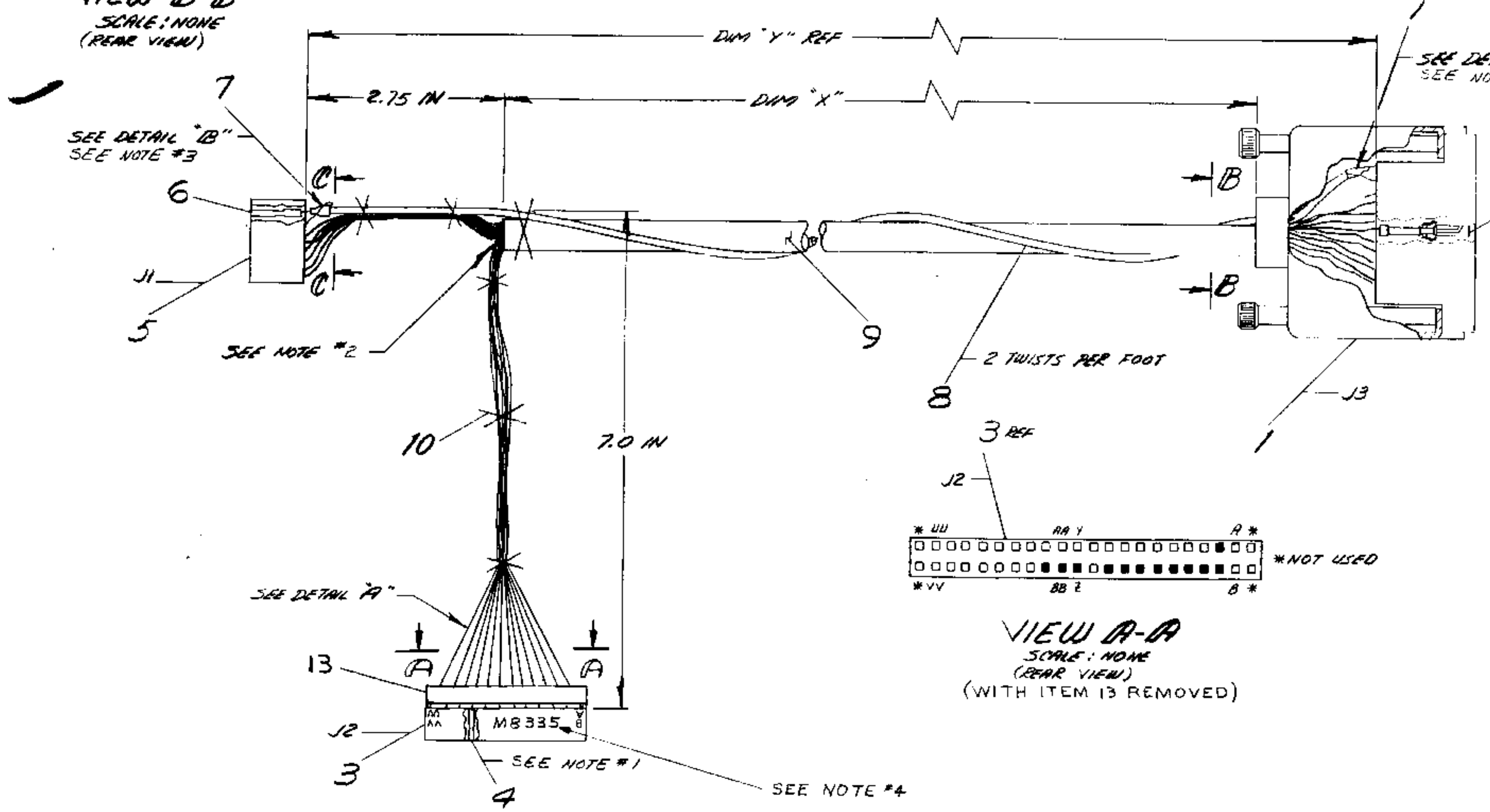
1. MANUFACTURING SHOULD USE MACHINE CRIMPER. TOOL FOR CRIMPING PINS (ITEM NO 4) MUST BE HT66 FROM BERG ELECT.
2. INSULATION AND DRAIN WIRE TO BE CUT BACK AS SHOWN ON DRAWING.
3. FOR CRIMPING OF ITEM #7 (SPLICE) USE HAND TOOL AMP #69241-1
4. USE BRADY MARKERS FOR M8335.



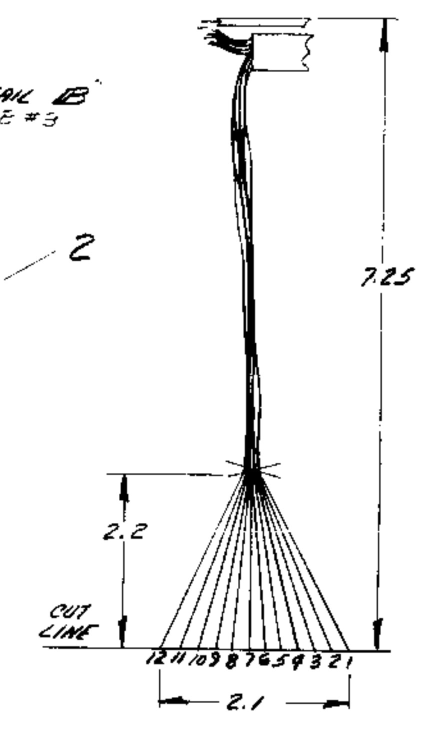
VIEW B-B
SCALE: NONE
(REAR VIEW)



VIEW C-C
SCALE: NONE
(REAR VIEW)

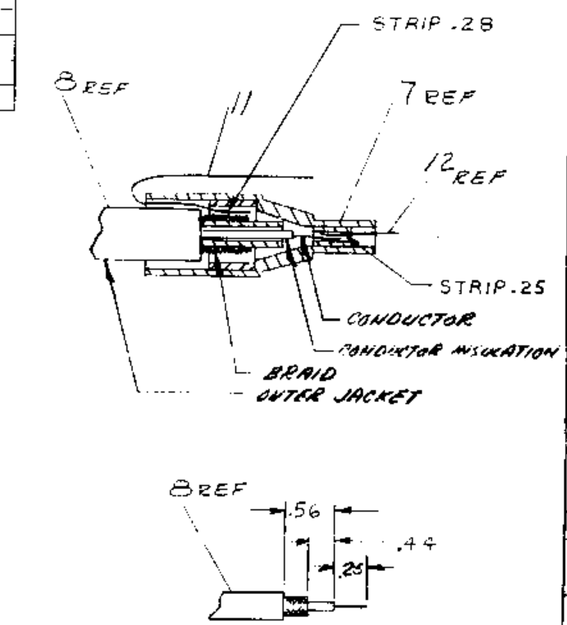


VIEW A-A
SCALE: NONE
(REAR VIEW)
(WITH ITEM 13 REMOVED)



DETAIL "A"

DO NOT REDUCE
FOR MFG. PURPOSES ONLY



DETAIL "B"
SCALE: NONE
(2 PLACES)

PARTS LIST

QTY.	DESCRIPTION	PART NO	ITEM NO.
1	STRAIN RELIEF	1211166	13
A/R	WIRE #22 AWG WHT	9107350-99	12
A/R	WIRE #22 AWG BLK	9107350-00	11
A/R	TIE WRAP	9007031	10
A/R	CABLE #22 AWG	9107687	9
A/R	COAX CABLE 174 A/U	9107530	8
2	TERMASHIELD SPLICE	1211312	7
8	TERM. PIN (MALE)	1209378-01	6
1	CONN. 10 PIN	1210822-10	5
12	SOCKET PINS	1210089-4	4
1	HOUSING PIN	1210918-15	3
20	SOCKET CONTACT #100-1020S	1210290-1	2
1	CONN. PLUG	1209569-0	1

FIRST USED ON OPTION/MODEL: VT8-E

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES

DECIMALS | ANGLES

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL: SEE PARTS LIST

FINISH

DRN | DATE 8-15-72

CHK'D | DATE

ENG | DATE

PROJ ENG | DATE

PROD | DATE

NEXT HIGHER ASSY: D-UA-VT8-E-0

SCALE: NONE

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: (VT8-E)

SIZE D | CODE IA | NUMBER 7009042-0-0 | REV

DIST

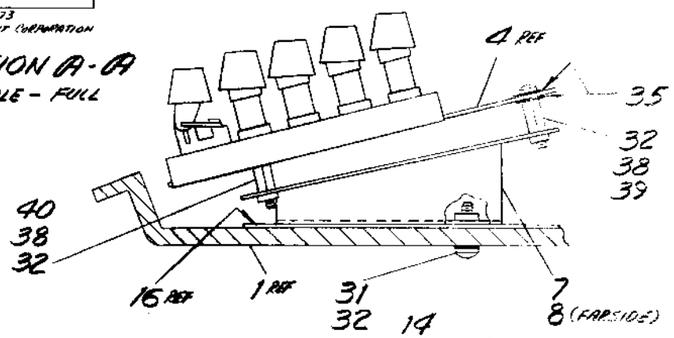
REVISIONS | CHANGE NO | REV | CHK

BRUNING 40-107 15968

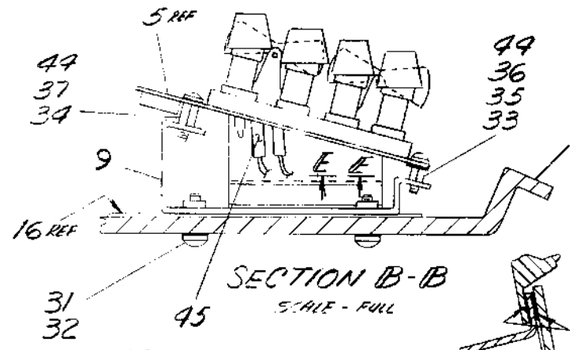
DEC FORM NO DRG 100-A

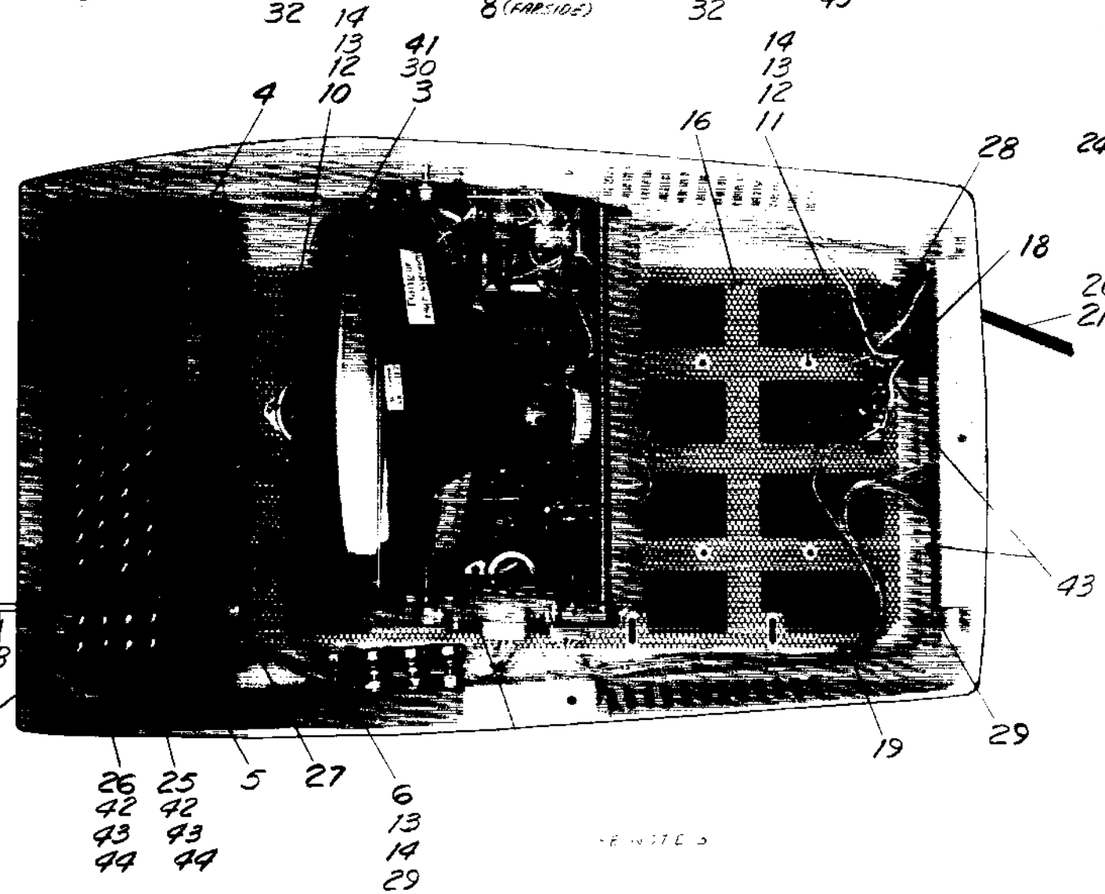
D IA 7009042-0-0

SECTION A-A
SCALE - FULL



SECTION B-B
SCALE - FULL





SECTION C-C
SCALE - NONE

LEGEND

NUMBER	VARIATION
70090**-1	115V
70090**-2	230V

QTY	QTY	DESCRIPTION	PART NO	ITEM NO
4	4	SCR PAN THRSS HD 1/4-20 X 1.0 LG	9006660-3	55
1	1	BASEBOARD MOUNTING	D-MB-7605376-0-0	54
2	2	SCR, NYLON "6-32 X .25	9003091-2	53
1	1	INSULATOR	B-MD-7403285-0-0	52
2	2	CONN SOLDERLESS (RED)	9006780	51
A/R	A/R	TIE WRAP	9007031	50
2	2	CONN SOLDERLESS (BLU)	9007927	49
3	3	CONN SOLDERLESS (BLU)	9007970	48
2	2	CONN SOLDERLESS (RED)	9007917	47
A/R	A/R	WIRE #18 AWG TWP RED/WHT	9107430-29	46
A/R	A/R	TUBING, SHRINKABLE	9107305	45
8	8	WASH INT TOOTH #4	9006632	44
8	8	NUT HEX #4-40	9006557	43
4	4	SCR PAN PHIL HD #4-40 X 3/8 LG	9006041-1	42
4	4	SCR PAN PHIL HD #10-32 X 5/8 LG	9006079-1	41
2	2	SPACER #8 X 1/2 LG HEX	9007977	40
2	2	SPACER #8 X 3/8 LG HEX	9006802	39
4	4	SCR PAN PHIL HD 8-32 X 1 LG	9006043-1	38
2	2	SPACER #6 X 5/16 LG HEX	9006739	37
2	2	SPACER #6 X 3/16 LG HEX	9006796	36
6	6	WASH FLAT NYLON .187 I.D.	9006713	35
2	2	SCR PAN PHIL HD #4-40 X .50 LG	9006013-1	34
2	2	SCR PAN PHIL HD #4-40 X .994 LG	9006012-1	33
10	10	WASH INT TOOTH #8	9006639-1	32
6	6	SCR PAN PHIL HD 8-32 X .62 LG	9006040-1	31
4	4	WASH INT TOOTH #10	9006635	30
8	8	NUT HEX #6-32	9006560	29
1	1	CLAMP, CABLE NYLON .38	9007083	28
1	1	CABLE, KEYBOARD INTERCONN.	C-IA-7008628-0-0	27
1	1	BUTTON ROCKER SWITCH	B-SC-1210393-0-0	26
1	1	BUTTON ROCKER SWITCH	B-SC-1210388-0-0	25
1	1	VT05 SCOPE MASK	D-SC-1210479-0-0	24
1	1	SHIELD, SCOPE	D-IA-7008585-0-0	23
A/R	A/R	TAPE 1/4 WIDE	9008839-1	22
—	1	POWER CORD REWORK 115V	C-IA-1008502-9-0	21
1	—	POWER CORD REWORK 230V	C-IA-7008432-9-0	20
1	1	POWER HARNESS	E-IA-7008973-0-0	19
1	1	CIRCUIT BREAKER 378-202-101	1210292	18
1	1	SNAP BUSHING SB875-6	9008112	17
1	1	SCREEN, PROTECTIVE	E-MD-7008871-0-0	16
1	1	BRACKET MTG SWITCH	B-IA-7008859-0-0	15
8	8	WASH INT TOOTH LOCK #6	9006633	14
8	8	SCR, PAN PHIL HD 6-32 X .50 LG.	9006024-1	13
4	4	NUT, SPEED TWN #SB901-632-4	9006588	12
1	1	CAP, 2X.1 MFD 1000 VDC	1000039	11
1	1	SPEAKER 16 Ω 1/4 W SHIELD	1210299	10
1	1	BRACKET SM. KEYBOARD	D-IA-7008852-0-0	9
1	1	BRACKET LG. KEYBOARD L.H.	C-IA-7007626B38-2-0	8
1	1	BRACKET LG. KEYBOARD R.H.	C-IA-7008638-1-0	7
1	1	POT ASSY	D-AD-7007232-0-0	6
1	1	CURSOR BD ASSY KEYBOARD	D-AD-5410229-0-0	5
1	1	KEYBOARD ASSY	D-AD-5409991500	4
1	1	SCOPE ASSY	3010326	3
1	1	COVER, REWORK	D-IA-7008900-0-0	2
1	1	PLASTIC BASE	E-BS-2109113-0-0	1

FIRST USED ON OPTION/MODEL: VT8-E

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE 11-19-73
	CHK'D	DATE 11/19/73
DECIMALS: XXX .005, XX .02, X — ; ANGLES 10' 30	ENG	DATE
	PROJ. ENG	DATE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	PROD	DATE 11-19-73
MATERIAL —	NEXT HIGHER ASSY	D-IA-VT8-E-0
FINISH —	SCALE NONE	
	SHEET 1 OF 3	

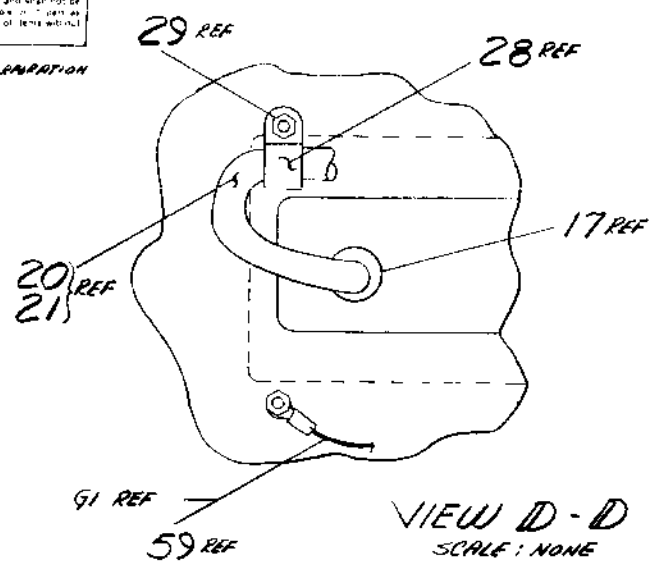
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: VIDEO TERMINAL

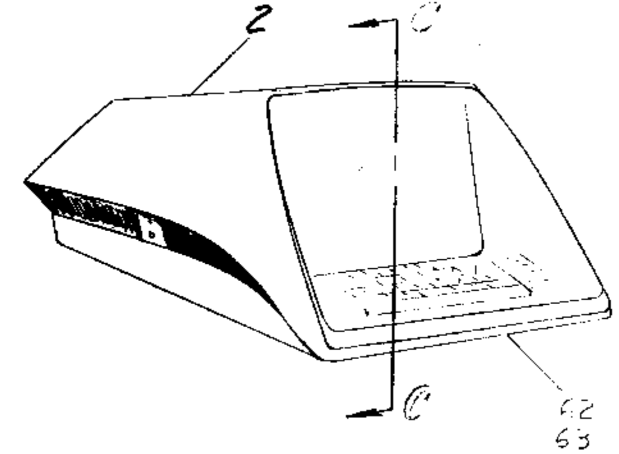
SIZE D | CODE AD | NUMBER 7009044-0-C | REV | DIST

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO 0BD 100-A



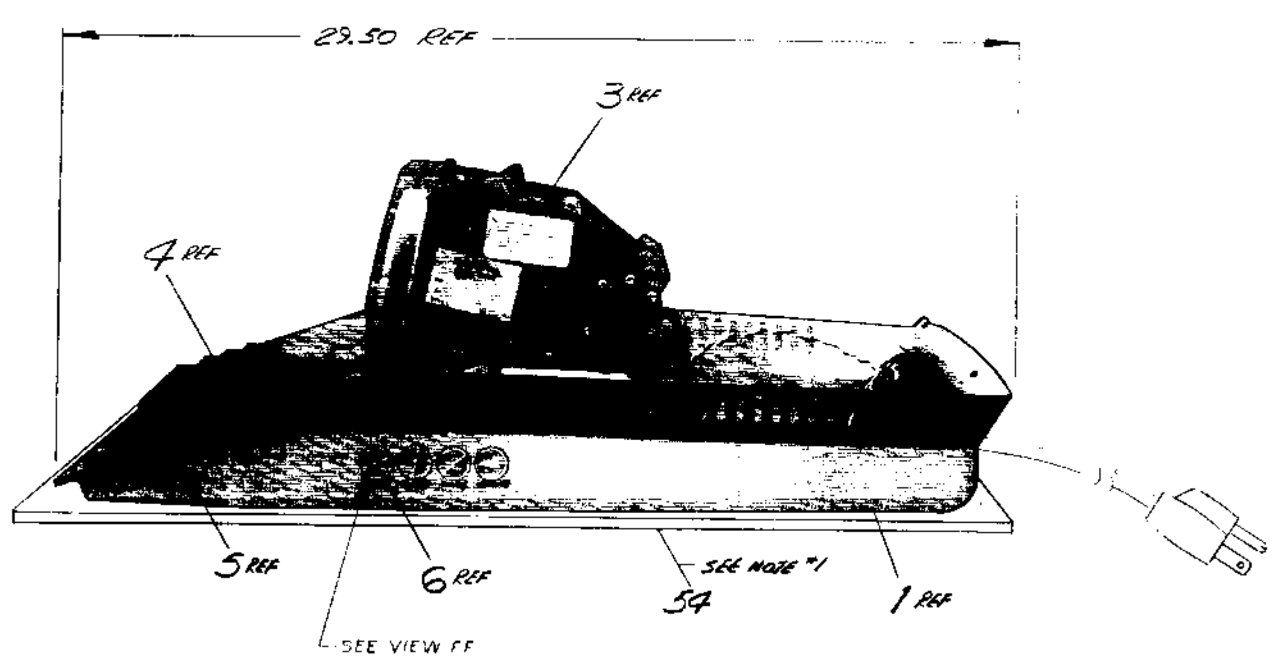
VIEW D-D
SCALE: NONE

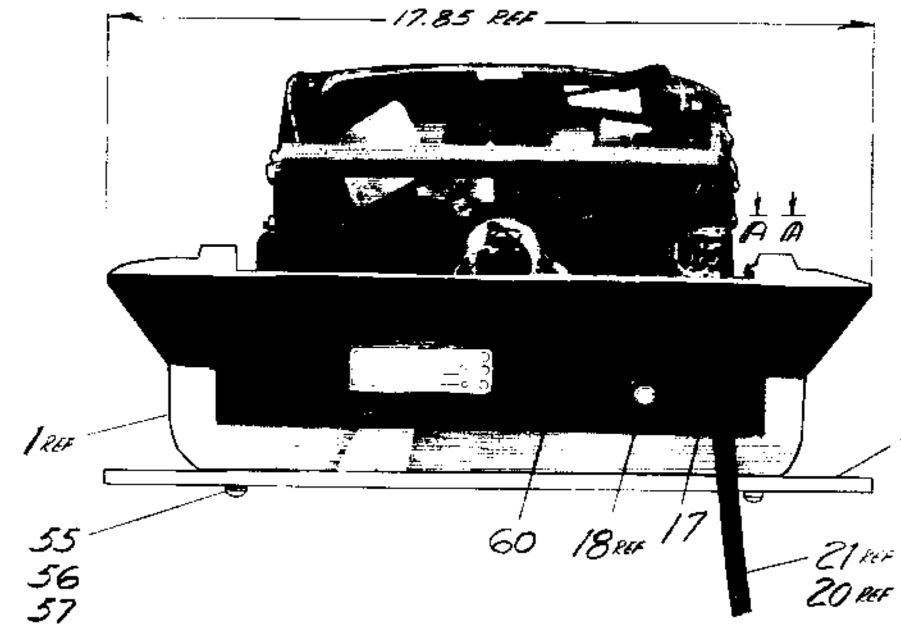


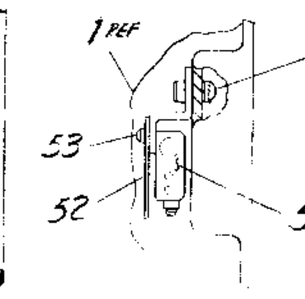
NOTE:

1. ASSEMBLE BASEBOARD (ITEM #54) TO BASE (ITEM #1) FIRST, BEFORE ASSEMBLING ANY OTHER ITEMS.
2. 52 IS LOWER SCREW ON SIDE OF SCOPE ASSY CHASSIS.
3. 7009044-1 SWITCH POSITION IS 115V
   7009044-2 SWITCH POSITION IS 230V
4. DECAL HAS PRESSURE SENSITIVE ADHESIVE. LOCATE AS SHOWN WHERE .09±.03 DIMENSION IS DISTANCE BETWEEN THE TOP OF PRINTING AND BOTTOM EDGE OF 4 "D" HOLES.

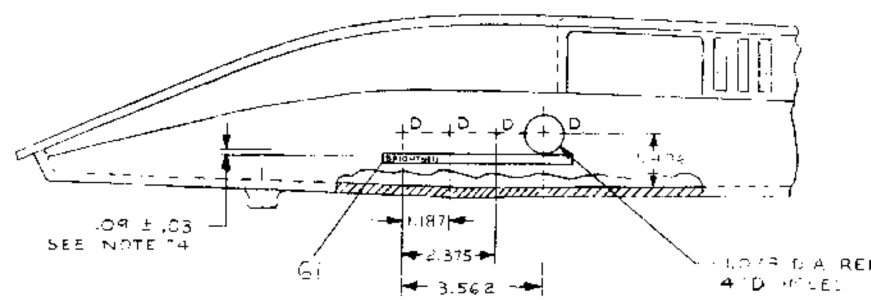
7009044-2	7009044-1			
1	1	SCR PHL PAN HD #6-32X.62LG	9006045-1	63
4	4	WASHER FLAT .375 X .187 ID	9006660	62
1	1	DECAL, TV CONTROLS	3611183	61
1	1	PLATE, BACK	D-IA-7409806-0-0	60
A/R	A/R	WIRE #18 AWG BLK	9107370-00	59
1	1	SWITCH, INTERLOCK	1203566	58
4	4	WASH INT TOOTH LOCK 1/4	9006637	57
4	4	WASHER 1/4 FLAT SST	9006669	56







VIEW A-A
SCALE: NONE



VIEW FF
SCALE: NONE

FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
VT8-E		PARTS LIST		

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: VIDEO TERMINAL

DRN: DATE 8-7-72
PROD: DATE
NEXT HIGHER ASSY: D-UA-VT8-E-0
SCALE: NONE
SHEET 2 OF 3

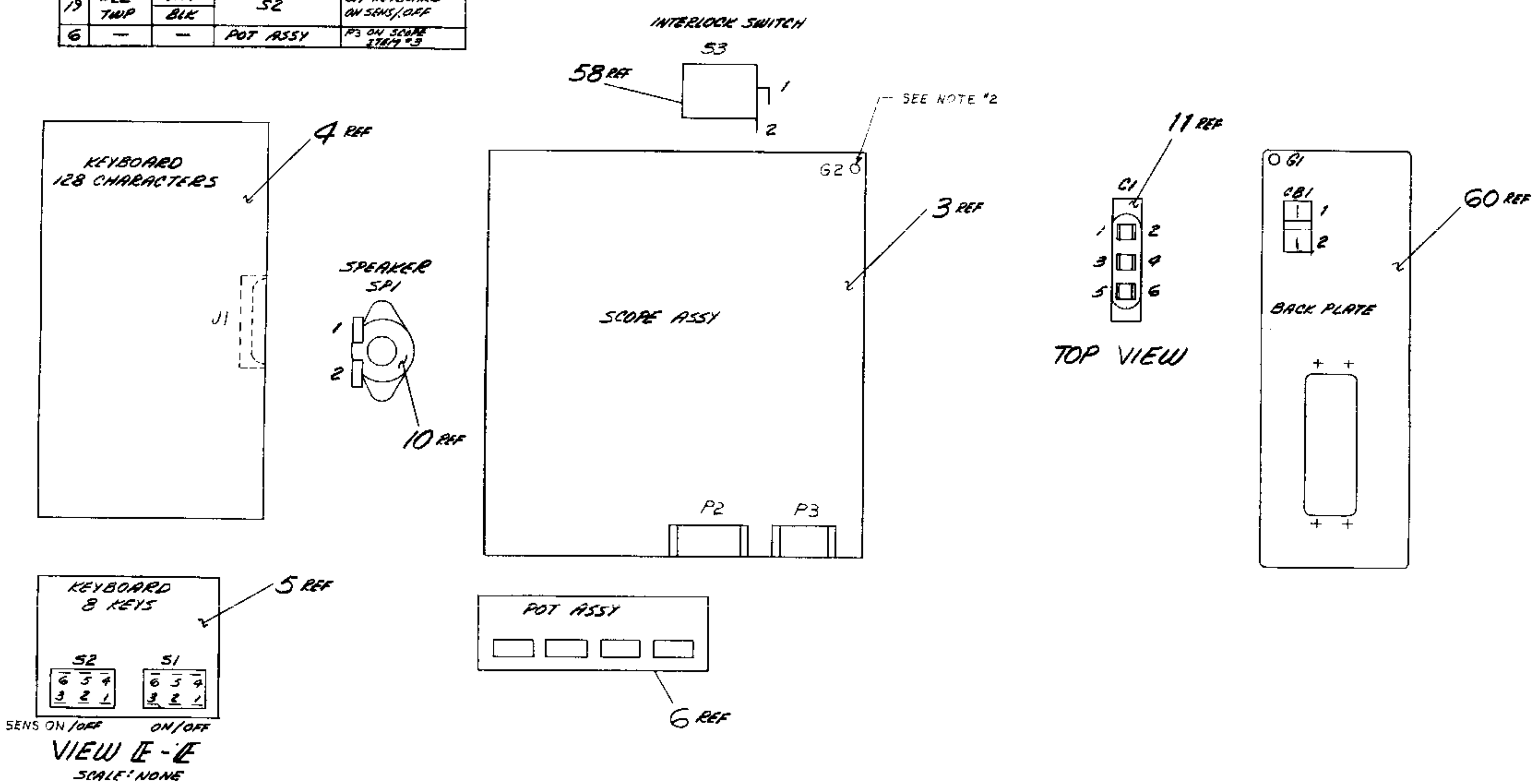
SIZE	CODE	NUMBER	REV
D	AD	7009044-0-0	

HARNESS WIRE TABLE

ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM HARNESS NUMBER	TO VT8-E UNIT LOCATION
19	#22	—	P1	ITEM #60 BACK PLATE
19	#18 TWP	WHT	POINT 1	C1-5
		RED	POINT 2	C1-3
19	#22	—	P2	P2 ON SCOPE ITEM #3
19	#22	—	J1	ITEM #4 J1
19	#22	WHT/ORN	POINT 31	SP1-2 ITEM #10
19	#22	WHT/RED	POINT 32	SP1-1 ITEM #10
19	#18 TWP	WHT	S1	SM KEYBOARD ON/OFF
		RED		
19	#18 TWP	WHT		
		RED		
19	#22 TWP	GRY	S2	SM KEYBOARD ON SENS/OFF
		BLK		
6	—	—	POT ASSY	P3 ON SCOPE ITEM #3

WIRE TABLE

ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
46	#18 TWP	RED	C1-4	#47	S3-2	#51
		WHT	CB1-2	#47	S3-1	#51
20/21	—	WHT	—	—	C1-6	#48
20/21	—	GRN	—	—	G1	#49
20/21	—	BLK	—	—	CB1-1	#48
59	#14	BLK	C1-2	#48	G1	#49
59	#14	BLK	C1-1	#48	G2	#49



FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
VT8-E		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS: .XXX ± .005, .XX ± .02, .X ± .1 — ANGLES: ± 0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

DRN / DATE; CHK'D / DATE 1/4/73; ENG. / DATE; PROJ ENG / DATE; PROD. / DATE

MATERIAL —
FINISH —
NEXT HIGHER ASSY: D-UA-VT8-E-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: VIDEO TERMINAL

SIZE: D CODE: AD NUMBER: 7009044-0-0 REV:
SCALE: NONE SHEET 3 OF 3
DIST. C

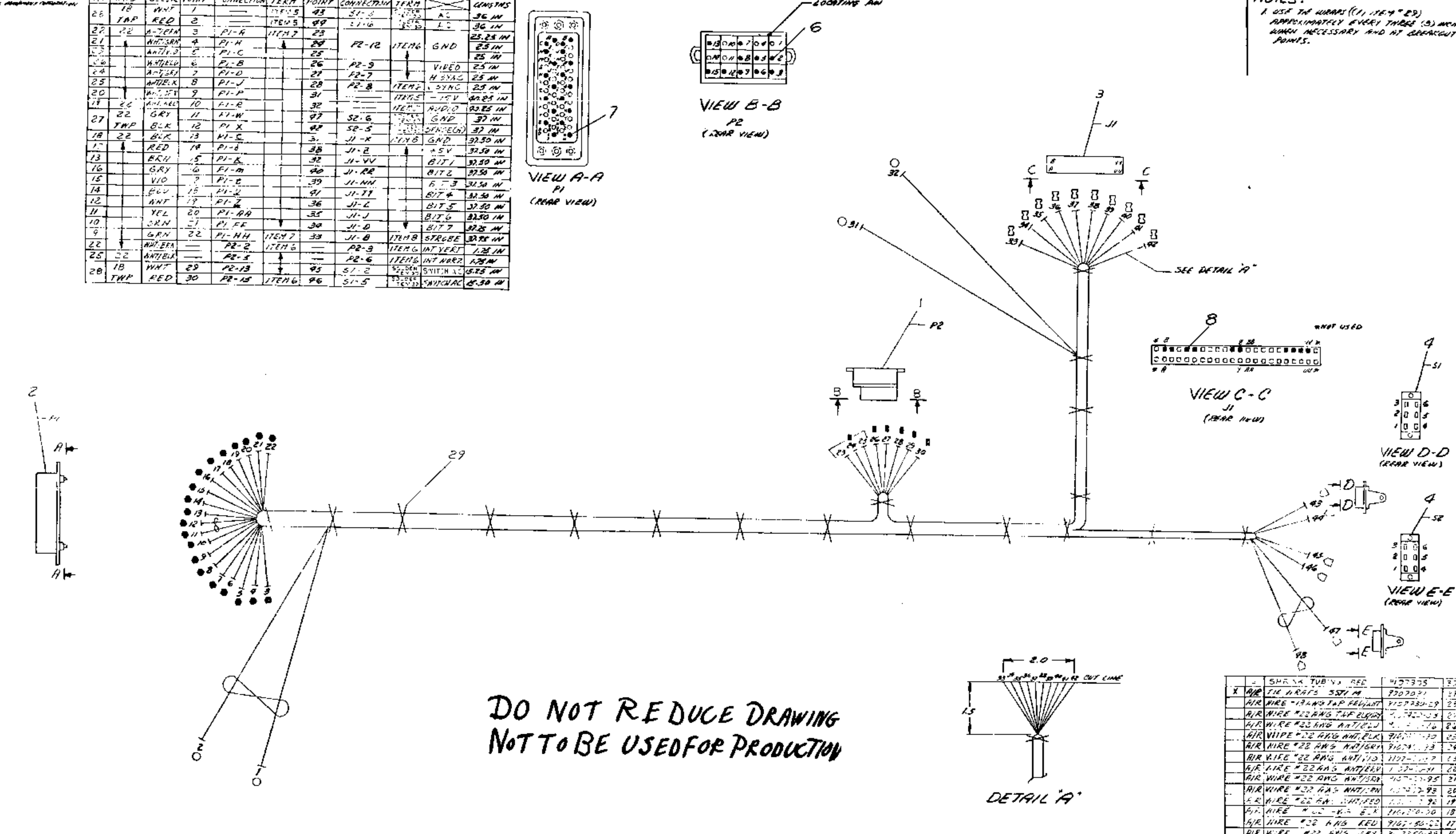
REVISIONS / CHANGE NO / CHK / REV

DEC FORM NO DRO 100-A

WIRE TABLE

WIR NO	DESCRIPTION AWG	COLOR	FROM POINT	FROM CONNECTION	FROM TERM	TO POINT	TO CONNECTION	TO TERM	SIGNAL	PRECUT LENGTHS
26	18 TWP	WHT	1	—	ITEM 5	43	S1-[illegible]	SOLDER TERM	AC	36 IN
		RED	2	—	ITEM 5	44	S1-6	SOLDER TERM	AC	36 IN
22	22	WHT/BRN	3	P1-R	ITEM 7	23	P2-12	ITEM 6	GND	25.25 IN
21	↓	WHT/GRN	4	P1-H	↓	24				25 IN
23		WHT/VIO	5	P1-C		25				25 IN
26		WHT/BLU	6	P1-B		26	P2-9	↓	VIDEO	25 IN
24		WHT/GRY	7	P1-D		27	P2-7		H SYNC	25 IN
25		WHT/BLK	8	P1-J		28	P2-8	ITEM 6	V SYNC	25 IN
20	↓	WHT/ORN	9	P1-P		31	—	ITEM 5	-15V	40.25 IN
19	22	WHT/RED	10	P1-R		32	—	ITEM 5	AUDIO	93.25 IN
27	22 TWP	GRY	11	P1-W		47	S2-6	SOLDER TERM	GND	37 IN
		BLK	12	P1-X		48	S2-5	SOLDER TERM	SENSE(H)	37 IN
18	22	BLK	13	P1-C		3.	J1-X	ITEM 8	GND	37.50 IN
17	↓	RED	14	P1-d		38	J1-Z	↓	+5V	37.50 IN
13		BRN	15	P1-K		32	J1-VV		BIT 1	37.50 IN
16		GRY	16	P1-m		40	J1-RR		BIT 2	37.50 IN
15		VIO	17	P1-E		39	J1-NN		BIT 3	37.50 IN
14		BLU	18	P1-U		41	J1-TT		BIT 4	37.50 IN
12		WHT	19	P1-Z		36	J1-L		BIT 5	37.50 IN
11		YEL	20	P1-AA		35	J1-J		BIT 6	37.50 IN
10		ORN	21	P1-FF	↓	34	J1-D	↓	BIT 7	37.25 IN
9	↓	GRN	22	P1-HH	ITEM 7	33	J1-B	ITEM 8	STROBE	37.75 IN
22		WHT/BRN	—	P2-2	ITEM 6	—	P2-3	ITEM 6	INT VERT	1.25 IN
25	22	WHT/BLK	—	P2-5	↕	—	P2-6	ITEM 6	INT HORZ	1.25 IN
28	18 TWP	WHT	29	P2-13		45	S1-2	SOLDER TERM	SWITCH AC	15.25 IN
		RED	30	P2-15	ITEM 6	46	S1-5	SOLDER TERM	SWITCH AC	15.50 IN

NOTES:
1. USE TIE WRAPS (T1, ITEM # 29) APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY AND AT BREAKOUT POINTS.



DO NOT REDUCE DRAWING
NOT TO BE USED FOR PRODUCTION

0 IN — 6 IN — 12 IN

DO NOT REDUCE
(FOR MFG PURPOSES ONLY)

PARTS LIST

SYM	QTY	DESCRIPTION	PART NO	ITEM NO
	—	SHRINK TUBING RED	9107305	30
X	A/R	TIE WRAPS SST1M	7207071	29
	A/R	WIRE #18 AWG TWP RED/WHT	9107380-29	28
	A/R	WIRE #22 AWG TWP BLK/GRY	[illegible]	27
	A/R	WIRE #22 AWG WHT/BLU	[illegible]	26
	A/R	WIRE #22 AWG WHT/BLK	[illegible]	25
	A/R	WIRE #22 AWG WHT/GRY	[illegible]	24
	A/R	WIRE #22 AWG WHT/VIO	[illegible]	23
	A/R	WIRE #22 AWG WHT/BLU	[illegible]	22
	A/R	WIRE #22 AWG WHT/GRN	[illegible]-95	21
	A/R	WIRE #22 AWG WHT/ORN	[illegible]-93	20
	A/R	WIRE #22 AWG WHT/RED	[illegible]-92	19
	A/R	WIRE #22 AWG BLK	9107350-00	18
	A/R	WIRE #22 AWG RED	9107350-22	17
	A/R	WIRE #22 AWG GRY	9107350-88	16
	A/R	WIRE #22 AWG VIO	9107350-77	15
	A/R	WIRE #22 AWG BLU	9107350-66	14
	A/R	WIRE #22 AWG BRN	9107350-11	13
	A/R	WIRE #22 AWG WHT	9107350-99	12
	A/R	WIRE #22 AWG YEL	9107350-44	11
	A/R	WIRE #22 AWG ORN	9107350-33	10
	A/R	WIRE #22 AWG GRN	9107350-55	9
⌛	10	SOCKET, CRIMP	1210381-6	8
●	20	CONNECTOR PIN [illegible]	1209629	7
■	10	TERMINAL, F/A CONTACT	1209378-01	6
○	4	TERM. HARKLESS #50902	7007917	5
	2	SWITCH, SLIDE DPDT	1205191	4
	1	HOUSING SOCKET 49 PIN	1210718-45	3
	1	CONN. WINCHESTER 50 PIN	1211161	2
	1	CONN MATE-N-LOK 15 PIN	1209351-15	1

FIRST USED ON OPTION/MODEL: VT8-E

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES
DECIMALS | ANGLES
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL: SEE PARTS LIST
NEXT HIGHER ASSY: D-AD-7009060-0-0

EQUIPMENT CORPORATION

TITLE: POWER HARNESS

SIZE E | CODE IA | NUMBER 7009079-0-0

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

	SEQUENCE
DRAWING DIRECTORY	B-DD-LK01-Ø
KEYBOARD CIRCUIT	D-CS-5409945-0-1
KEYBOARD ENCODING	D-LD-5409945-0-2
KEYBOARD SCHEMATIC	D-CS-3010166-0-1

MFG PRINT SET

LK01 TESTER	B-DD-LKØ1-TA
LED TEST PROCEDURE	A-SP-5409945-TA-Ø

UNIT VARIATIONS

VARIATION	TITLE	PRINT SET TYPE
LKØ1-Ø	KEYBOARD	

REVISIONS

REV	CHG. NO.	DATE
A	LK01-4	

USED ON OPTION/MODEL

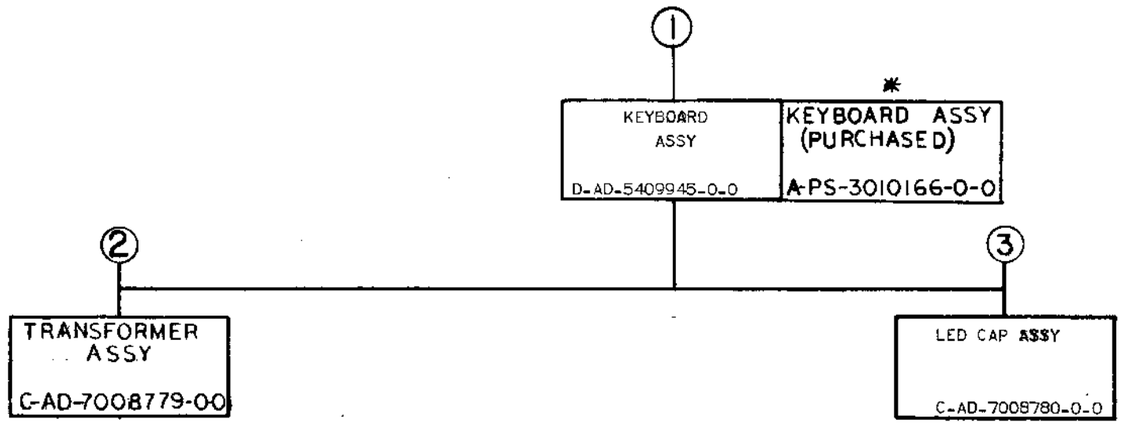
DRN. K. Russ	DATE 1-31-72	TITLE KEYBOARD
CHK'D. K. Russ	DATE 1-31-72	
PROJ ENG. D Wiedeler	DATE 2/14/72	
PROD. [illegible]	DATE 2/14/72	
FIELD SERV.	DATE	
SHEET 1 OF 3		

SIZE	CODE	NUMBER	REV
B	DD	LKØ1-Ø	A

DIST G

DRB 106

DEC 16-(325)-1062-1-N871



* INDICATES KEYBOARD SUPPLIED UNDER SECOND SOURCE VENDER

TITLE		SIZE	CODE	NUMBER	REV
KEYBOARD	SHEET 2 OF 3	B	DD	LKØ1-Ø	A

ELECTRICAL

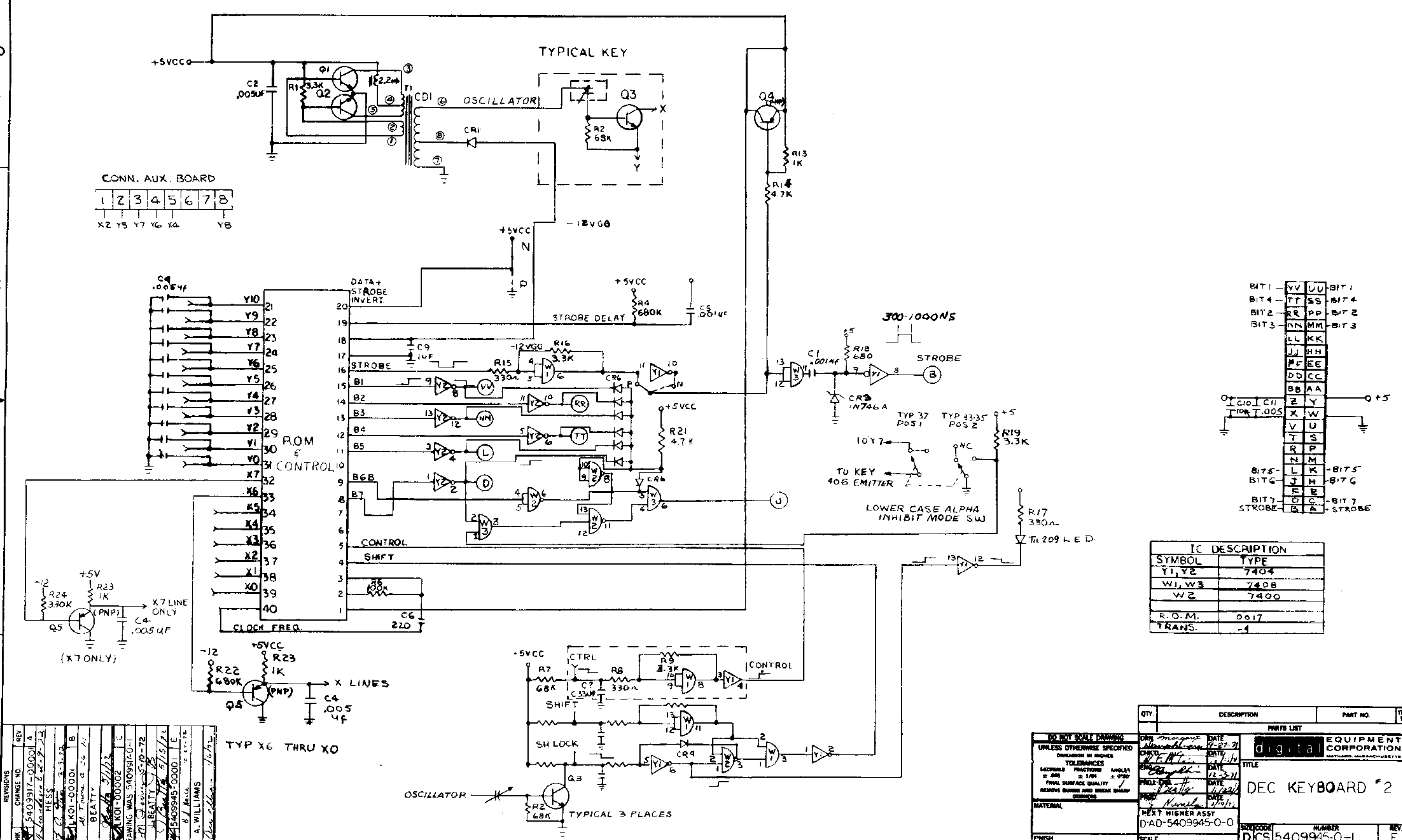
CUSTOMER PRINT SET LK01-Ø	MFG SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.
X		1	B-DD-LK01-Ø		3	DRAWING DIRECTORY	
X			D-CS-5409945-0-1		1	KEYBOARD CIRCUIT SCHEMATIC	
X			D-LO-5409945-0-02		1	KEYBOARD ENCODING	
			A-PS-3010166-0-0		#	KEYBOARD ASSY (PURCHASED)	
X			D-CS-3010166-0-1		1	KEYBOARD SCHEMATIC	
			A-II-3010166-0-2		#	KEYBOARD INCOMING INSPECTION	
	X		B-DD-LK01-TA		#	LK01 TESTER DRAWING DIRECTORY	
	X		A-SP-5409945-TA-Ø		#	LED CAP TEST PROCEDURE	
		2	C-AD-7008779-0-0		1	TRANSFORMER ASSY	
			A-SP-7008779-0-1		3	TRANSFORMER ASSY PROCEDURE	

MECHANICAL

CUSTOMER PRINT SET LK01-Ø	MFG SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.
		1	D-AD-5409945-0-0		3	KEYBOARD ASSY	
			A-PL-5409945-0-0		3	KEYBOARD ASSY (PL)	
			B-MD-7409524-0-0		1	TORSION BAR HINGE	
			B-MD-7409519-0-0		1	TORSION BAR	
			D-MD-7409523-0-0		1	9 KEY SPACE BAR	
			C-MD-7409518-0-0		1	SHAFT CAP	
			D-MD-7409522-0-0		1	SPACE BAR GUIDE	
			D-MD-7409517-0-0		1	13° SPACE BAR INSERT	
			C-MD-7409525-0-0		1	KEY GUIDES	
			C-MD-7409516-0-0		1	COUPLING PLATE	
			D-PS-9009148-0-0		1	KEYCAP SINGLE	
			B-MD-7409514-0-0		1	DUST COVER R.H.	
			B-MD-7409515-0-0		1	DUST COVER L.H.	
			D-MD-7409540-0-0		1	DUST COVER (SINGLE CHANNEL)	
			B-MD-7409538-0-0		1	CHANNEL SPACER	
			D-MD-7409528-0-0		1	STEPPED SHAFT	
			D-MD-7409555-0-0		1	CHANNEL MACHINING ROW 1	
			D-MD-7409535-0-0		1	CHANNEL MACHINING ROW 2	
			D-MD-7409556-0-0		1	CHANNEL MACHINING ROW 3	
			D-MD-7409557-0-0		1	CHANNEL MACHINING ROW 4	
			D-MD-7409558-0-0		1	CHANNEL MACHINING ROW 5	
			B-MD-7409532-0-0		1	SWITCH SELECT	
			FIXTURES REFERENCE				
			~~E-AD-9306462-0-0~~		~~1~~	~~KEY ASSY FIXTURE~~	
			D-AD-9305466-0-0		1	KEY CAP PRESS FIXTURE	
			D-AD-9305467-0-0		1	SPACE BAR ASSY FIXTURE	
			E-AD-9305452-0-0		2	KEYBOARD WORK HOLDER	
			D-DA-9605793-0-0		1	TORSION BAR HINGE ASSY	
			D-DA-9605813-0-0		1	COUPLING PLATE ASSY FIXTURE	
					1		
		2	B-MD-7409537-0-0		1	TRANSFORMER BASE	
			FIXTURE REFERENCE				
			E-DA-9605794-0-0		1	TRANSFORMER BOBBIN WINDING ASSY	
		3	C-AD-7008780-0-0		1	LED CAP ASSY	
			C-MD-7409513-0-0		1	LED KEY CAP	

TITLE		SIZE	CODE	NUMBER	REV
KEYBOARD	SHEET 3 OF 3	B	DD	LK01-Ø	A

DEC 16—(325)—1062—2—N871



IC DESCRIPTION	
SYMBOL	TYPE
Y1, Y2	7404
W1, W3	7408
W2	7400
R.O.M.	0017
TRANS.	-1

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

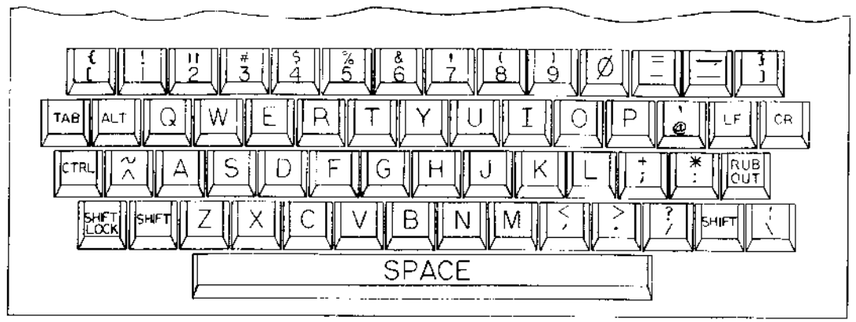
TITLE: DEC KEYBOARD #2

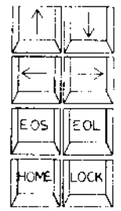
NEXT HIGHER ASSY: D-AD-5409945-0-0

SIZE: D CODE: CS NUMBER: 5409945-0-1 REV: E

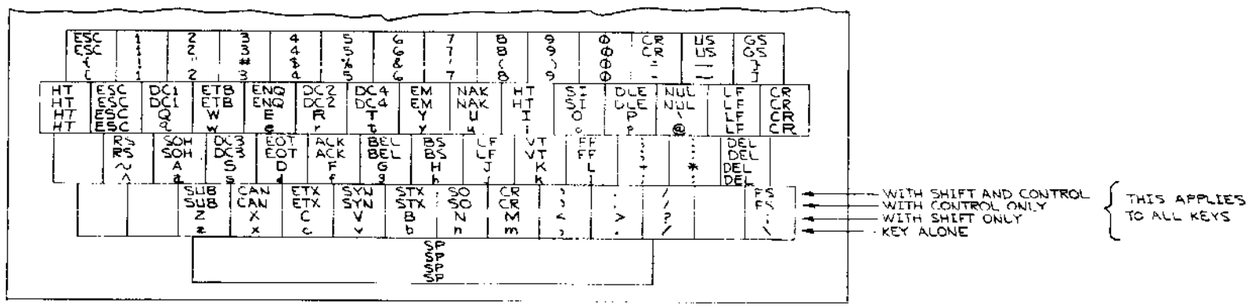
SHEET 1 OF 1

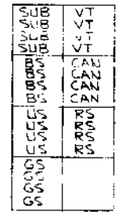
KEYBOARD KEY CAP CONFIGURATION



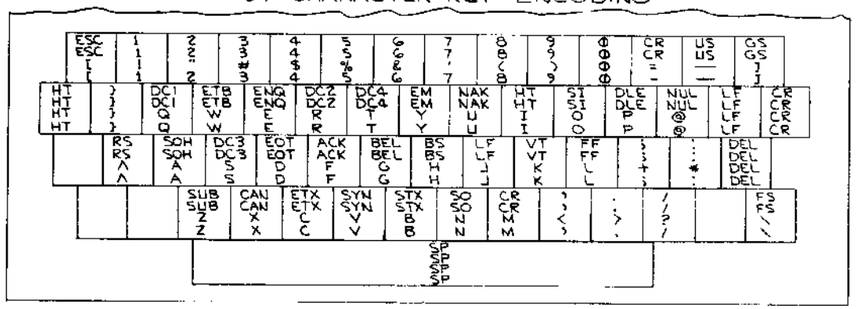


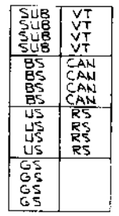
128 CHARACTER KEY ENCODING





97 CHARACTER KEY ENCODING





FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
D-AD-5409945-0-0		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS: XXX ± .005, XX ± .02, X ± .1 — ANGLES: ± 0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN		DATE 6-6-72
CHK'D		DATE 1-13-72
ENG		DATE 2/14/72
PROJ ENG		DATE 2/14/72
PROD		DATE
NEXT HIGHER ASSY		

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: KEYBOARD #2 (ENCODING)

SIZE D | CODE LO | NUMBER 5409945 0-2 | REV

DIST

REVISIONS	REV.	CHANGE NO.	CHK.

DEC FORM NO DRD 100-A

PURCHASE SPECIFICATION

OSCILLATOR

TYPICAL KEY

CONN. AUX. BOARD

1	2	3	4	5	6	7	8
X2	Y5	Y7	Y6	X4			Y8

CONTROL & R.O.M

CONTROL

SHIFT

SH LOCK

CLOCK FREQ.

STROBE

STROBE DELAY

DATA + STROBE INVERT.

TYP X7 THRU X0

X LINES

OSC BUS

INDICATES VENDOR'S KEY CIRCUIT

8 RESISTORS, 6.8K, 1/4W, 10%

8 TRANSISTORS (NPN) A1015A. CD SPEC.

CAPACITOR .005 MFD, DISK

NOTE: KEY 222 IS LOCK FOR KEYS 321 & 322 IT HAS TO BE DEPRESSED FOR OPERATION OF ABOVE KEYS.

300 TO 1000 NS

TU KEY 406 EMITTER

LOWER CASE ALPHA INHIBIT MODE SW

TYP 37 POS 1

TYP 33-35 POS 2

TIL 209 L.E.D

IC DESCRIPTION	
SYMBOL	TYPE
Y1, Y2	7404
W1, W3	7408
W2	7400
R.O.M.	0017
TRANS.	-4

APPROVED VENDOR
CONTROL DEVICES WOBURN, MASS.

BIT 1	VV	UU	BIT 1
BIT 4	TT	SS	BIT 4
BIT 2	RR	PP	BIT 2
BIT 3	NN	MM	BIT 3
	LL	KK	
	JJ	HH	
	FF	EE	
	DD	CC	
	BB	AA	
	Z	Y	
	X	W	
	V	U	
	T	S	
	R	P	
	N	M	
	L	K	BIT 5
BIT 6	J	H	BIT 6
	F	E	
BIT 7	D	C	BIT 7
STROBE	B	A	STROBE

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

NEXT HIGHER ASSY

SCALE

SHEET 15 OF 15

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DEC KEYBOARD #2

SIZE D | CODE PS | NUMBER 3010166-0-0 | REV. C

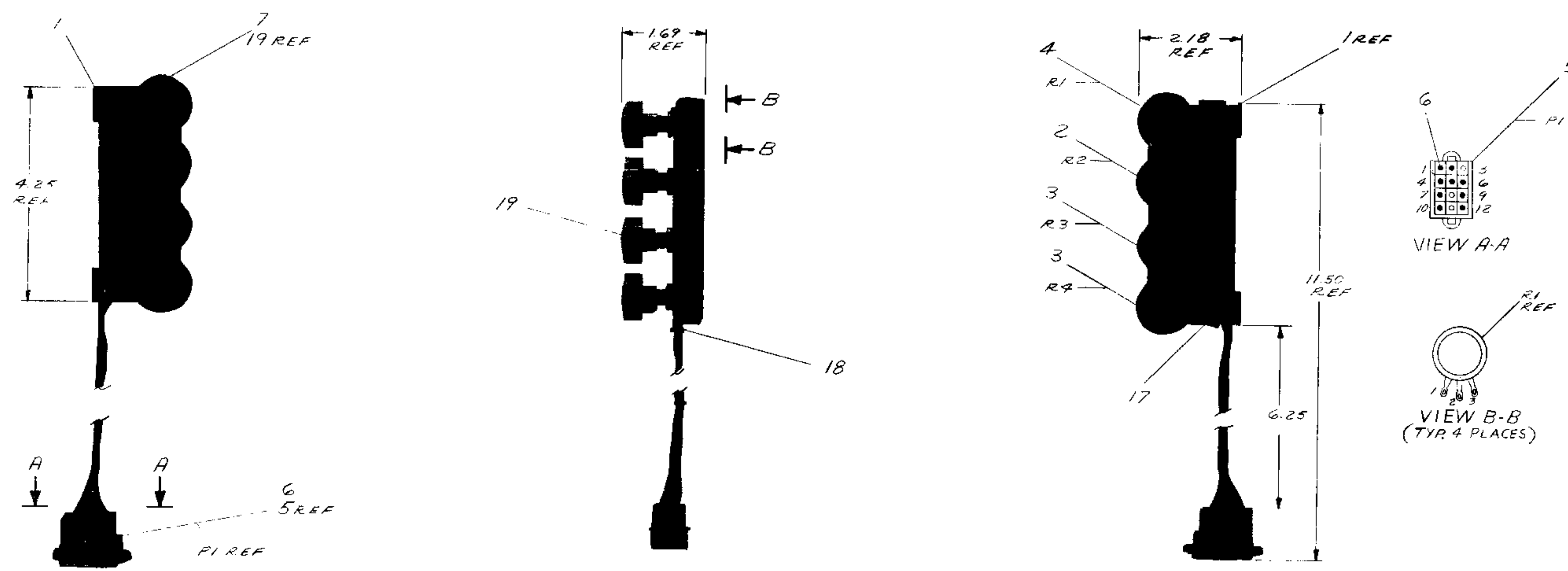
DIST.

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO 1080 100

ITEM NO.	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
8	22	BLK	R1-1	*	R2-3	—
8	↑	BLK	R2-3	↑	P1-6	ITEM 6
16		WHT/BRN	R1-2		P1-2	↑
15		WHT/BLK	R1-3		P1-1	
14		WHT/RED	R2-1		P1-4	↓
13		WHT/ORN	R2-2		P1-5	ITEM 6
12		WHT/YEL	R3-2		R3-1	—
12		WHT/YEL	R3-1		P1-7	ITEM 6
11		WHT/GRN	R3-3		P1-9	ITEM 6
10		WHT/BLU	R4-2		R4-1	—
10	↓	WHT/BLU	R4-1	↓	P1-10	ITEM 6
9	22	WHT/VIO	R4-3	*	P1-12	ITEM 6

* THIS CONNECTION REQUIRES THE USE OF ITEM 17 & SOLDER.



QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: VT05

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY / REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN: DATE 2-9-71
CHK'D: DATE 2/11/71
ENG.: DATE 2-12-71
PROJ. ENG.: DATE 3-4-
PROD.: DATE 3-4-71

NEXT HIGHER ASSY D-UA-VT05-0-0

SCALE NONE

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE POT ASSEMBLY

SIZE D CODE AD NUMBER 7007232-0-0 REV.

DIST.

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

SEQUENCE		SEQUENCE	
DRAWING DIRECTORY	B-DD-5410224-0		
CURSOR BOARD (KEYBOARD)	D-CS-5410224-0-1		
CURSOR BOARD ENCODING (KEYBOARD)	C-LO-5410224-0-B		

THIS IS PRINT SET

UNIT VARIATIONS

VARIATION	TITLE	PRINT SET TYPE 5410224-1
5410224	CURSOR BOARD (KEYBOARD)	X

REVISIONS

REV	CHG. NO.	DATE

USED ON OPTION/MODEL

DRN. D.SCHMIDT	DATE 7-20-72
CHK'D. R.HUTNAK	DATE 7-25-72
PROJ ENG. D Widden	DATE 7/31/72
PROD. R. Davis	DATE 8/4/72
FIELD SERV.	DATE 9/2/72
SHEET 1 OF 2	

TITLE: CURSOR BOARD (KEYBOARD)

SIZE	CODE	NUMBER	REV
B	DD	5410224-0	

DIST

ARB 1.06

DEC 16—(325)—1062—1—N871

ELECTRICAL

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.
X		1	B-DD-5410224-0		2	DRAWING DIRECTORY	
X			D-CS-5410224-0-1		2	CURSOR BOARD (KEYBOARD)	
			D-AD-5410224-0-0		1	CURSOR BOARD ASSY (KEYBOARD)	
X			C-LO-5410224-0-B		1	CURSOR BOARD ENCODING (KEYBOARD)	
X			D-IA-5010223-0-0		1	CURSOR BOARD P.C. BOARD	
			D-AD-9305643-0-0		1	PRESS FIXTURE	

MECHANICAL

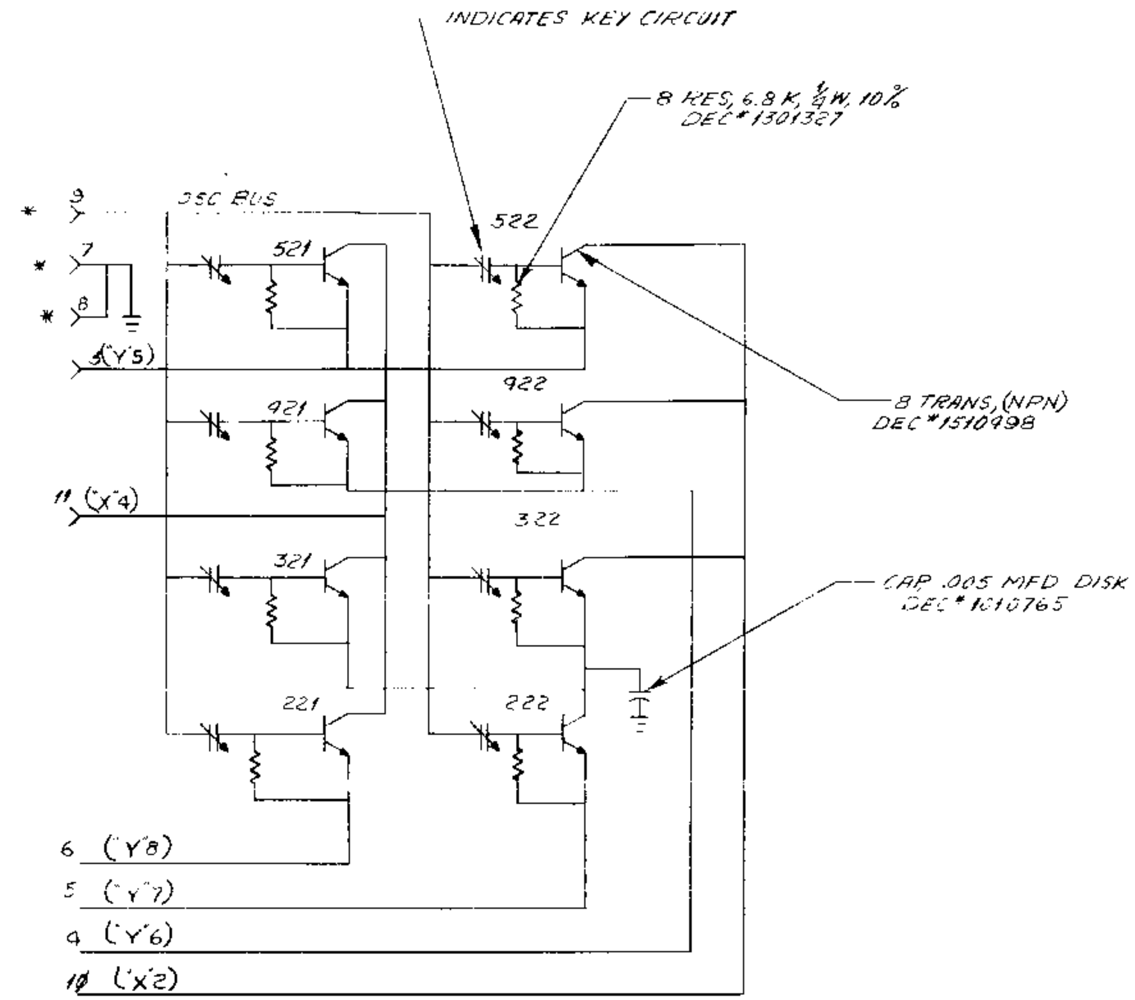
CUSTOMER PRINT SET	MFG SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO.
		1	D-AD-5410224-0-0		2	CURSOR BOARD ASSY (KEYBOARD)	
			C-PS-9009148-64-0		1	KEY CAP, SINGLE	
			B-MD-7410521-0-0		1	DUST COVER, SHORT	
			C-MD-7410520-0-0		1	CHANNEL, MACHINING	
			D-MD-7410549-0-0		1	KEY SHAFT, STEPPED 90° TURN	
			C-MD-7409516-0-0		1	PLATE, COUPLING	
			B-MD-7409538-0-0		1	STANDOFF, CHANNEL	
			C-MD-7409525-0-0		1	KEY GUIDE	

TITLE		SIZE	CODE	NUMBER	REV
CURSOR BOARD (KEY BOARD)	SHEET 2 OF 2	B	DD	5410224-0	

NOTES:

1. KEY 222 IS LOCK FOR KEYS 321 & 322. IT HAS TO BE DEPRESSED FOR OPERATION OF ABOVE KEYS.

* 2. FOR REFERENCE INFORMATION SEE DWG NO. D-CS-5903395-0-1



FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
VT05	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES — DECIMALS: XXX ± .005, XX ± .02, X ± .1 — ANGLES: ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN / DATE; CHKD / DATE; ENG / DATE; PROJ ENG. / DATE; PROD / DATE

NEXT HIGHER ASSY —

SCALE NONE — SHEET 1 OF 1

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: CURSOR BOARD (KEYBOARD)

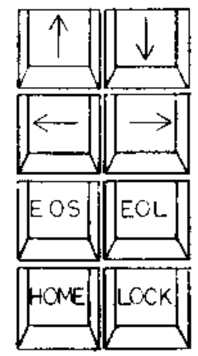
SIZE	CODE	NUMBER	REV
D	CS	5410224-0-1	

DIST

DEC FORM NO DRD 121-B

NOTES:

1. CODES SHOWN ARE THE ASCII OUTPUTS FROM THE MAIN KEYBOARD, WHEN THE CURSOR KEYS ARE OPERATED.



KEYCAP CONFIGURATION

SUB	VT
BS	CAN
US	RS
GS	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VTØ5		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS	ANGLES
.XXX = .005 .XX = .02 .X = .1	±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. | DATE
CHK'D. | DATE 7/21/72
ENG | DATE
PROJ. ENG. | DATE
PROD. | DATE

NEXT HIGHER ASSY.

SCALE 1/1

SHEET OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: CURSOR BOARD ENCODING (KEYBOARD)

SIZE	CODE	NUMBER	REV.
C	LO	5410224-0-8	

DIST.

REVISIONS: REV. | CHANGE NO. | CHK

BRUNING 40-107 15968

DEC FORM NO. DRC 100-A