MASTER DRAWING LIST

MAINTENANCE MANUALS NO.	TITLE	UNIT VARIATIONS VR14-Ø	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-LC	VR14-LD
VR14	DISPLAY	X	X	X	X	X	X	X	X

USED ON OPTIONS

REVISIONS REV.	DATE	CHG. NO.	APP'D.
M	4/72	00016	B A.F.
N	7/72	00019	A.F.
P	10/72	00021	A.F.
R	12/72	00022	D.C.
S	1/73	00023	

DRN. D. CRABBE	DATE 10/70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. D. CRABBE	DATE 10/70	
ENG. D. CRABBE	DATE 11/70	TITLE VR14 DISPLAY
PROJ. ENG. A. FISHMAN	DATE 11/70	
PROD. PETERSON	DATE 11/70	
FIRST USED ON VR14		SIZE A · CODE ML · NUMBER VR14-0 · REV. S
SCALE		
SHEET 1 OF 2		DIST.

DRA 131

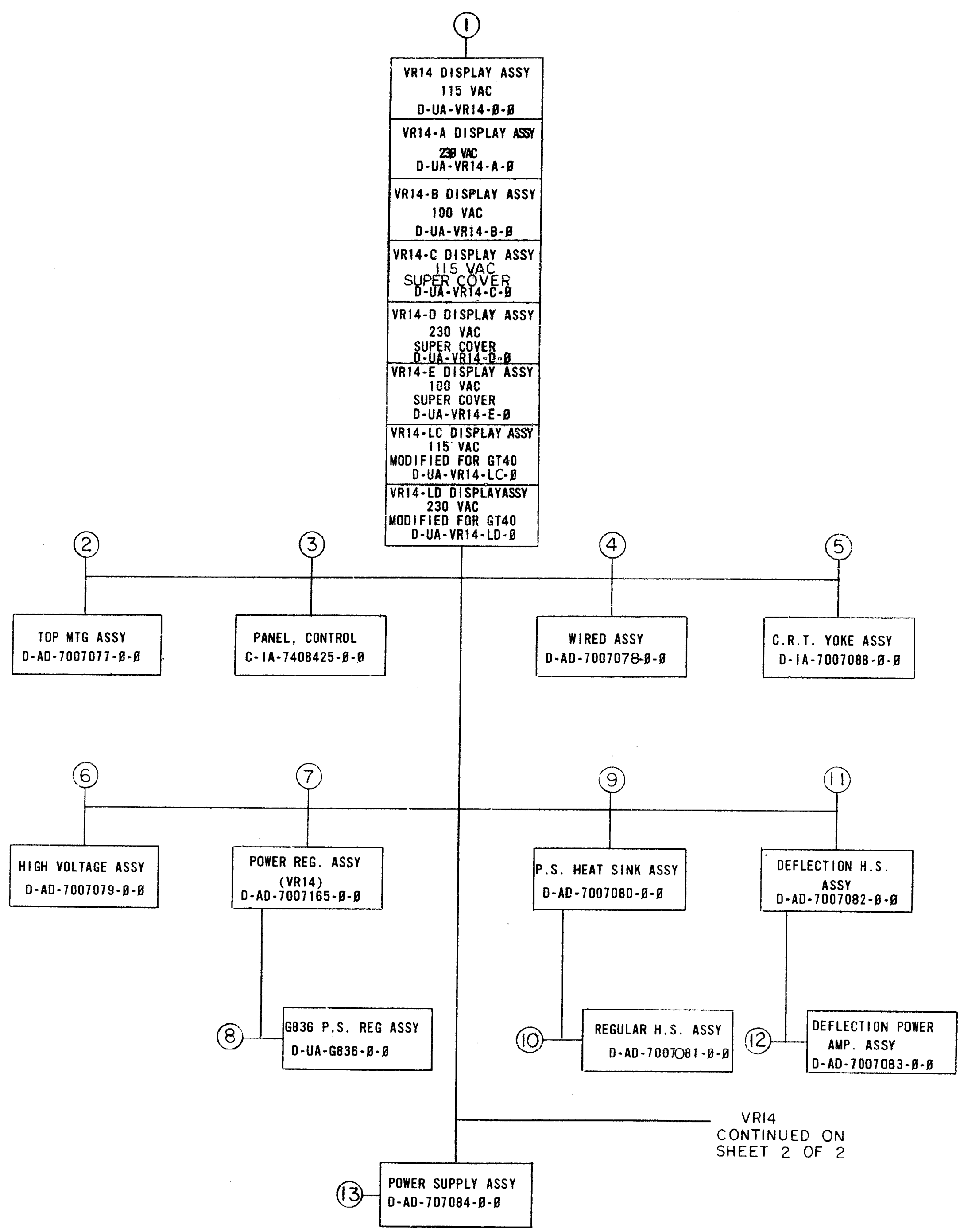
Dec 16-(325)-1048-N471

PRINT SET VR14-Ø	DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE	OPTION NO.
X	D-DI-VR14-0-2	J	2	DRAWING INDEX LIST	
X	D-CS-G836-0-1	#	1	POWER SUPPLY & REGULATOR SCHEMATIC	
X	C-CS-7007080-0-1	A	1	POWER SUPPLY HEAT SINK SCHEMATIC	
X	C-CS-7007082-0-1	A	1	DEFLECTION HEAT SINK SCHEMATIC	
X	D-CS-7007084-0-1	D	2	POWER SUPPLY SCHEMATIC	
X	C-MU-VR14-0-3	B	1	MODULE UTILIZATION	
X	D-IC-VR14-0-1	K	3	VR14 BLOCK SCHEMATIC	
X	A-PL-VR14-0-3	B	1	MODULE UTILIZATION (PL)	
X	D-UA-VR14-0-0	J	4	DISPLAY ASSEMBLY	
X	A-PL-VR14-0-0	J	4	DISPLAY ASSEMBLY (PL)	
X	D-AD-7007078-0-0	F	1	WIRED ASSEMBLY	
X	A-PL-7007078-0-0	F	2	WIRED ASSEMBLY (PL)	
X	A-SP-VR14-0-4		4	ENGINEERING SPECIFICATION	
X	A-SP-VR14-0-5	B	31	CHECKOUT & ACCEPTANCE PROCEDURE	
X	D-UA-G836-0-0	#	1	POWER SUPPLY & REGULATOR ASSY	
X	A-PL-G836-0-0	#	3	POWER SUPPLY & REGULATOR ASSY (PL)	
X	D-AD-7007080-0-0		1	POWER SUPPLY HEAT SINK ASSY	
X	A-PL-7007080-0-0		1	POWER SUPPLY HEAT SINK ASSY (PL)	
X	D-AD-7007082-0-0	B	1	DEFLECTION HEAT SINK ASSY	
X	A-PL-7007082-0-0	B	1	DEFLECTION HEAT SINK ASSY (PL)	
X	D-AD-7007084-0-0	F	2	POWER SUPPLY ASSY	
X	A-PL-7007084-0-0	F	3	POWER SUPPLY ASSY (PL)	

TITLE				
VR14 DISPLAY	SHEET 2 OF 2	SIZE A · CODE ML	NUMBER VR14-0	REV. S

DRA 132

DEC 16-(325)-1048-1-N471



MECHANICAL

FIND NO.	DESCRIPTION	PART NO.	DEPT USAGE PROD	CUST	F/C
1.	VR14 DISPLAY ASSY 115 VAC	D-UA-VR14-Ø-Ø			
	VR14-A DISPLAY ASSY 230 VAC	D-UA-VR14-A-Ø			
	VR14-B DISPLAY ASSY 100 VAC	D-UA-VR14-B-Ø			
	VR14-C-DISPLAY 115 VAC S.C.	D-UA-VR14-C-Ø			
	VR14-D DISPLAY 230 VAC S.C.	D-UA-VR14-D-Ø			
	VR14-E DISPLAY 100 VAC S.C.	D-UA-VR14-E-Ø			
	VR14-LC DISPLAY ASSY 115 VAC GT 40	D-UA-VR14-LC-Ø			
	VR14-LD DISPLAY ASSY 230 VAC GT 40	D-UA-VR14-LD-Ø			
	VR14 DISPLAY ASSY P.L.	A-PL-VR14-Ø-Ø			
	BEZEL (VR12)	E-SC-1209230-Ø-Ø			
	BEZEL, CONTROL PANEL (VR12)	E-IA-7406891-Ø-Ø			
	CAP, REAR	C-SC-1209229-Ø-Ø			
	CAP (VR14)	C-MD-7408434-Ø-Ø			
	MASK, C.R.T. (VR14)	D-SC-1209228-Ø-Ø			
	MASK C.R.T.	D-MD-7406837-Ø-Ø			
	SCREEN, SAFETY	D-SC-1210113-Ø-Ø			
	SCREEN, SAFETY (VR14)	D-IA-7408408-Ø-Ø			
	PLATE, BOTTOM MTG.	D-IA-7408400-Ø-Ø			
	FAN, SCREEN	C-MD-7404881-Ø-Ø			
	C.R.T. SHIELD	E-SC-1210104-Ø-Ø			
	MAIN CHASSIS CABLE HARNESS	E-IA-70084[illegible]7-Ø-Ø			
	GROUND TUBE	C-IA-7408411-Ø-Ø			
	CHASSIS TRACK BRACE	D-MD-7408549-Ø-Ø			
	CHANNEL SWITCH	B-IA-7008976-Ø-Ø			
	MASK	E-PS-1211106-Ø-Ø			
	BRACE, CHASSIS	E-IA-7409964-Ø-Ø			
	SHIELD SAFETY	C-IA-7408409-Ø-Ø			
	HOLDER, CARD	C-MD-7408414-Ø-Ø			
	PKG INST VR14 RACK MOUNT	A-PI-3700026-Ø-Ø			
	PKG INST VR14 SUPER COVER	A-PI-3700027-Ø-Ø			
	JUMPER	B-IA-7007006-3-Ø			
2.	TOP MTG. ASSY	D-AD-7007077-Ø-Ø			
	TOP MTG. ASSY P.L.	A-PL-7007077-Ø-Ø			
	PLATE, TOP MTG.	E-IA-7408401-Ø-Ø			
	SCOTCHCALS (VR14)	A-DC-7408407-Ø-Ø			
3.	PANEL, CONTROL	C-IA-7408425-Ø-Ø			
	PANEL, CONTROL SILK SCREEN	B-SS-7408425-Ø-1			
4.	WIRED ASSY	D-AD-7007078-Ø-Ø			
	WIRED ASSY P.L.	A-PL-7007078-Ø-Ø			
	FRAME LOGIC	D-IA-7408422-Ø-Ø			
	BAR, MTG	B-MD-7407114-Ø-Ø			
	LOGIC FRAME DECALS	A-SS-5308753-Ø-2			
	LOGIC FRAME DECALS	A-SS-5308753-Ø-4			
5.	C.R.T. YOKE ASSY	D-IA-7007088-Ø-Ø			
6.	HIGH VOLTAGE ASSY	D-AD-7007079-Ø-Ø			
	HIGH VOLTAGE ASSY P.L.	~~A-PL-7007079-Ø-Ø~~			
	PLATE, HIGH VOLTAGE MTG.	D-IA-7408420-Ø-Ø			
	SHIELD, HIGH VOL. PROTECTION	B-MD-7408424-Ø-Ø			
	SPACER, HEX	B-MD-7408413-Ø-Ø			
	HIGH VOLTAGE SHIELD	D-SC-1210169-Ø-Ø			
7.	POWER REGULATOR ASSY (VR14)	D-AD-7007165-Ø-Ø			
	POWER REG. ASSY (VR14) P.L.	A-PL-7007165-Ø-Ø			
	MATE-N-LOK ASSY BRKT	D-IA-7408439-Ø-Ø			
	COVER, CAPACITOR	C-MD-7408436-Ø-Ø			
8.	G836 POWER REG. ASSY	D-UA-G836-Ø-Ø			
	G836 POWER REG. ASSY P.L.	A-PL-G836-Ø-Ø			
9.	POWER SUPPLY H.S. ASSY	D-AD-7007080-Ø-Ø			
	POWER SUPPLY H.S. ASSY P.L.	A-PL-7007080-Ø-Ø			
	SPACER, MTG.	C-MD-7408438-Ø-Ø			
	BRKT. MTG. SPACER	C-MD-7408437-Ø-Ø			
	POWER SUPPLY HEAT SINK	D-SC-1210131-Ø-Ø			
10.	REGULATOR HEAT SINK ASSY	D-AD-7007081-Ø-Ø			
	REGULATOR H.S. ASSY P.L.	A-PL-7007081-Ø-Ø			
11.	DEFLECTION HEAT SINK ASSY	D-AD-7007082-Ø-Ø			
	DEFLECTION H.S. ASSY	A-PL-7007082-Ø-Ø			
12.	DEFLECTION POWER AMP. ASSY	D-AD-7007083-Ø-Ø			
	DEFLECTION POWER AMP (PL)	A-PL-7007083-Ø-Ø			
13.	POWER SUPPLY ASSY	E-AD-7007084-Ø-Ø			
	POWER SUPPLY ASSY (PL)	A-PL-7007084-Ø-Ø			
	POWER SUP. CABLE HAPN.	E-IA-7007147-Ø-2			
	COVER, CAPACITOR HOLD DOWN	D-IA-7408433-Ø-Ø			
	PLATE, SIDE MTG	E-IA-7408402-Ø-Ø			
	COVER, PROTECTION	B-MD-7408416-Ø-Ø			

ELECTRICAL

FIND NO.	DESCRIPTION	PART NO.	DEPT USAGE PROD	CUST	F/C
1.	VR14 DISPLAY 115 VAC	A-ML-VR14-Ø			
	VR14-A DISPLAY 230 VAC	A-ML-VR14-A			
	VR14-B DISPLAY 100 VAC	A-ML-VR14-B			
	VR14-C DISPLAY 115 VAC S.C.	A-ML-VR14-C			
	VR14-D DISPLAY 230 VAC S.C.	A-ML-VR14-D			
	VR14-E DISPLAY 100 VAC S.C.	A-ML-VR14-E			
	VR14-LC DISPLAY ASSY 115 VAC GT 40	D-UA-VR14-LC-Ø			
	VR14-LD DISPLAY ASSY 230 VAC GT 40	D-UA-VR14-LD-Ø			
	CIRCUIT SCHEMATIC (VR14)	D-IC-VR14-Ø-1			
	MODULE UTILIZATION	C-MU-VR14-Ø-3			
	MODULE UTILIZATION (PL)	A-MU-VR14-Ø-3			
	ENGINEERING SPECIFICATION	A-SP-VR14-Ø-4			
	CHECK OUT AND ACCEPTANCE PROCEDURE	A-SP-VR14-Ø-5			
4.	WIRED ASSY	C-AD-7007078-Ø-Ø			
	WIRED ASSY P.L.	A-PL-7007078-Ø-Ø			
8.	G836 POWER REG. ASSY	D-UA-G836-Ø-Ø			
	G836 POWER REG. ASSY P.L.	A-PL-G836-Ø-Ø			
	CIRCUIT SCHEMATIC (G836)	D-SC-G836-Ø-1			
9.	POWER SUPPLY HEAT SINK ASSY	D-AD-7007080-Ø-Ø			
	POWER SUPPLY H.S. ASSY PL	A-PL-7007080-Ø-Ø			
	CIRCUIT SCHEMATIC (HEAT SINK)	D-CS-7007080-Ø-1			
11.	DEFLECTION HEAT SINK ASSY	D-AD-7007082-Ø-Ø			
	DEFLECTION H.S. ASSY P.L.	A-PL-7007082-Ø-Ø			
	CIRCUIT SCHEMATIC(DEFLECTION)	D-CS-7007082-Ø-1			
13.	POWER SUPPLY ASSY	D-AD-7007084-Ø-Ø			
	POWER SUPPLY ASSY P.L.	A-PL-7007084-Ø-Ø			
	CIRCUIT SCHEMATIC (POWER SUPPLY)	D-CS-7007084-Ø-1			

REVISIONS

REV.	CHANGE NO.	CHK
F	VR14-00019 REVISED & REDRAWN	
H	VR14-00021 A FISHMAN	
J	VR14-00023 D K CRABBE 2-6-73	

FIRST USED ON OPTION/MODEL: VR14

DRN.	D.K.CRABBE	DATE 11-3-70
CHK'D	D.K.CRABBE	DATE 11-4-70
ENG.	D.K.CRABBE	DATE 11-6-70
PROJ. ENG.	A.FISHMAN	DATE 11-6-70
PROD.	R.PETERSON	DATE 12-8-70

NEXT HIGHER ASSY: D-UA-VR14-Ø-Ø

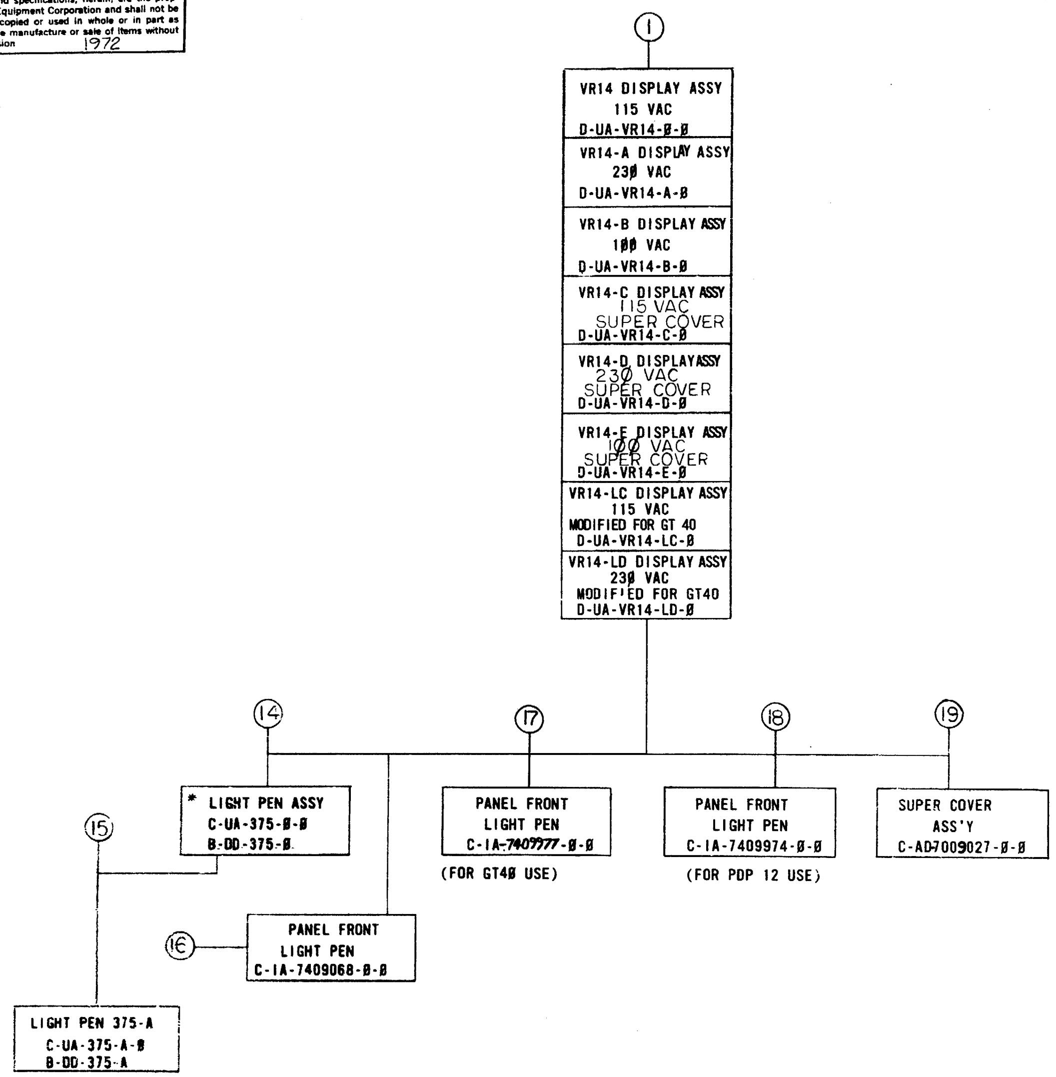
SCALE: —

SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DRAWING INDEX LIST

SIZE: D CODE: DI NUMBER: VR14-Ø-2 REV: J



* OPTIONAL

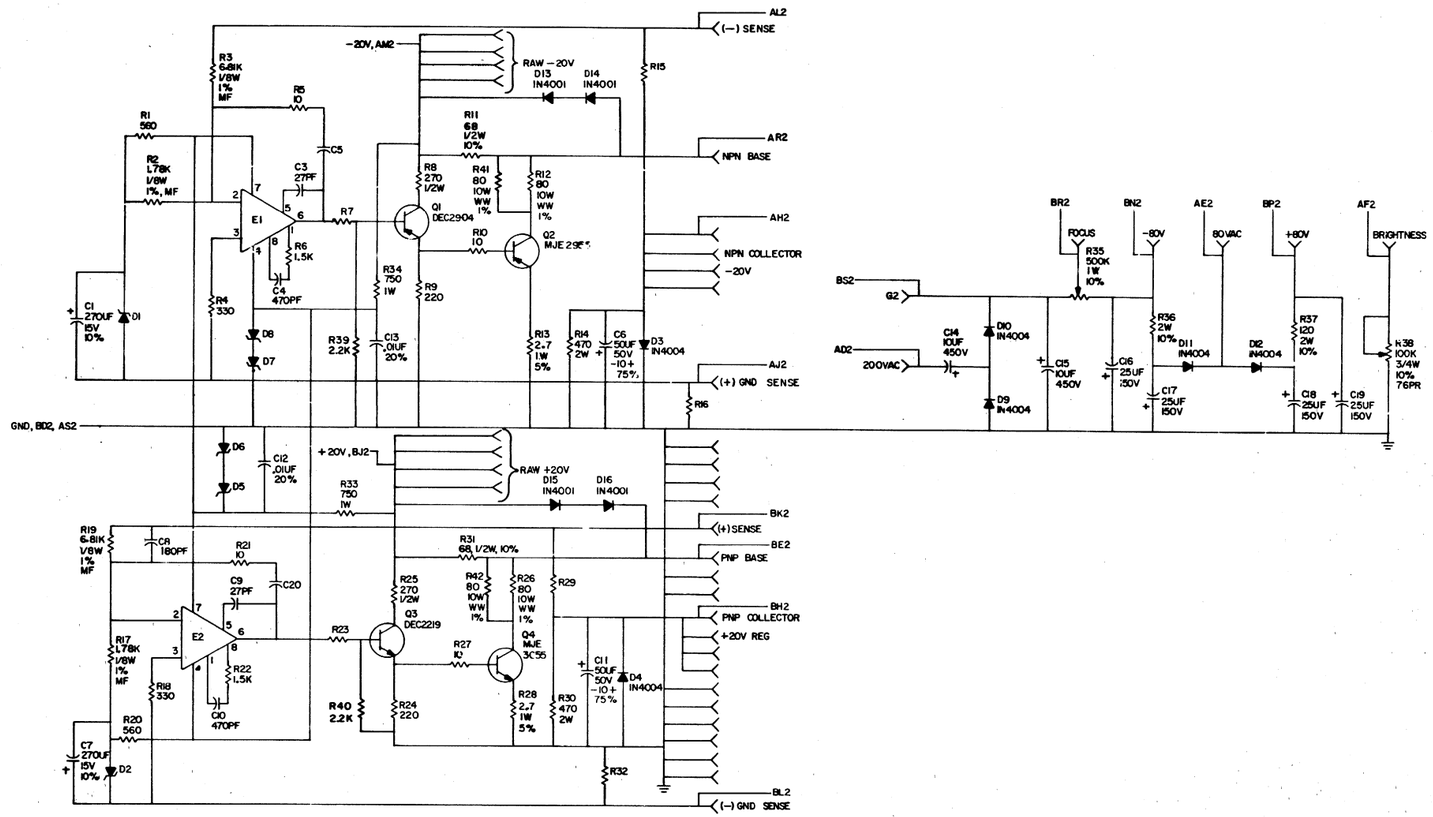
MECHANICAL			DEPT USAGE		
FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C
14.	LIGHT PEN ASSY	C-UA-375-Ø-Ø			
	PHONE JACK CABLE	D-IA-7008433-Ø-Ø			
15.	LIGHT PEN ASSY (375-A)	C-UA-375-A-Ø			
	INFRA-RED LIGHT PEN	5410268			
16.	PANEL, FRONT LIGHT PEN	C-IA-7409068-Ø-Ø			
	SILK SCREEN	B-SS-7409068-Ø-1			
17.	PANEL FRONT LIGHT PEN	C-IA-7409977-Ø-Ø			
	SILK SCREEN	B-SS-7409977-Ø-1			
18.	PANEL FRONT LIGHT PEN	C-IA-7409974-Ø-Ø			
	SILK SCREEN	B-SS-7409974-Ø-1			
19.	SUPER COVER ASS'Y	D-AD-7009027-Ø-Ø			
	SHIM, CHASSIS (R.H.)	C-MD-7409968-0-0			
	SHIM, CHASSIS (L.H.)	C-MB-7409969-0-0			
	COVER PANEL REAR TOP	D-MD-7409965-0-0			
	EXTRUSION ASS'Y LOWER	D-IA-7409972-0-0			
	COVER TOP	E-IA-7409963-0-0			

ELECTRICAL			DEPT USAGE		
FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C

FIRST USED ON OPTION/MODEL: VR14

DRN. D.K CRABBE	DATE 11-3-70	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D. D.K CRABBE	DATE 11-4-70	TITLE DRAWING INDEX LIST
ENG. D.K CRABBE	DATE 11-6-70	
PROJ. ENG. A. FISHMAN	DATE 11-6-70	
PROD. R. PETERSON	DATE 12-8-70	
NEXT HIGHER ASSY D-UA-VR14-Ø-Ø		SIZE D CODE DI NUMBER VR14-0-2 REV. J
SCALE —		
SHEET 2 OF 2		DIST.

REVISIONS: REV | CHANGE NO | CHK



UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1K, 1/4W, 5%
DIODES ARE IN752A, 5.6V
CAPACITORS ARE 1000PF, 100V, 5%
E1, E2 ARE DEC709C
>—• EYELETS

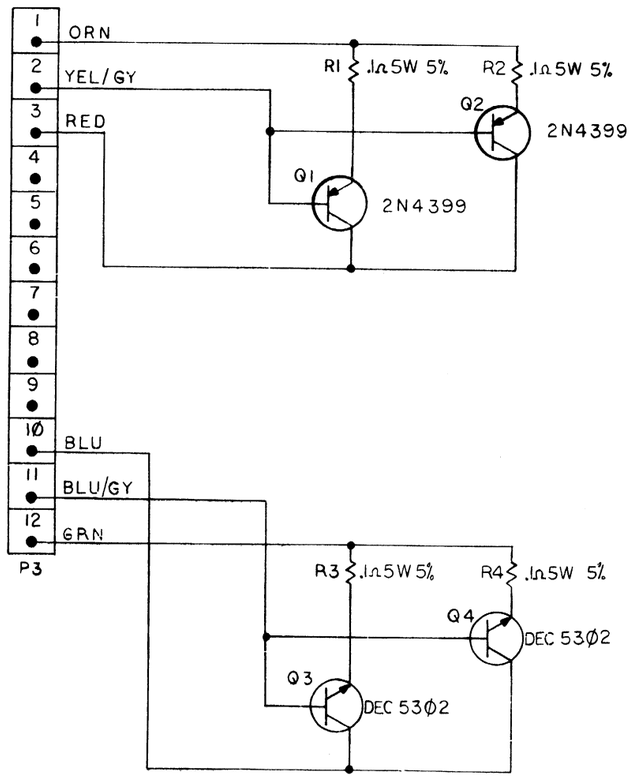
TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	CTC	EIA
IN752A	5.6E	MJE 3055	
2N2904	54E		
2N2904	2N332		
	5		
	2N2219		

DRN Mary Moore 11/22/70
CHK'D
ENG
PROD

TITLE VR-14 POWER SUPPLY AND REGULATOR BD G836
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
SIZE D | CODE CS | NUMBER G836-0-1 | REV E
PRINTED CIRCUIT REV 0

DEC FORM NO. 2008 108

HEAT SINK CONNECTOR
SOCKET HOUSING
DEC 12Ø9351-12



REF DESIGNATION	DESCRIPTION	PART NO.
P3	AMP 12 CIRCUIT	12Ø9351-12
Q1 Q2	TRANSISTOR 2N4399	151Ø362
Q3, Q4.	TRANSISTOR DEC 53Ø2	151Ø196
R1 - R4.	RESISTOR .1Ω 5W 5%	13Ø5872

PARTS LIST

REVISIONS			
REV.	CHANGE NO.	CHK	
A	VR14-00005		A. FISHMAN 4/14/71

FIRST USED ON OPTION MODEL
VR14

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

MATERIAL —//—

FINISH —//—

TRANSISTOR/DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA
DEC 53Ø2	2N 53Ø2		
DEC 379Ø	2N 379Ø		

DRN.		DATE 7/24/70
CHK'D	W.K. Gabbe	DATE 10/16/70
ENG.	W.K. Gabbe	DATE 11/6/70
PROJ. ENG.	C. Fishman	DATE 11-7-70
PROD.	R. Peterson	DATE 11/6/70
NEXT HIGHER ASSY	D-AD-7007080-0-0	
SCALE	—//—	
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

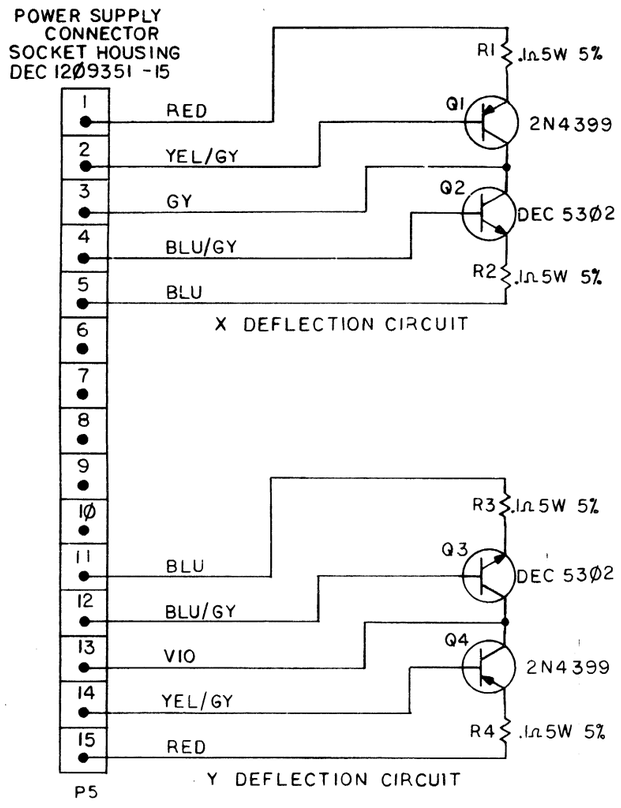
TITLE
CIRCUIT SCHEMATIC
(HEAT SINK)

SIZE	CODE	NUMBER	REV.
C	CS	7007080-0-1	A

DIST.

SIZE C CODE CS NUMBER 7007080-0-1 REV. A

DEC FORM NO. DRC 100



REF DESIGNATION	DESCRIPTION	PART NO.
Q2, Q3.	TRANSITOR DEC 53Ø2	151Ø196
P5	AMP 15-CIRCUIT	12Ø9351-15
Q1, Q4.	TRANSISTOR 2N4399	1510362
R1-R4	RESISTOR .1Ω 5W 5%	13Ø5872

PARTS LIST

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA
DEC 3790	2N 3790		
DEC 5302	2N 5302		

REVISIONS			
REV.	CHANGE NO.	CHK	
A	VR14-00005	A. FISHMAN	4/14/71

FIRST USED ON OPTION/MODEL: VR14

UNLESS OTHERWISE SPECIFIED

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.	L. Morin	DATE 9/24/70
CHK'D.	D.K. Gobbi	DATE 10/16/70
ENG.	D.K. Gobbi	DATE 11/6/70
PROJ. ENG.	C.F. Fishman	DATE 11-6-70
PROD.	R. Peterson	DATE 11/6/70

NEXT HIGHER ASSY: D-AD-7007082-0-0

SCALE —//—

SHEET 1 OF 1

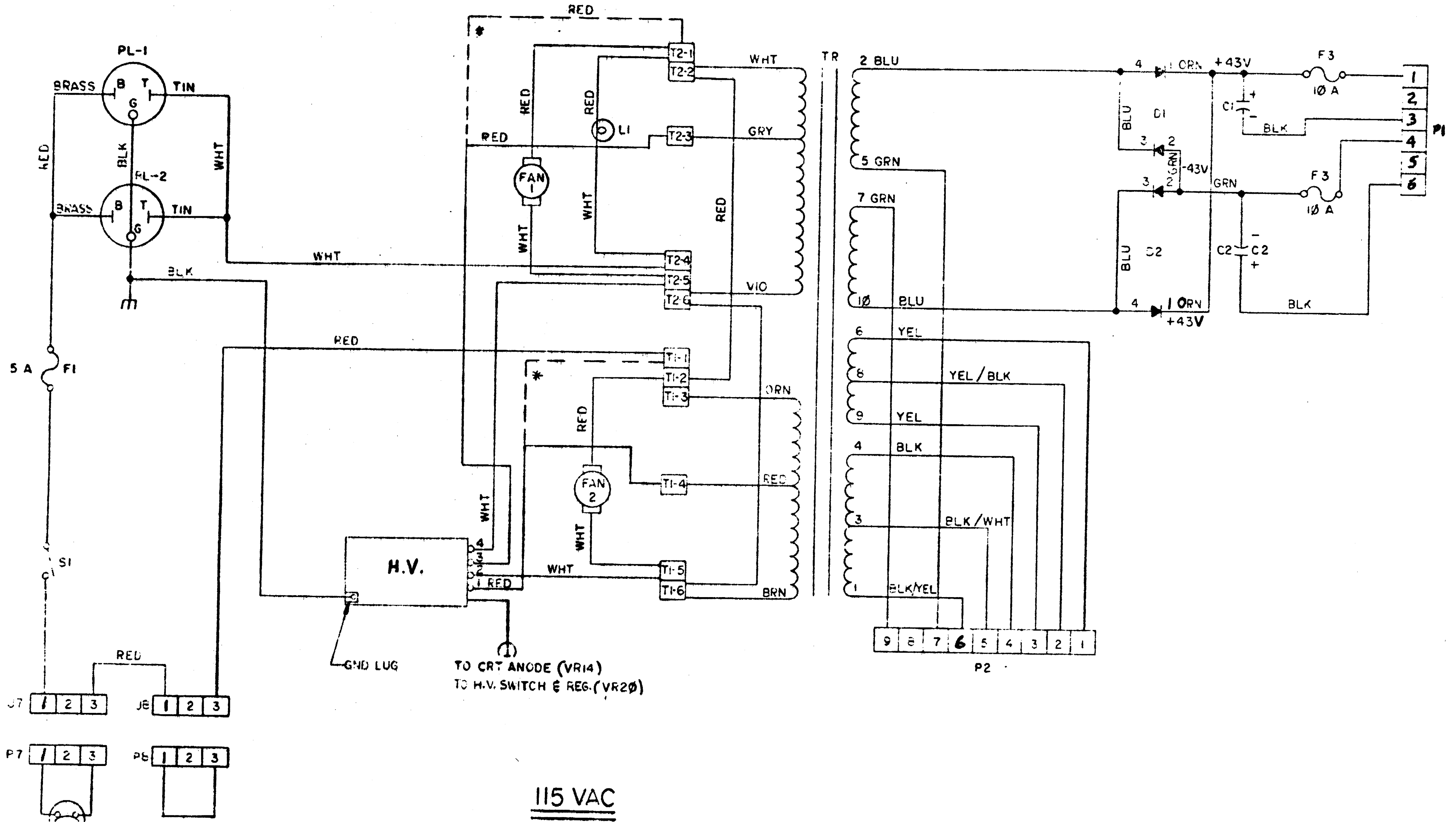
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: CIRCUIT SCHEMATIC (DEFLECTION)

SIZE	CODE	NUMBER	REV.
C	CS	7007082-0-1	A

DIST.

SIZE C CODE CS NUMBER 7007082-0-1 REV. A



* FOR VR2Ø OPERATION:
DELETE T1-4, ADD TO T1-1
DELETE T2-3, ADD TO T2-1

QTY	DESCRIPTION	PART NO.	ITEM NO.
	PWR SUP PARTS LIST	A-PL-7007084-0-0	15
F3	FUSE 1Ø AMP	9ØØ8836	14
F2	FUSE 3 AMP	9ØØ7218	13
F1	FUSE 5 AMP	9ØØ7222	12
TR	TRANSFORMER	1610160-0	11
J7,8	MATE-N-LOCK 3 PIN	120935Ø-3	10
P2	MATE-N-LOCK 9 PIN	12Ø9351-9	9
P1	MATE-N-LOCK 6 PIN	12Ø9351-6	8
C1,C2	CAP. 59ØØ uf AT 75 V	1010143-0	7
PL2	RECEP. AC MALE 160-5 AMPH (115V)	12Ø1252	6
PL1	RECEP. AC FEM 160-4 AMPH (115V)	12Ø1251	5
S1	SWITCH & POT 1ØØK 1/2 W	1310383	4
L1	LIGHT, PILOT 115 VAC	12Ø9348	3
D1,2	RECTIFIER, DM-15	11Ø5799	2
T1,T2	JONES STRIP	9ØØ69Ø4	1

PARTS LIST

FIRST USED ON OPTION/MODEL: VR14

TRANSISTOR & DIODE CONVERSION CHART

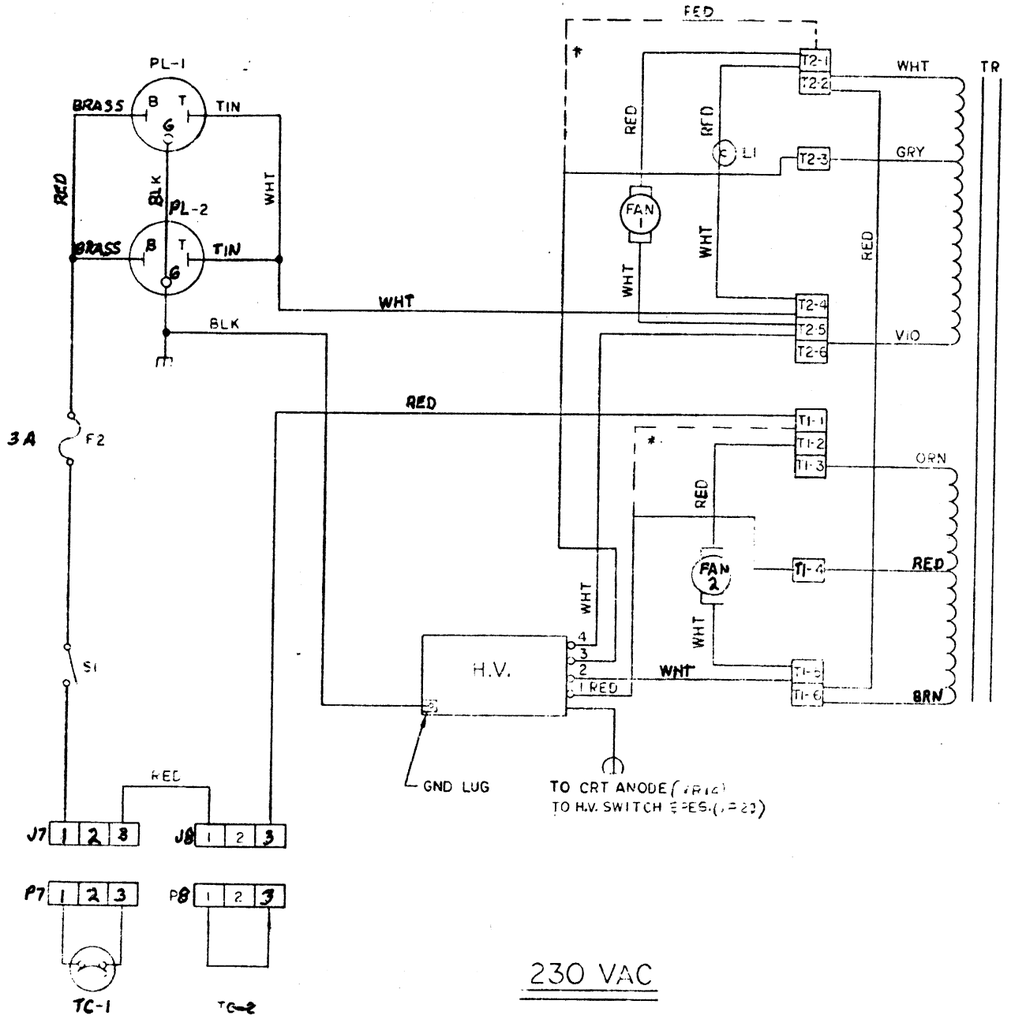
NEXT HIGHER ASSY: D-AD-7007084-0-0

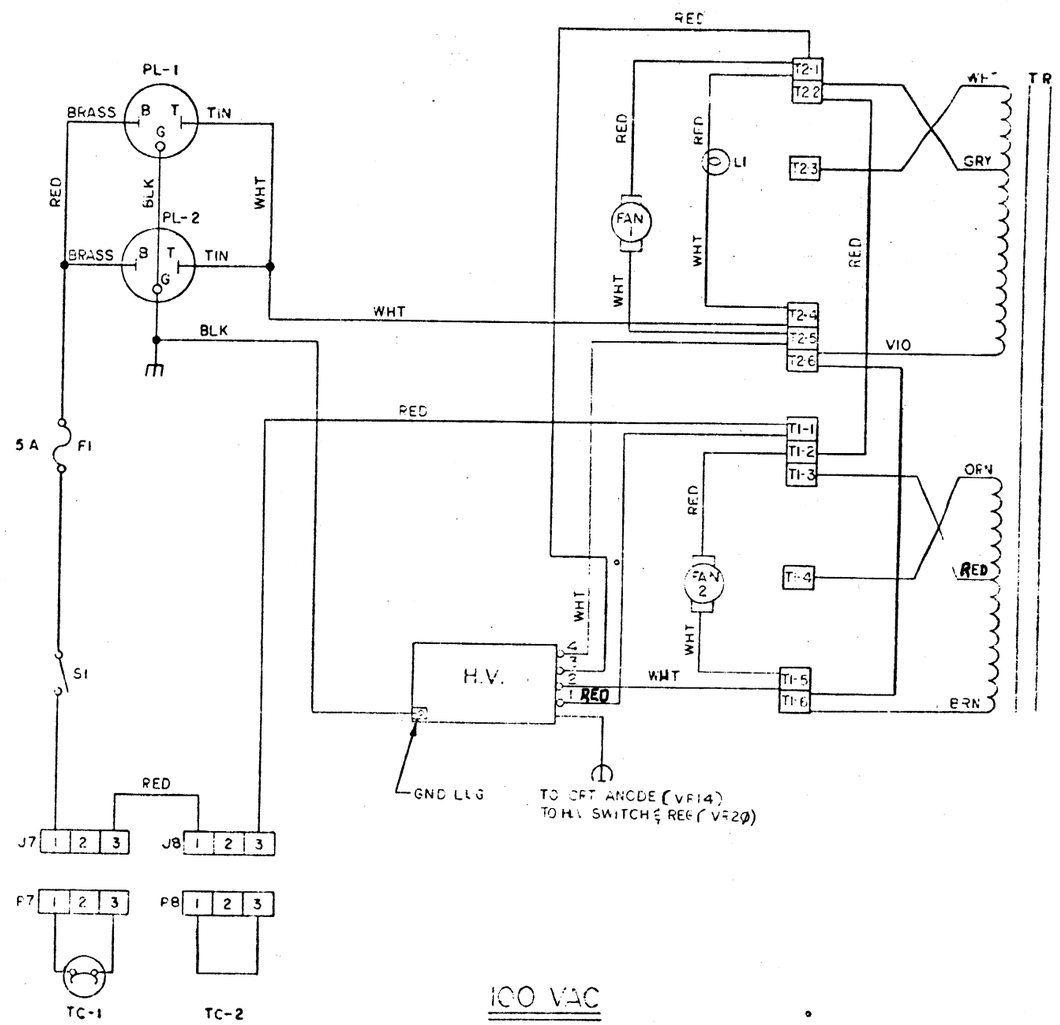
EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

CIRCUIT SCHEMATIC (PWR. SUP.)

NUMBER: D-CS-7007084-0-1
REV: D

VR14-00007 B
A. FISHMAN
VR14-00010 C
FISHMAN
VR14-00015 D
L. GALE





TRANSISTOR & DIODE CONVERSION CHART

QTY.	DESCRIPTION	PART NO.	ITEM NO.

FIRST USED ON OPTION/MODEL: VR14

DO NOT SCALE
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .003 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINISH QUALITY
REMOVE BURRS AND BREAK SHARP

MATERIAL: ++

FINISH: --

NEXT HIGHER ASSY: D-CS-70070-4-0-0

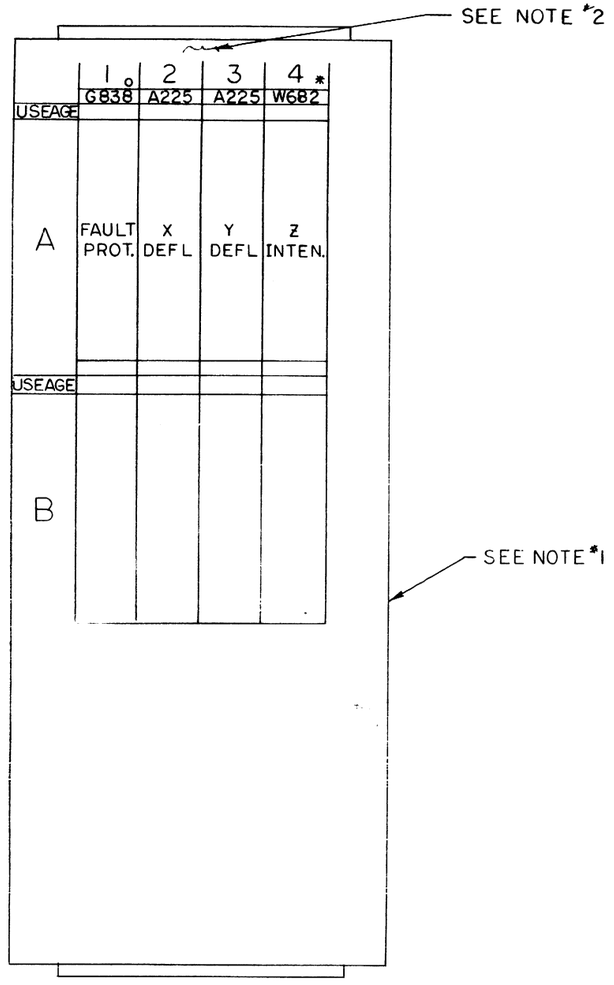
DATE: 2-2

EQUIPMENT CORPORATION

TITLE: CIRCUIT SCHEMATIC (PWR. SUP.)

SIZE D | NUMBER D-CS-70070-4-0-1 | REV D

SCALE: NONE | SHEET 1 OF 1



o G840 LIGHT PEN OPTION
* W684 8 LEVEL INTENSITY OPTION
} (STANDARD ON VR14 LC, LD)

NOTES:
1. MODULE INFORMATION SHOWN FROM WIRING SIDE.
2. A225' ARE REPLACED WITH A225-YB'S ON VR14-LC AND LD

REVISIONS			
CHK	CHANGE NO.	REV.	
PM	VR14-00019	A	Effect 8-1-72 A. FISHMAN
PM	VR14-00022	B	per Form 1-3-73 A. FISHMAN

FIRST USED ON OPTION/MOD	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VR14		PARTS LIST		

UNLESS OTHERWISE SPECIFIED

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. D.K. Gabbe	DATE 9/28/70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. D.K. Gabbe	DATE 9/29/70	
ENG. D.K. Gabbe	DATE 11/6/70	
PROJ. ENG. G. F. Ishman	DATE 11-6-70	
PROD. R. Peterson	DATE 11/6/70	

NEXT HIGHER ASSY
C-MU-VR14-Ø-3

SCALE

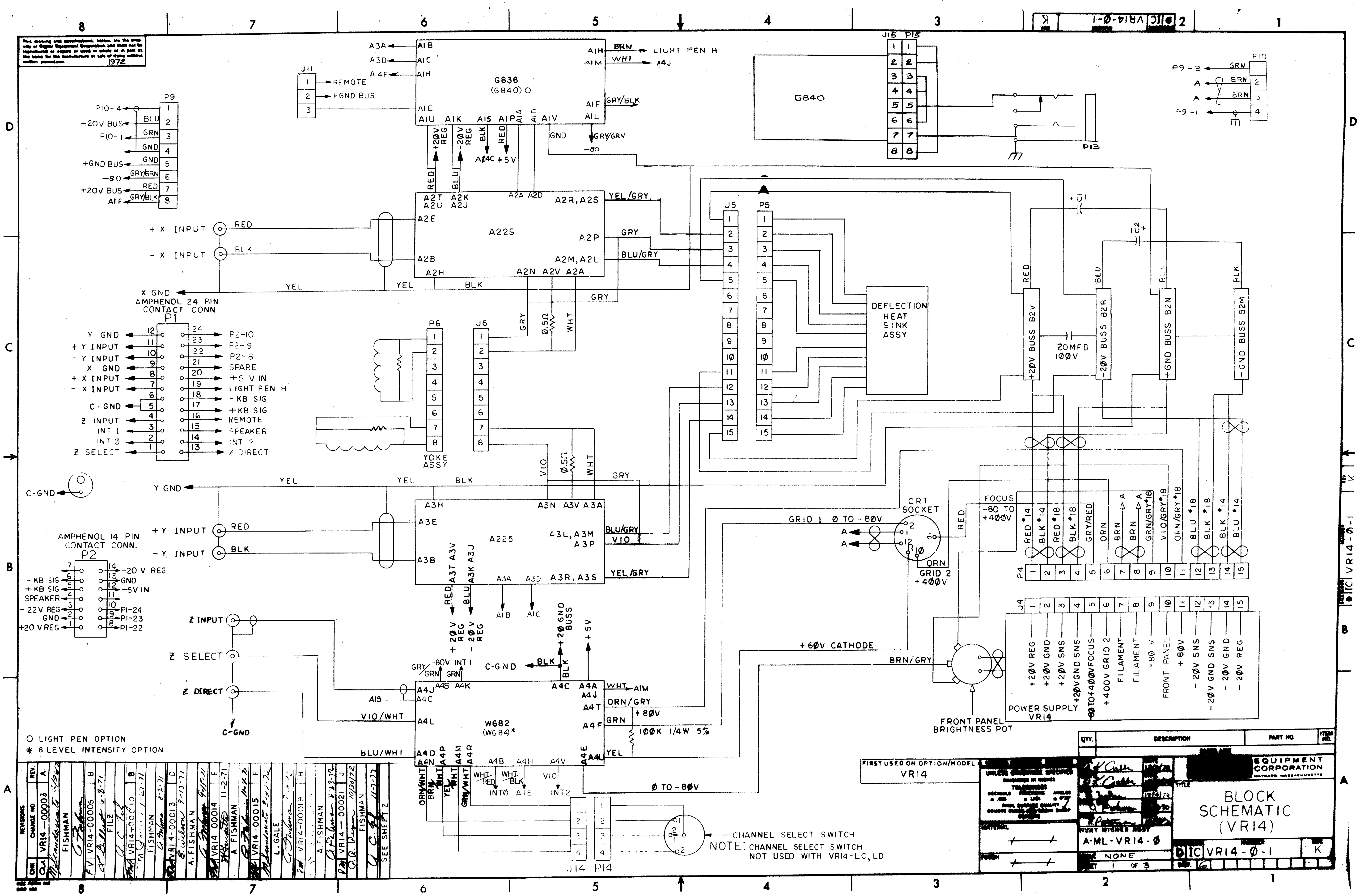
SHEET 1 OF 1

TITLE
MODULE UTILIZATION (VR14)

SIZE	CODE	NUMBER	REV.
C	MU	VR14-Ø-3	B

DIST.

DEC FORM NO. DNC 100



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1972
G838 (G840)
LIGHT PEN H
REMOTE
+GND BUS
G840
J15 P15
P9
P10
P13
A225
YEL/GRY
GRY
BLU/GRY
+ X INPUT
- X INPUT
X GND
AMPHENOL 24 PIN CONTACT CONN
P1
Y GND
+ Y INPUT
- Y INPUT
X GND
+ X INPUT
- X INPUT
C - GND
Z INPUT
INT 1
INT 0
Z SELECT
P2-10
P2-9
P2-8
SPARE
+5 V IN
LIGHT PEN H
- KB SIG
+KB SIG
REMOTE
SPEAKER
INT 2
Z DIRECT
P6
J6
YOKE ASSY
J5
P5
DEFLECTION HEAT SINK ASSY
+20V BUSS B2V
-20V BUSS B2R
+GND BUSS B2N
-GND BUSS B2M
20MFD 100V
AMPHENOL 14 PIN CONTACT CONN.
P2
-20 V REG
+5V IN
- KB SIG
+ KB SIG
SPEAKER
- 22V REG
GND
+20 V REG
+ Y INPUT
- Y INPUT
A3L, A3M
A3P
YEL/GRY
CRT SOCKET
FOCUS
-80 TO +400V
GRID 1 Ø TO -80V
GRID 2 +400V
+ 60V CATHODE
BRN/GRY
FRONT PANEL BRIGHTNESS POT
P4
J4
+20V REG
+20V GND
+20V SNS
+20VGND SNS
80 TO +400V FOCUS
+400V GRID 2
FILAMENT
-80 V
FRONT PANEL
+ 80V
- 20V SNS
- 20V GND SNS
- 20V GND
- 20V REG
POWER SUPPLY VR14
Z INPUT
Z SELECT
Z DIRECT
C-GND
W682 (W684)*
100K 1/4W 5%
Ø TO -80V
J14
P14
CHANNEL SELECT SWITCH
NOTE: CHANNEL SELECT SWITCH NOT USED WITH VR14-LC, LD
O LIGHT PEN OPTION
* 8 LEVEL INTENSITY OPTION
REVISIONS
VR14-00003
VR14-00005
VR14-00010
VR14-00013
VR14-00014
VR14-00015
VR14-00019
VR14-00021
SEE SHEET 2
FISHMAN
FILZ
A. FISHMAN
L. GALE
FIRST USED ON OPTION/MODEL
VR14
A-ML-VR14-Ø
NONE
1 OF 3
[redacted] EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
BLOCK SCHEMATIC (VR14)
D IC VR14-Ø-1
K

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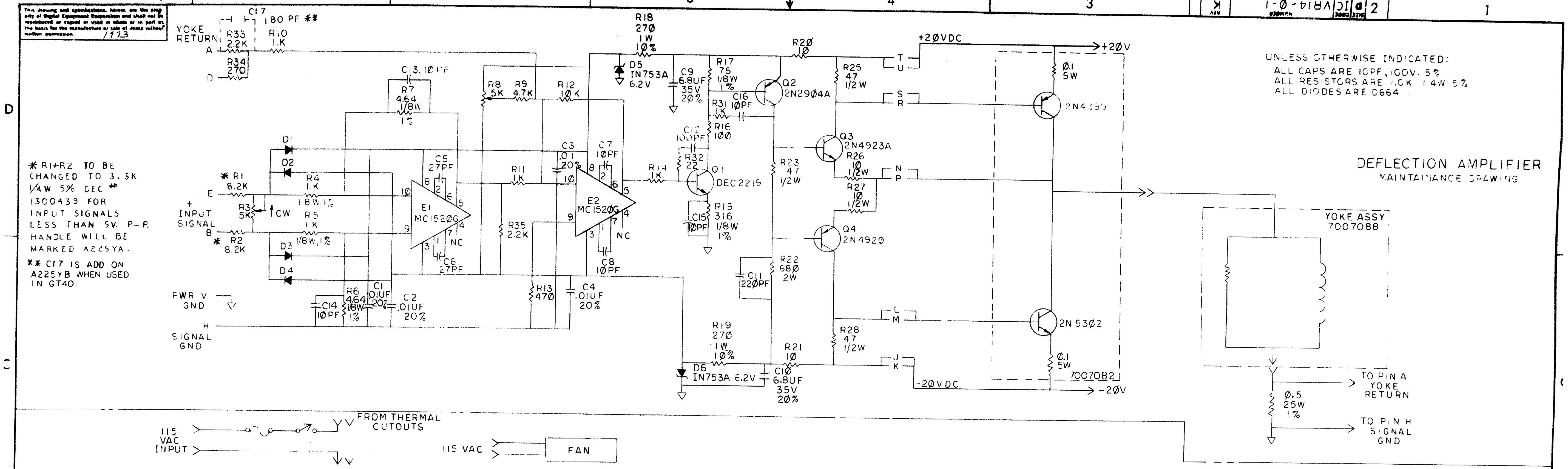
UNLESS OTHERWISE INDICATED:
ALL CAPS ARE 10PF, 100V, 5%
ALL RESISTORS ARE 1.0K 1/4W, 5%
ALL DIODES ARE D664

*R1+R2 TO BE CHANGED TO 3.3K 1/4W 5% DEC # 1300439 FOR INPUT SIGNALS LESS THAN 5V. P-P. HANDLE WILL BE MARKED A225YA.

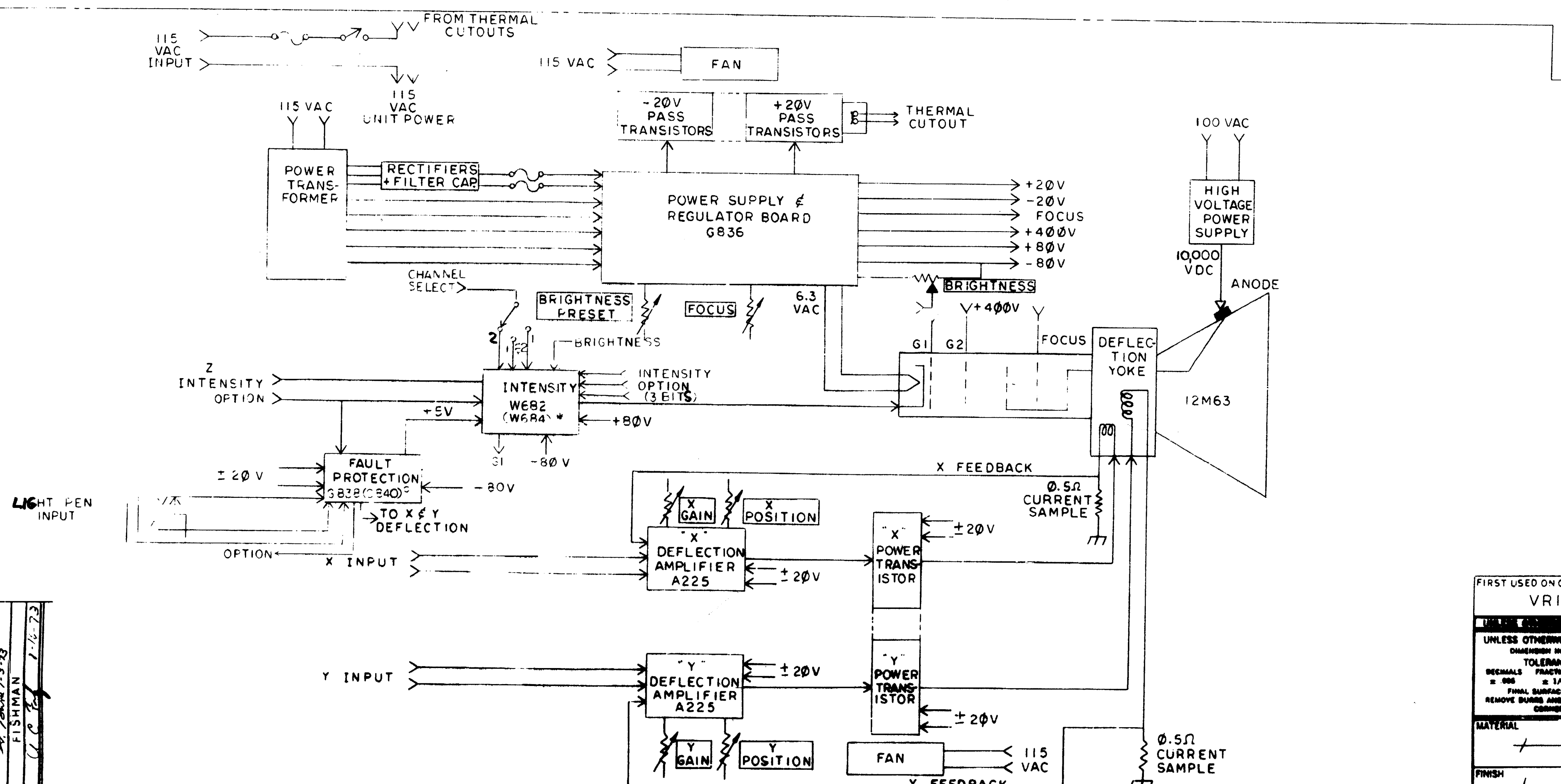
** C17 IS ADD ON A225YB WHEN USED IN GT40.



VR14 FUNCTIONAL BLOCK DIAGRAM
MAINTAINANCE DRAWING

* 8 LEVEL INTENSITY CONTROL OPTION.

○ LIGHT PEN OPTION



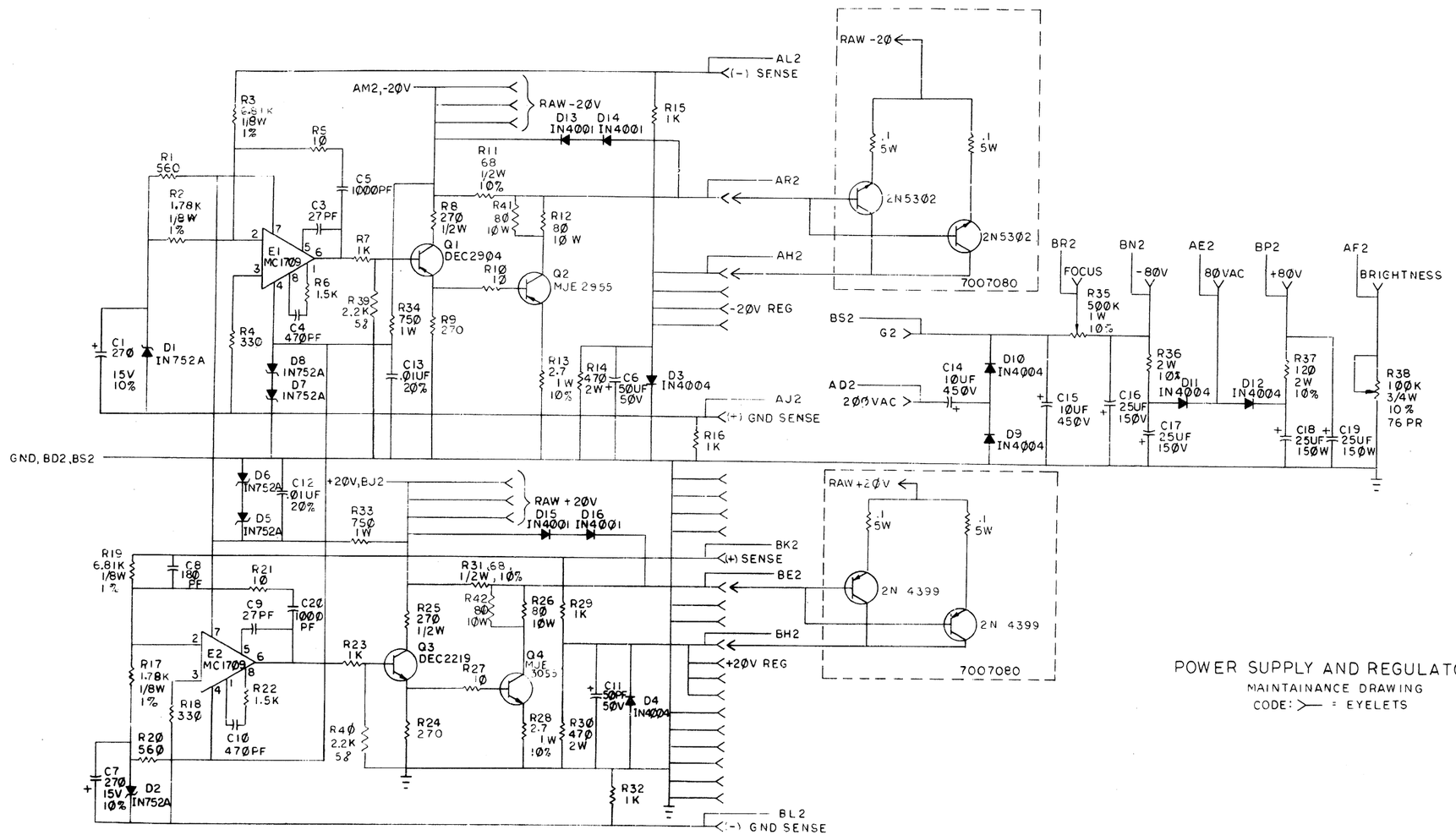
REV	CHANGE NO	DATE
K	VR14-00022	1-4-73

FIRST USED ON OPTION/MOD	VR14
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES	TOLERANCES
DRN	D. K. Crabbe 11/25/70
CHKD	D. K. Crabbe 12/3/70
ENG	12-4-70
PROJ ENG	12-8-70
PROD	R. Peterson 12/8/70
NEXT HIGHER ASSY	A-ML-VR14-0
SCALE	NONE
SHEET	2 OF 3

[redacted] EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: BLOCK SCHEMATIC (VR14)

SIZE	CODE	NUMBER	REV
D	IC	VR14-0-1	K



POWER SUPPLY AND REGULATOR
MAINTAINANCE DRAWING
CODE: >— = EYELETS

REVISIONS	REV.	CHANGE NO	CHK

FIRST USED ON OPTION/MCO.	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VR14				

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES
TOLERANCES
DECIMALS ± .000 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINISH, SURFACE QUALITY, REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —

FINISH —

	NAME	DATE
DRAWN	[redacted]	12/11/70
CHECKED	[redacted]	12/15/70
ENGR	[redacted]	12-23-70
MFG	[redacted]	1-5-71
QA	[redacted]	1/9/71

NEXT HIGHER ASSY
A-ML-VR14-0

NONE

[redacted] EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
BLOCK SCHEMATIC (VR14)

SIZE	CODE	NUMBER	REV.
D	IC	VR14-0-1	K

SHEET 1 OF 3

DIC VR14-0-1 K

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

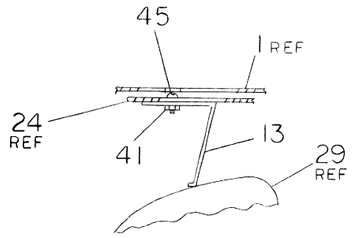
MADE BY D.K. Crabbe	CHECKED D.K. Crabbe	SECTION
DATE 9/28/70	DATE 10/8/70	1
ENG D.K. Crabbe	PROD R Peterson	ISSUED SECT.
DATE 11/6/70	DATE 11/6/70	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION VR14-Ø	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-IC	VR14-ID				
	A225	Deflection Amplifier	2	2	2	2	2	2						
	W682	Intensity Amplifier	1	1	1	1	1	1	-	-				
	G838	Fault Protection	1	1	1	1	1	1	-	-				
	G840	LIGHT PEN	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R				
	W684	8 LEVEL INTENSITY	A/R	A/R	A/R	A/R	A/R	A/R	1	1				
	A225-YB	DEFLECTION AMPLIFIER	-	-	-	-	-	-	2	2				

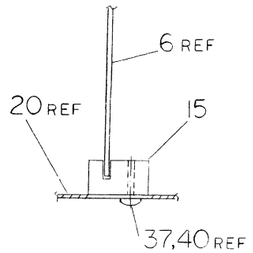
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE UTILIZATION LIST	A-MU-VR14-Ø-3	A	PL	VR14-Ø-3	B	VR14-00022
	SHEET 1 OF 1	DIST.				

DEC FORM NO.16-1031
DRA 110

LEGEND	
NO.	VARIATION
VR14-Ø	115 VAC 50/60 HZ
VR14-A	230 VAC 50/60 HZ
VR14-B	100 VAC 50/60 HZ
VR14-C	115 VAC 50/60 HZ SUPER COVER
VR14-D	230 VAC 50/60 HZ SUPER COVER
VR14-E	100 VAC 50/60 HZ SUPER COVER
VR14-LC	115 VAC 50/60 HZ MODIFIED FOR GT 40
VR14-LD	230 VAC 50/60 HZ MODIFIED FOR GT 40



SECTION "A-A"



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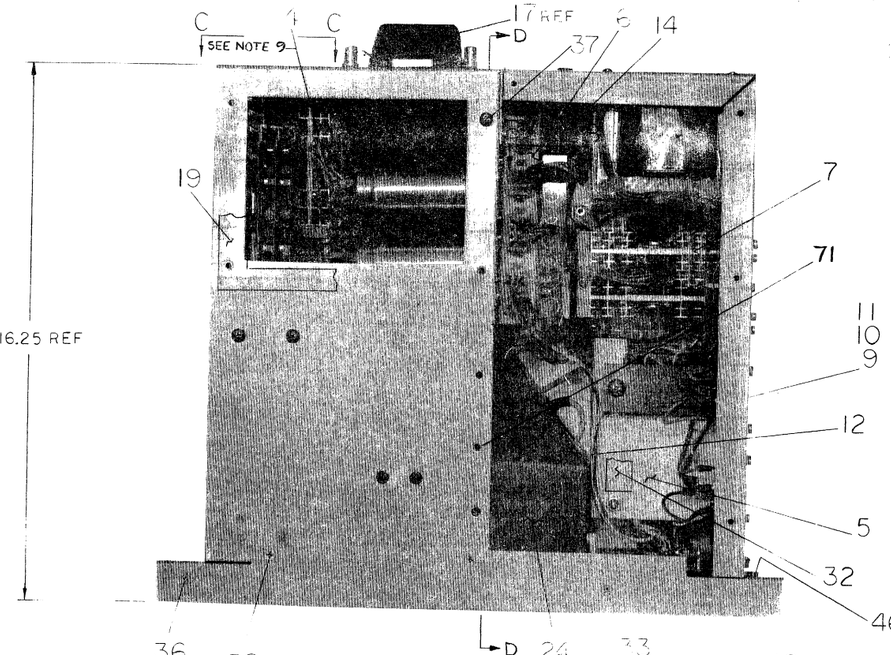
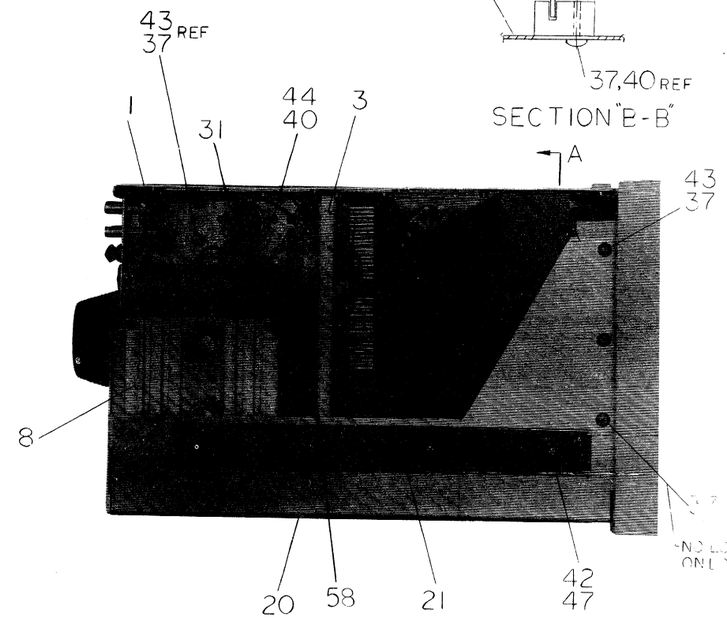
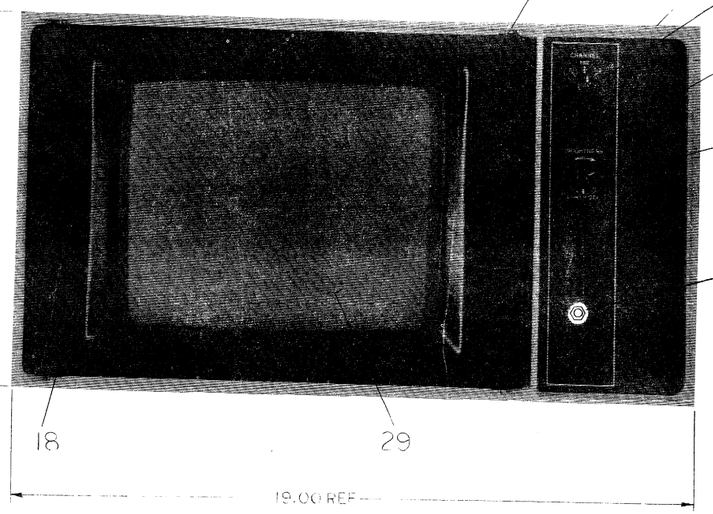






NOTES:

1. FOR DWG INDEX LIST REFER TO D-DI-VR14-Ø-2.
2. REMOVE ITEM #52 (WASHER) AFTER SHIPPING.
3. BEFORE MOUNTING CHASSIS TRACKS (ITEM #21) DRILL OUT BEAD OF METAL AT ONE END OF MIDDLE RUNNER ON BOTH TRACKS. USE 1/8 DRILL.
4. PLACE SHRINKIES, ITEM #55 ON POT-A, POT-B, & POT-C.
5. W684 USED WITH VR14-LC, LD.
6. G840 LIGHT PEN OPTION.
7. WHEN KEYBOARD IS CONNECTED THERE IS + AND -22 VOLTS ON PIN 22+24 ON INPUT CONNECTOR.
8. CONNECT BLK WIRE ITEM #67 WITH ITEM #'S 68, 69 & 55 FROM TOP SCREW OF CONTROL PANEL TO GND LUG ON HI VOLTAGE SUPPLY ONLY ON C, D, E, LC & LD SYSTEMS.
9. FOR VR14'S LC & LD ROTATE YOKE (SYNTRONIC) SO THAT POINTS 3 & 4 ON YOKE ARE LOCATED ON TOP.

REVISIONS			
CHK	CHANGE NO.	REV.	
G. Gale	VR14-00003	A	
FISHMAN			
G. Fabian	VR14-00009	B	
FISHMAN			
G. Fabian	VR14-0001C	C	
FISHMAN			
G. Fabian	VR14-00013	D	
A. FISHMAN			
G. Fabian	VR14-0001S	E	
L GALE			
G. Fabian	VTR14-0001S	F	
A. FISHMAN			
G. Fabian	VR14-00021	H	
FISHMAN			
G. Fabian	VR14-00022	J	
FISHMAN			

DEC FORM NO. F 100

FIRST USED ON OPTION/MODEL: VR14

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

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DRN. G. Gale	DATE 12/5/70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. G. Gale	DATE 12/8/70	
ENG. G. Gale	DATE 12/6/70	TITLE: VR14 DISPLAY ASSY
PROJ. ENG. G. Fabian	DATE 12-8-70	
PROD. R. Peterson	DATE 12/9/70	

NEXT HIGHER ASSY: A-ML-VR14-Ø

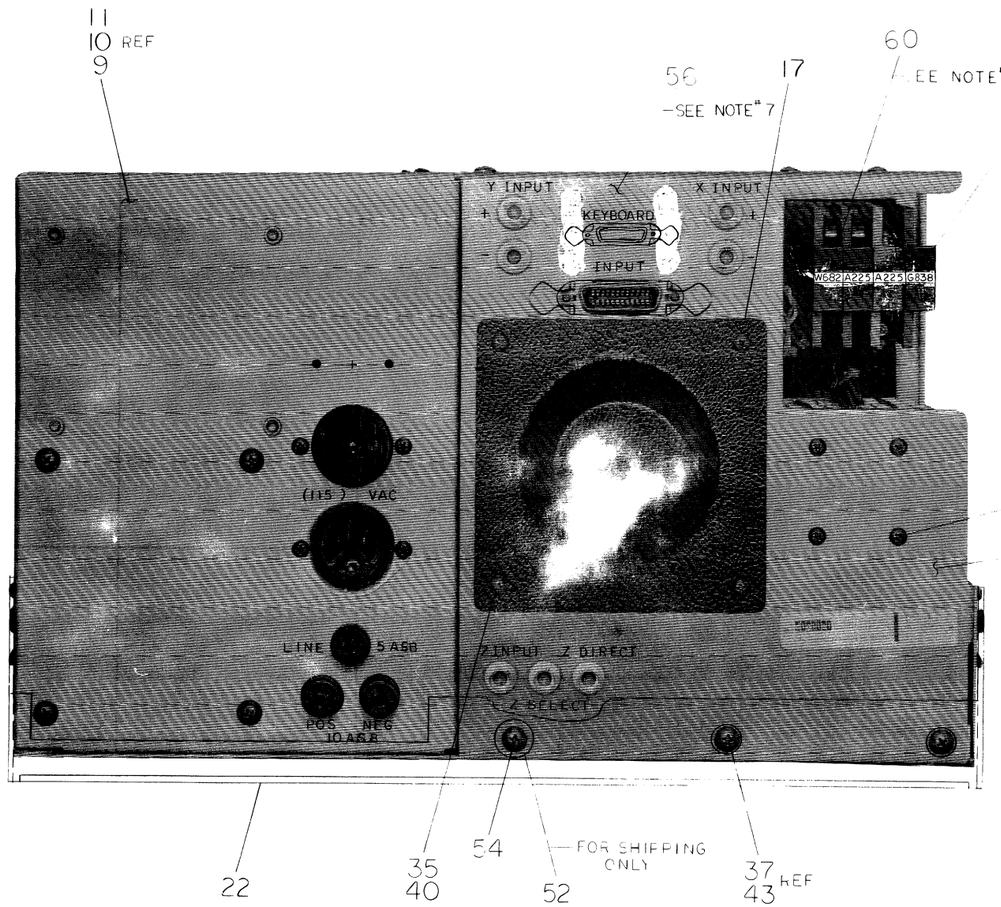
SCALE: NONE

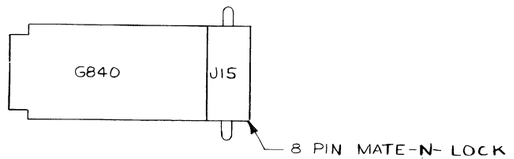
SHEET 1 OF 4

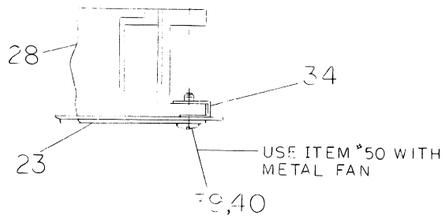
SIZE	CODE	NUMBER	REV.
D	UA	VR14-C-Ø	J

DIST.

SIZE	CODE	NUMBER	REV.
D	UA	VR14-Ø-Ø	J







SECTION 'C-C'

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: VR14

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. O.K. Crabb	DATE 12/8/70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. K.K. Chin	DATE 12/8/70	
ENG. K.K. Chin	DATE 12/8/70	TITLE: VR14 DISPLAY ASSY
PROJ. ENG. L. Fortman	DATE 12-7-70	
PROD. [illegible]	DATE 12-17-70	

NEXT HIGHER ASSY: A-ML-VR14-Ø

SCALE NONE

SIZE D | CODE UA | NUMBER VR14-Ø-Ø | REV J

SHEET 2 OF 4

DIST.

REVISIONS | CHANGE NO. | CHK

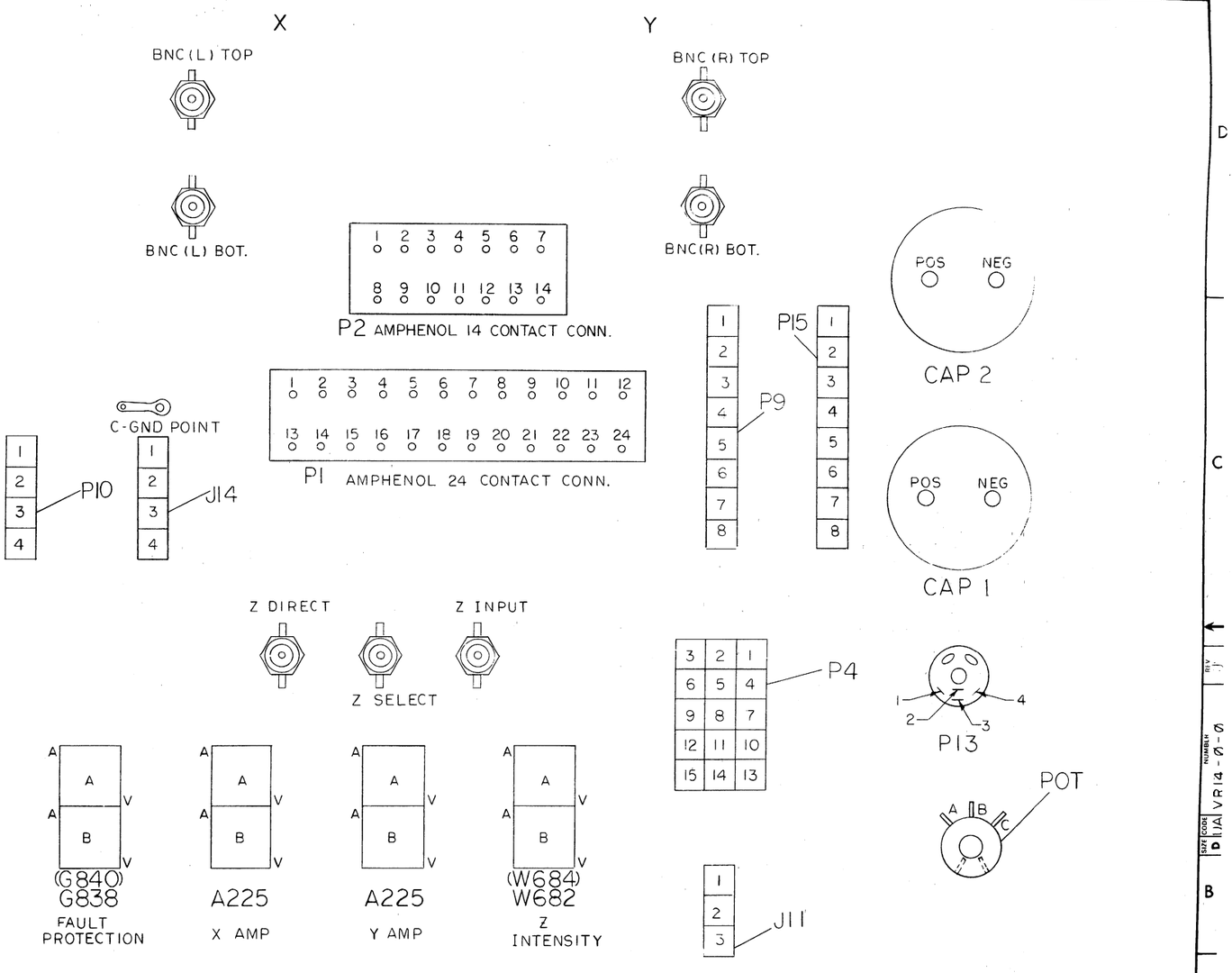
DEC FORM NO. E 100

HARNESS TABLE

COLOR	HARN.#	MAIN CHASSIS LOC.
RED	1	BNC (L) TOP
BLK	2	BNC (L) BOT
YEL	3	BNC (L) TOP GND
RED	4	BNC (R) TOP
BLK	5	BNC (R) BOT
YEL	6	BNC (R) TOP GND
WHT/BLU	7	AØ4C
BLK	8	AC4C
WHT/BLU	10	AZ4D
WHT/VIO	11	AØ4L
CLEAR	12	AØ4J
WHT/VIO	13	AØ4L
ORN	14	BØ4C
RED	15	BØ4J
BRN	16	BØ4A
BRN	17	BØ4B
BRN	18	BØ4A
BRN	19	BØ4B
BRN	20	BØ4A
BRN	21	BZ4B
BLK	22	BØ4N
GRN	23	BZ4F
YEL	24	BØ4L
ORN	25	BZ4D
BLU	26	BØ3R
BLK	27	BØ1M
BLU	28	BØ4R
BLK	29	EØ3M
RED	30	BØ4E
GRY/RED	31	BØ4J
BLK	32	BØ2M
BLU	33	EØ3R
RED	34	BØ3V
BLK	35	EØ1M
BLK	36	BØ4M
RED	37	BØ4V
GRY/BLK	38	AØ1F
GRY/GRN	39	AØ1L
WHT/BLK	40	AØ1E
GRY/GRN	56	POT-A
GRY/GRN	57	POT-A
GRY/GRN	58	POT-A
GRY/VIO	59	POT-C
GRY/BRN	60	POT-B
WHT/GRN	81	AØ4R
WHT/BRN	82	AØ4P
WHT/YEL	83	AØ4M
WHT/ORN	84	AØ4N
GRY/BRN	85	AØ4E
BLK	86	BØ4M
RED	87	EØ3V

HARNESS TABLE CONT

COLOR	HARN.#	MAIN CHASSIS LOC.
BLK	88	BØ1N
BLU	89	BØ4R
GRY/ORN	90	AC4T
RED	91	AV2E
BLK	92	AC2B
YEL	93	AC2H
RED	94	AC3E
BLK	95	AØ3B
YEL	96	AØ3H
BLK	97	CAP1-NEG
RED	98	CAP1-POS
BLK	99	CAP2-POS
BLU	100	CAP2-NEG
BLK	101	C-GND POINT
WHT/VIO	102	P1-1
CLEAR	103	P1-4
BLU	104	P1-16
WHT/BLU	105	P1-13
BLK	106	C-GND POINT
CLEAR	107A	Z INPUT
WHT/VIO	108	Z SELECT
BLK	109	Z **INPUT GND**
WHT/BLU	110	Z **DIRECT**
CLEAR	107C	Z INPUT
SHIELD	107B	Z INPUT GND
SHIELD	102D	C-GND POINT
SHIELD	107	Z INPUT GND
SHIELD	11A	AØ4C
WHT/RED	105C	P1-2
WHT/RED	6A	AØ4B
GRN	105B	P1-3
GRN	10A	AØ4K
VIO	105A	P1-14
VIO	13A	AØ4V
BRN	102A	P1-19
BRN	96A	AØ1H
BLU	101C	P2-3
BLU	96F	CAP2-NEG
BLK	101B	P2-2
BLK	96D	CAP2-POS
RED	101A	P2-1
RED	96B	CAP1-POS
BLU	102C	P2-14
BLU	96E	CAP2-NEG
BLK	102B	P2-13
BLK	96C	CAP2-POS



NOTE: ALL ABOVE PARTS SHOWN ARE VIEWED FROM WIRING SIDE. P15 PLUGS NTO J15 ON G840.

REVISIONS	REV	CHANGE NO.	CHK

FIRST USED ON OPTION/MOD: VR14

UNLESS OTHERWISE SPECIFIED

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

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DRN. K Crabbe	DATE 11/5/70	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHKD. K Crabbe	DATE 11/25/70	
ENG. K Crabbe	DATE 12/8/70	
PROJ. ENG.	DATE	
PROD. R Peters	DATE 12/8/70	

NEXT HIGHER ASSY: D-UA-VR14-Ø-Ø

SCALE NONE

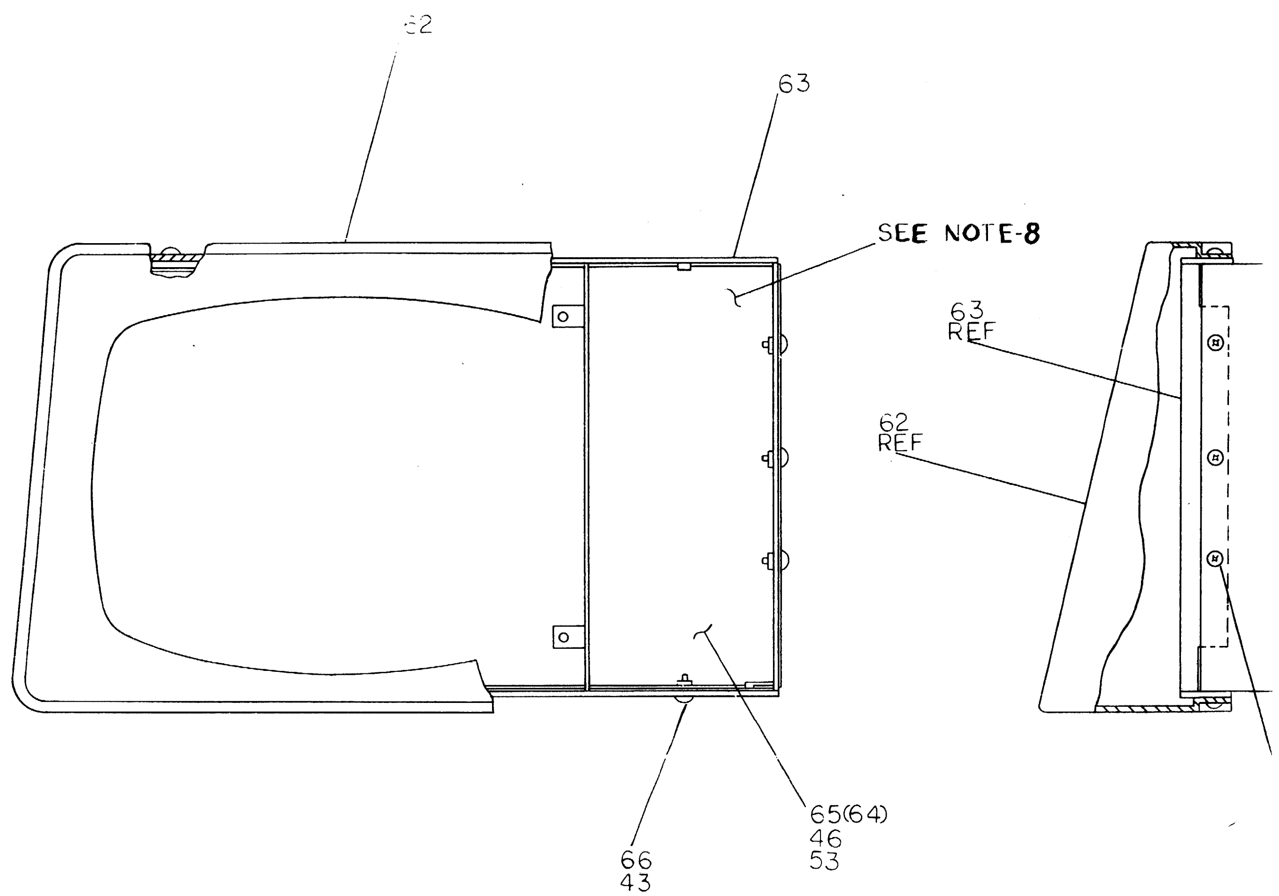
SHEET 3 OF 3

TITLE: VR14 DISPLAY ASSY

SIZE	CODE	NUMBER	REV.
D	UA	VR14-Ø-Ø	J

DIST. C

DEC FORM NO DRD 100



SECTION "D-D"

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	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

		DATE
DRN	C.B. McCoy	10-16-72
CHK'D		10-18-72
ENG		10-18-72
PROJ. ENG		10-18-72
PROD		10/31/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE VR14 DISPLAY ASSY

NEXT HIGHER ASSY: A-ML-VR14-Ø

SIZE	CODE	NUMBER	REV.
D	UA	VR14-0-Ø	J

SCALE NONE

SHEET 4 OF 4

DIST

REVISIONS | REV | CHANGE NO | CHK

BRUNING 40-107 15968

DEC FORM NO DRD 100-A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D.K. CRABBE	CHECKED D.K. Crabbe	SECTION 1
DATE 12-2-70	DATE 12/8/70	
ENG D.K. Crabbe	PROD R Peterson	ISSUED SECT. 1
DATE 12/8/70	DATE 12/8/70	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION VR14-Ø	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-LC	VR14-LD
1	D-AD-7007077-0-0	TOP MTG ASSY	1	1	1	1	1	1	1	1
2	C-IA-7409068-0-0	PANEL, CONTROL	1	1	1	-	-	-	-	-
3	D-AD-7007078-0-0	WIRED ASSY	1	1	1	1	1	1	1	1
4	D-IA-7007088-0-0	C.R.T. YOKE ASSY	1	1	1	1	1	1	1	1
5	D-AD-7007079-0-0	HIGH VOLTAGE ASSY	1	1	1	1	1	1	1	1
6	D-AD-7007165-0-0	POWER REGULATOR ASSY (VR14)	1	1	1	1	1	1	1	1
7	D-AD-7007080-0-0	POWER SUPPLY HEAT SINK ASSY	1	1	1	1	1	1	1	1
8	D-AD-7007082-0-0	DEFLECTION HEAT SINK ASSY	1	1	1	1	1	1	1	1
9	D-AD-7007084-1-0	POWER SUPPLY ASSY	1	-	-	1	-	-	1	-
10	D-AD-7007084-2-0	POWER SUPPLY ASSY	-	1	-	-	1	-	-	1
11	D-AD-7007084-3-0	POWER SUPPLY ASSY	-	-	1	-	-	1	-	-
12	E-IA-7008457-0-0	MAIN CHASSIS HARNESS	1	1	1	1	1	1	1	1
13	C-IA-7408411-0-0	GROUND, TUBE	1	1	1	1	1	1	1	1
14	C-IA-7408409-0-0	SHIELD, SAFETY	1	1	1	1	1	1	1	1
15	C-MD-7408414-0-0	HOLDER, CARD	1	1	1	1	1	1	1	1
16	E-IA-7406891-0-0	BEZEL, CONTROL PANEL	1	1	1	1	1	1	1	1
17	C-MD-7408434-0-0	CAP (VR14)	1	1	1	1	1	1	1	1
18	D-MD-7406837-0-0	MASK, CATHODE RAY TUBE	1	1	1	-	-	-	-	-
19	D-IA-7408408-0-0	SCREEN, SAFETY (VR14)	1	1	1	1	1	1	1	1
20	D-IA-7408400-0-0	PLATE, BOTTOM MTG.	1	1	1	1	1	1	1	1
21	D-SC-1209147-0-0	SLIDE, 16" TRAVEL CHASSIS TRACK	1 pr	1 pr	1 pr	-	-	-	-	-
22	D-MD-7408549-0-0	CHASSIS TRACK BRACE	1	1	1	-	-	-	-	-

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
VR14 DISPLAY ASSY	D-UA-VR14-Ø-Ø	A	PL	VR14-Ø-Ø	J	VR14-00022
	SHEET 1 OF 4	DIST. G				

DEC FORM NO 16-1031

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. CRABBE	CHECKED D.K. Crabbe	SECTION 1
DATE 12-2-70	DATE 12/8/70	
ENG D.K. Crabbe	PROD R Peterson	ISSUED SECT. 1
DATE 12/8/70	DATE 12/8/70	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION VR14-Ø	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-LC	VR14-LD
23	C-MD-7404881-0-0	FAN, SCREEN	2	2	2	2	2	2	2	2
24	E-SC-1210104-0-0	C.R.T. SHIELD	1	1	1	1	1	1	2	2
~~25~~	~~D-IA-7407791-0-0~~	~~SUPER COVER VR14~~				1	1	1		
~~26~~	~~B-MD-7407793-0-0~~	~~SPACER~~				1	1	1		
~~27~~	~~B-MD-7407794-0-0~~	~~BAR, SPACER~~				1	1	1		
28	1209403-0	FAN, BOXER 7, BLADE	2	2	2	2	2	2	2	2
29	1209597-6	CATHODE RAY TUBE TYPE 12 M63 THOMAS	1	1	1	1	1	1	1	1
30	1209576	KNOB # SS-70L-2-BLK BUCKEYE	1	1	1	1	1	1	1	1
31	1009434	CAPACITOR, 5500 MFD 40 VDC-10, +100%	2	2	2	2	2	2	2	2
32	3610267	"DANGER HIGH VOLTAGE" STICKER	1	1	1	1	1	1	1	1
33	9006584	SPEED NUT #C8091-6-32-4 TINNERMAN	4	4	4	4	4	4	4	4
34	9008202	CLIP, FAN TINNERMAN	8	8	8	8	8	8	8	8
35	9006022-1	SCR, FAN HD PHL #6-32 X 3/8 SST	4	4	4	4	4	4	4	4
36	9006024-2	SCR, FLAT HD PHL #6-32 X ½ SST	4	4	4	4	4	4	4	4
37	9006071-3	SCR, PHL TRUSS HD #10-32 X 3/8 SST	49	49	49	49	49	49	49	49
38	9006071-2	SCR, PHL FLAT HD #10-32 X 3/8 SST	5	5	5	5	5	5	5	5
39	9006024-1	SCR, PAN HD PHL #6-32 X ½ SST	8	8	8	8	8	8	8	8
40	9006633	WASHER, LOCK INT TOOTH #6	26	26	26	26	26	26	26	26
41	9006560	NUT, KEPS #6-32	5	5	5	5	5	5	5	5
42	9006070-1	SCR, PHL TRUSS HD #10-32 X 5/16 SST	10	10	10	2	2	2	2	2
43	9006635	WASHER, LOCK INT TOOTH #10	61	61	61	61	61	61	61	61
44	9006020-1	SCR, PHL PAN HD #6-32 X ¼ SST	4	4	4	4	4	4	4	4

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
VR14 DISPLAY ASSY.	D-UA-VR14-Ø-Ø	A	PL	VR14-Ø-Ø	J	
	SHEET 2 OF 4	DIST. G				

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. CRABBE	CHECKED D. CRABBE	SECTION
DATE 12-2-70	DATE 12-8-70	1
ENG D. CRABBE	PROD R. PETERSON	ISSUED SECT.
DATE 12-8-70	DATE 12-8-70	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION VR14-Ø	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-LC	VR14-LD
45	9006021-1	SCR, PHL PAN HD #6-32 X 5/16 SST	10	10	10	10	10	10	10	10
46	9006563	NUT, KEPS #8-32	2	2	2	3	3	3	3	3
47	9007651	WASHER, LOCK EXT TOOTH #10	8	8	8	-	-	-	-	-
~~48~~	~~9006074-2~~	~~SCR, PHL FLAT HD #10-32 X 5/8 SST~~				~~1~~	~~1~~	~~1~~		
49	9006025-2	SCR, PHL FLAT HD #6-32 X 5/8 SST	-	-	-	2	2	2	2	2
50	9006121	SCR, SELF-TAPPING #8-32 X 3/8 SST	8	8	8	8	8	8	8	8
~~51~~	~~9006071-1~~	~~SCR, PHL PAN HD #10-32 X 3/8 SST~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~		
52	9008146	WASHER, FLAT .63 OD X .23 ID X .048 THK	1	1	1	-	-	-	-	-
53	9006660	WASHER, FLAT .375 OD X .187 X .036 THK	-	-	-	3	3	3	3	3
54	9006074-3	SCR, PHL TRUSS HD #10-32 X 5/8 SST	1	1	1	-	-	-	-	-
55	9107305	SHRINKIES (RED)	3	3	3	3	3	3	3	3
56	7408407	DECALS (VR14)	1	1	1	1	1	1	1	1
57	C-IA-7408425-0-0	PANEL CONTROL (GT-40)								
58	7007006-3	JUMPER	1	1	1	1	1	1	1	1
59	7008976	CHANNEL SELECT SWITCH	1	1	1	1	1	1	-	-
60	C-UA-375-0-0	LIGHT PEN OPTION	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
61	D-AD-7009027-0-0	SUPER COVER ASSY	-	-	-	1	1	1	1	1
62	E-PS-1211106-0-0	MASK	-	-	-	1	1	1	1	1
63	E-IA-7409964-0-0	BRACE CHASSIS	-	-	-	1	1	1	1	1
64	C-IA-7409977-0-0	PANEL CONTROL (GT-40)	-	-	-	-	-	-	1	1
65	C-IA-7409974-0-0	PANEL CONTROL (PDP-12)	-	-	-	1	1	1	-	-
66	9006073-3	SCR, PHL TRUSS HD #10-32 X ½ SST	-	-	-	6	6	6	6	6

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
VR14 DISPLAY ASSY	D-UA-VR14-Ø-Ø	A	PL	VR14-Ø-Ø	J	
	SHEET 3 OF 4	DIST.	G			

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

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

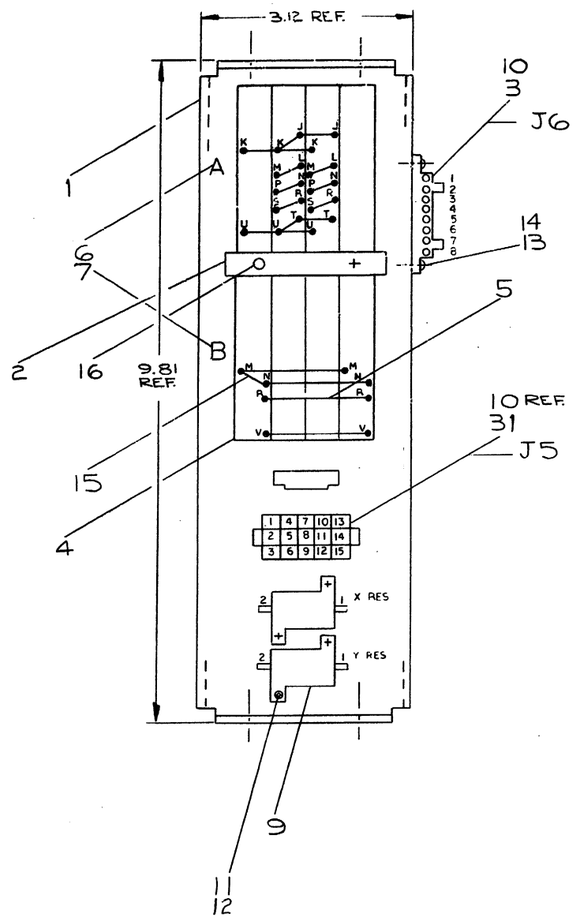
MADE BY D. CRABBE	CHECKED D. CRABBE	SECTION
DATE 12-2-70	DATE 12-8-70	
ENG D. CRABBE	PROD R. PETERSON	ISSUED SECT.
DATE 12-8-70	DATE 12-8-70	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION VR14-0	VR14-A	VR14-B	VR14-C	VR14-D	VR14-E	VR14-LC	VR14-LD
67	9107360-0-0	WIRE #18 AWG IVPC BLK	-	-	-	A/R	A/R	A/R	A/R	A/R
68	9007930-0	CONN, ARKLES #50360-1	-	-	-	1	1	1	1	1
69	9007925-0	CONN, #300H21A-1K	-	-	-	1	1	1	1	1
70	9006637	WASHER, INT TOOTH 3/8 ID #1220	1	1	1	1	1	1	1	1
71	9007081	CLAMP, CABLE 1/4 ID	1	1	1	1	1	1	1	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
VR14 DISPLAY ASSY	D-UA-VR14-0-0	A	PL	VR14-0-0	J	
	SHEET 4 OF 4	DIST.				

EC FORM DEC 16-(325)-1031-N870
A 110

EXTERNAL COMPONENTS TABLE						
ITEM	COMP	POL	FROM	TO	POL	REMARKS
8	RES		AØ4U	AØ4T		100K
9	XRES		SEE WIRE TABLE			0.5Ω
9	YRES		SEE WIRE TABLE			0.5Ω
32	CAP		AØIK	AØIV		20. MFD
36	RES		BØ4F	BØ4N		470K



WIRE TABLE					
SIGNAL NAME	ITEM NO	DESCRIPTION AWG	COLOR	CONNECTION FROM	TO
	5			AØ2T	AØ3T
				AØ1U	AØ3U
				AØ2J	AØ3J
				AØ1K	AØ3K
				BØ1N	BØ4N
				BØ1M	BØ4M
				BØ1R	BØ4R
	5			BØ1V	BØ4V
	15	18	BUS	AØ2J	AØ2K
				AØ2T	AØ2U
				AØ2S	AØ2R
				AØ2N	AØ2P
				AØ2L	AØ2M
				AØ3S	AØ3R
				AØ3N	AØ3P
				AØ3L	AØ3M
	15		BUS	BØ1N	BØ1M
+20 DC	17		RED	BØ2V	J5-1
+20 DC	17		RED	BØ2V	J5-15
	22		YEL/GRY	AØ2S	J5-2
	22		YEL/GRY	AØ3S	J5-14
	23		BLU/GRY	AØ2M	J5-4
	23		BLU/GRY	AØ3M	J5-12
-20 DC	20		BLU	BØ2R	J5-5
-20 DC	20		BLU	BØ2R	J5-11
X YOKE HOT	19		GRY	AØ2P	J5-3
Y YOKE HOT	21		VIO	AØ3P	J5-13
X YOKE HOT	19		GRY	AØ2N	J6-1
Y YOKE HOT	21		VIO	AØ3N	J6-8
X YOKE RETURN	18		WHT	J6-2	XRES-2
Y YOKE RETURN	18		WHT	J6-7	YRES-1
+20 DC	17		RED	BØ1V	AØ2U
-20 DC	20		BLU	BØ1R	AØ2K
GND	24		BLK	AØ3V	BØ3M
GND	24		BLK	XRES-1	AØ2V
GND	24	18	BLK	YRES-2	AØ3V
	26	22	YEL	BØ4L	AØ4U
	25		GRN	BØ4F	AØ4F
X SAMPLE	29		WHT	AØ1A	XRES-2
Y SAMPLE	29		WHT	AØ3A	YRES-1
X SIG GND	27		BLK	AØ2H	AØ2V
Y SIG GND	27		BLK	AØ3H	AØ3V
+5V	28		RED	AØ1P	AØ4A
GND	27		BLK	AØ4C	BØ3M
GND	27		BLK	XRES-1	AØ2H
GND	27	22	BLK	YRES-2	AØ3H
	5			AØ1A	AØ2A
	5			AØ1D	AØ2D
GND	24	18	BLK	AØ1V	BØ2M
GND	24	18	BLK	AØ2V	BØ2M
	29	22	WHT	AØ3A	AØ1B
	29	22	WHT	AØ3D	AØ1C
-80V	35	18	GRY/GRN	AØ4S	AØ1L
	34	22	WHT/BLK	AØ1E	AØ4H
GND	27	22	BLK	AØ1S	AØ4C

SEE NOTE #1 (XRES-2 / XRES-1)
SEE NOTE #1 (YRES-2 / YRES-1)
SEE NOTE #1 (XRES-1 / YRES-2)
SEE NOTE #1 (AØ2H / AØ3H)

NOTES:
1. TWIST (2 WIRES) 3 TWIST PER INCH MIN & 4 TWIST PER INCH MAX.
2. USE TERMIPOINT CONNECTORS ON ITEMS 8+32

SIGNAL NAME	ITEM NO	AWG	COLOR	FROM	TO
Z INT	19	22	WHT	AØ1M	AØ4J

REVISIONS				
CHK	CHANGE NO.	REV		
EJ	VR14-00002	A	M. Gurney 1-6-71	A. FISHMAN
	VR14-00010	B	M. Gurney 7-27-71	FISHMAN
	VR14-00014	C	11-2-71	A. FISHMAN
	VR14-00019	D	8-7-72	A. FISHMAN
	VR14-00021	E	12/20/72	FISHMAN
	VR14-00022	F	1-23	FISHMAN

FIRST USED ON OPTION / MODEL: VR14

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

QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST			

DRN		DATE 5/27/70
CHK(S)	D. Gibbs	DATE 10/2/70
ENG.	D. Gibbs	DATE 11/6/70
PROJ. ENG.	C. Coburn	DATE 11-6-70
PROD.	W. Peterman	DATE 11/16/70

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: WIRED ASSY (VR14)

NEXT HIGHER ASSY: D-UA-VR14-0-0

SCALE: NONE
SHEET 1 OF 1

SIZE	CODE	NUMBER	REV.
D	AD	7007078-0-0	F
DIST.			

DEC FORM NO. CAD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY J. Cahill	CHECKED D. Crabbe	SECTION 1
DATE 10/2/70	DATE 10/2/70	
ENG D.K. Crabbe	PROD R Peterson	ISSUED SECT. 1
DATE 11/6/70	DATE 11/6/70	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
1	D-IA-7408422-0-0	FRAME,LOGIC	1
2	B-MD-7407114-0-0	BAR,MTG	1
3	1209340-00	8 CIRCUIT MATE-N-LOK SOCKET AMP	1
4	1202244	144 CONNECTOR BLOCK	1
5	1202188	VOLTAGE CHAIN	A/R
6	A-SS-5308753-0-2	LOGIC FRAME DECALS	A/R
7	A-SS-5308753-0-4	LOGIC FRAME DECALS	A/R
8	1302466	RESISTOR 100K 1/4W 5%	1
9	1310180	RESISTOR 0.5Ω 20W 1%	2
10	1209379-01	CONTACT TERM PIN SOCKET AMP. INC.	14
11	9006011-1	SCR,PHL HD PAN #4-40 x 3/8 SST	4
12	9006557	NUT,KEPS #4-40	4
13	9006021-1	SCR,PHL HD PAN *6-32 x 5/16 SST	2
14	9006560	NUT,KEPS #6-32	2
15	9107560-3	#18 AWG SOLID BUSSING	A/R
16	9006120	POZIDRIVE SCR FIL HD 8-32 x 5/8 SST	2
17	9107360-22	#18 AWG STRD TEFLON (RED)	A/R
18	9107360-99	#18 AWG STRD TEFLON (WHITE)	A/R
19	9107360-88	#18 AWG STRD TEFLON (GRAY)	A/R
20	9107360-66	#18 AWG STRD TEFLON (BLUE)	A/R
21	9107360-77	#18 AWG STRD TEFLON (VIO)	A/R
22	9107410-84	#18 AWG STRD TEF TRACER (GRAY/YELLOW)	A/R

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO.
WIRED ASSEMBLY (VR14)	D-AD-7007078-0-0	A	PL	7007078-0-0	F	VR14-00022
	SHEET 1 OF 2	DIST. 6				

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY J. Cahill	CHECKED D. Crabbe	SECTION 1
DATE 11/3/70	DATE 11/3/70	
ENG D.K. Crabbe	PROD R. Peterson	ISSUED SECT. 1
DATE 11/6/70	DATE 11/6/70	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
23	9107410-86	#18 AWG STRD TEF TRACER (GRY/BLU)	A/R
24	9107360-00	#18 AWG STRD TEF WIRE (BLACK)	A/R
25	9107350-55	#22 AWG STRD TEF WIRE (GREEN)	A/R
26	9107350-44	#22 AWG STRD TEF WIRE (YELLOW)	A/R
27	9107350-00	#22 AWG STRD TEF WIRE (BLACK)	A/R
28	9107350-22	#22 AWG STRD TEF WIRE (RED)	A/R
29	9107350-99	#22 AWG STRD TEF WIRE (WHITE)	A/R
30	9107256-1	#22 TEF TUBING (BLACK)	A/R
31	1209350-15	CONN PIN HOUSING MATE-N-LOK AMP	1
32	1010195-0	CAPACITOR 20 mFd 100V 10%	1
33	9007230	TERMI POINT CONNECTORS	6
34	9107420-09	#22 AWG STRD TEF TRACER (BLK/WHT)	A/R
35	9107410-85	#18 AWG STRD TEF TRACER (GRY/GRN)	A/R
36	1302398	RES. 470K 1/4W 5%	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO.
WIRED ASSEMBLY (VR14)	D-AD-7007078-0-0	A	PL	7007078-0-0	F	
	SHEET 2 OF 2	DIST.				

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10/22/70

TITLE VR14 SPECIFICATION

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

GENERAL DESCRIPTION

The VR14 is a self-contained CRT display unit requiring only analog position and digital unblanking information. It is designed for use with a digital display controller. The amount of information displayed depends on the specific system; however, 1250 random points can be displayed flicker free at a 40 Hz. refresh rate. Viewable area is 62 inches square with an aspect ratio of 3:4. The unit is 10 1/2 inches high, 19 inches wide, 17 inches deep, and weighs about 75 pounds. It is available in either a rack mounted or table top model.

OPERATOR CONTROLS (All controls labeled as to function)

Front Panel:

Brightness / ON-OFF	Manual brightness control and AC power switch.
Channel Select	Operator selection of either channel 1 or channel 2 if a time multiplexed signal is available.

Internal Controls: These controls accessible from the top of the unit through the safety screen.

Deflection Controls: The following controls are 10 turn pots located on the deflection amplifiers (A225). All inputs have protection against momentary excessive voltage.

X Gain	Controls horizontal input sensitivity.
Y Gain	Controls vertical input sensitivity.
X Position	Manual Position Control.
Y Position	Manual Position Control.

NOTE: With deflection inputs grounded, the position controls allow the beam to be positioned anywhere within the usable screen area.

ENG	APPD	SIZE	CODE	NUMBER	REV
C Fishman 10/28/70	L. Gale 10/28/70	A	SP	VR14 -Ø - 4	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE VR14 SPECIFICATION

CRT Controls: These controls are 10 turn pots located on the G836 power supply module. Their purpose is to adjust focus and grid bias voltages. They are adjusted at the factory.

Focus: Adjusted for best overall focus.

Brightness Preset: To adjust the range of the front panel brightness control.

GENERAL ELECTRICAL SPECIFICATION

Spot Size: ≤ 20 mils inside the usable screen area at a brightness of 30 footlamberts. Spot size is measured using shrinking raster technique at a brightness of greater than 30 footlamberts.

Jitter: ≤ ± 1/2 spot diameter.

Repeatability: ≤ ± 1 spot diameter
(Repeatability is the deviation from the nominal location of any given spot)

Gain Change: From a fixed point on the screen, less than ± 0.3 percent gain change for each ± 1 percent line voltage variation.

Temperature Range: 0 to 50°C operating

Relative Humidity: 10 to 90 percent noncondensing.

Brightness: ≥ 30 footlamberts; measured using a shrinking raster technique.

Linearity: Maximum deviation of any straight line will be ≤ 1 percent of the line length measured perpendicular to a best fit straight line.

Deflection Method: Magnetic (70° diagonal deflection angle)

Focus Method: Electrostatic

High Voltage: 11.7 KV DC nominal (voltage proportional to input line voltage). Supply is self-contained and equipped with a bleeder resistor.

Shielding: CRT is fully enclosed in a magnetic shield.

Overload Protection: Unit is protected against fan failure or air blockage by thermal cutouts.

SIZE	CODE	NUMBER	REV
A	SP	VR14 - Ø - 4	

DEC FORM NO 16-1022

DEFLECTION AMPLIFIER SPECIFICATION

1. Deflection Amplifiers are DC coupled and are capable of sustaining a worst case AC or DC deflection at environmental extremes.

2. Input Specification

   A. Inputs are differential.
   B. Differential input impedance . . . 5K ohms minimum.
   C. Input sensitivity . . . 200 mv/inch maximum.
   D. Common Mode Rejection Ratio . . . 40 db.
   E. Maximum Operating Input . . . ± 6V. (Maximum operating input is the sum of the common mode input and the differential input.)
   F. Input offset not to exceed ± 1/2 peak to peak input signal.
   G. Maximum non-operating input . . . ± 50V.

3. Full screen deflection and settling time to within ± 1 spot diameter . . . . . ≤ 18 µs.

4. Small signal settling time to within 1/2 spot diameter . . . ≤ 1 µs for a 0.1 inch deflection.

5. Small signal linear slew rate . . . ≥ 0.4 in 1 µs.

6. Velocity error coefficient . . . 500 ns. maximum. (Average ramp delay between input and output.)

Z AXIS SPECIFICATION

1. Z Input
   A negative transition from ≥ +2.4V, but not exceeding +8V, to ≤ +0.8V, but not less than -4V, in ≤ 20 ns will cause an unblanking pulse at the CRT cathode from approximately +60V to ground with a duration of ≥ 200 ns at the 50 percent points. Delay between the 50 percent point of the negative input transition to the 50 percent point of the output pulse is less than 100 ns.

2. Z Direct
   A positive going pulse not exceeding 35V, but at least 20V in height and not exceeding 10 µs, but at least 1 µs in duration will unblank the CRT to a viewable intensity. This signal is AC coupled to the CRT grid.

3. Channel Select
   With the Channel Select Switch in the Channel 1 position, a positive level of greater than +2.4V, but not exceeding +8V will enable the Z input circuit. A level of less than +0.8V but not less than -4V will disable the circuit. With the switch in the Channel 2 position, a positive level will enable the Z circuit; a negative level will disable it. Placing the switch in the Channel 1 and 2 position disables this input.

POWER SUPPLY SPECIFICATION

1. All power supplies necessary for operation of the unit are self contained.

2. Input Requirements

   Voltage: 100 V ± 10 percent
   117 V ± 10 percent
   230 V ± 10 percent

   Selectable by tap changes.

   Frequency: 50 - 60 Hz.

   Power: ≤ 500 Watts

   Current: ≤ 5 Amperes

   Type: Single Phase

   NOTE: Different AC power receptacles are provided on 200 and 230 V Units.

3. Fuses are provided and labeled as to function, type, and rating for the primary circuit and deflection power circuits.

4. Thermal Cutouts, which operate on the AC primary, are used to prevent damage due to fan failure, air blockage, or excessive ambient temperature.

REAR PANEL CONNECTIONS

Deflection Inputs: BNC connectors labeled X+, X-, and Y+, Y-.

With operator facing the screen and the polarity switches in the up position, if X+ is positive with respect to X-, deflection is to the right and, if Y+ is positive with respect to Y-, deflection is up.

CRT Inputs: BNC connectors labeled Z input, Z direct, and channel.

Z input is a TTL compatible input which generates a pulse at the CRT cathode for each negative transition.

Z direct is an AC coupled input to the CRT grid circuit.

Channel is a TTL compatible input which, in conjunction with the Channel Select Switch, enables or disables the Z input circuit.

NOTE: All above inputs are available at a 24 pin plug, DEC No. 1209630.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 9/20/71

TITLE VR14 CHECKOUT AND ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	00015	A.FILZ	3/72	[signature]	3-28-72
B	ECO CHANGE	00022	A FISHMAN	1/73	[signature]	1-16-73

ENG	APPD	SIZE	CODE	NUMBER	REV
[signature] 9-21-71		A	SP	VR14-0-5	B

VR14 CHECKOUT PROCEDURE AND ACCEPTANCE PROCEDURE *

I. INTRODUCTION

The VR14 is a completely self-contained CRT display providing a 6.75 inch by 9 inch viewing area in a compact 19 inch package. The VR14 requires only analog X and Y position information with an intensity pulse to generate sharp, bright point plot displays.

II. SOFTWARE

A. Manuals

1. VR14 Users Manual
2. PDP-12 Systems Reference Manual

B. Prints

1. VR14-Ø
2. VC12-Ø
3. EM12-Ø

C. Diagnostics

1. Display Test Maindec 12-D6BC
   (Maindec-12-D6BB could also be used)

* Acceptance Procedure consist of Section VI through Section X excluding VI-1, VI-10, and VI-10.

SIZE	CODE	NUMBER	REV
A	SP	VR14-0-5	B

A. Basic Mechanical Check

1. Check all knobs for position and tightness
2. All silk screening is correct and legible
3. All AC and high voltage is covered and labeled
4. Slides work correctly
5. Tube face and phosphor are not damaged
6. Serial number tag is present and correct
7. 110v, 220v labeling is correct
8. Cables are correct type and length
9. All decals are present and on straight
10. All switches operate smoothly
11. Module block is not cracked or broken
12. Deflection coil is properly adjusted and tightened
13. No chips or scratches on painted surfaces
14. All shrinkies are secure
15. No loose parts or filings on bottom of chassis
16. Check wire dress
17. Check for proper fan operation
18. High voltage connection on CRT is secure
19. All crimped terminations are mated and seated
20. Check for wiring touching power transistor cases

III. TEST EQUIPMENT

A. Off-Line Test

1. VOM

B. On-Line Test

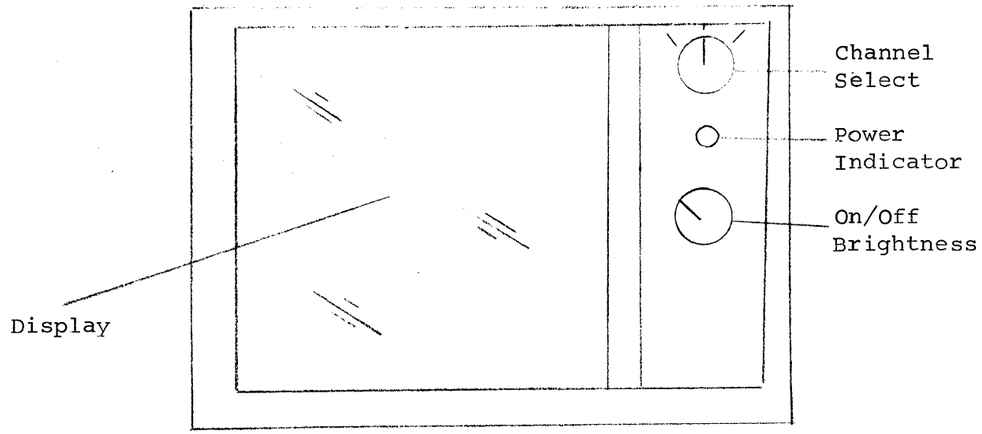
1. VOM
2. Oscilloscope
3. EP12
4. EM12
5. TU56
6. TC12
7. TTY
8. VC12

C. Special Test Equipment

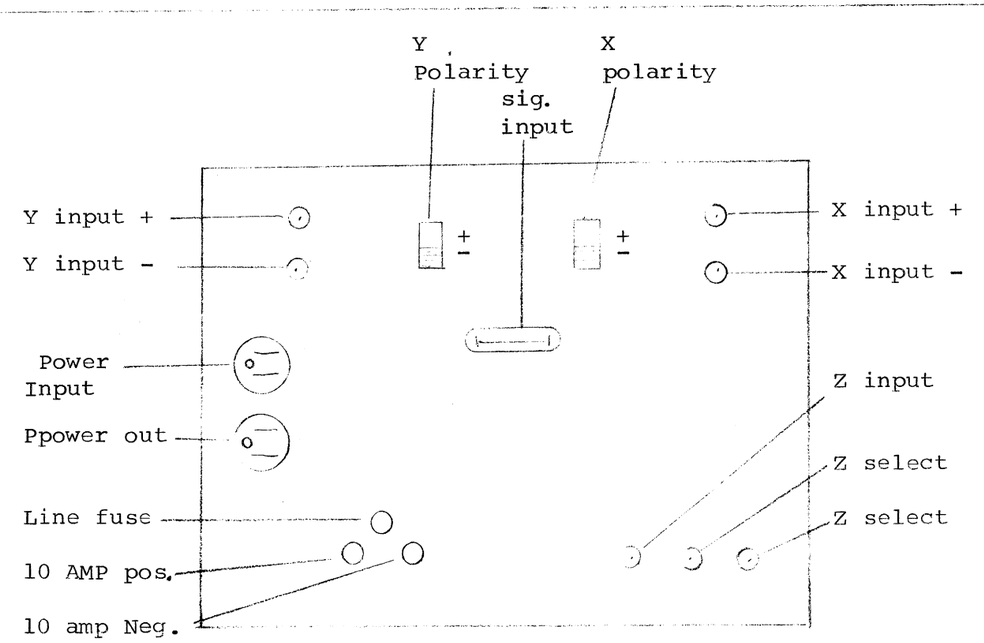
None Required

IV. OFF-LINE CHECKOUT PROCEDURE

CAUTION: The CRT is under high vacuum and is potentially in danger of explosion if subject to sharp blows or rough handling.

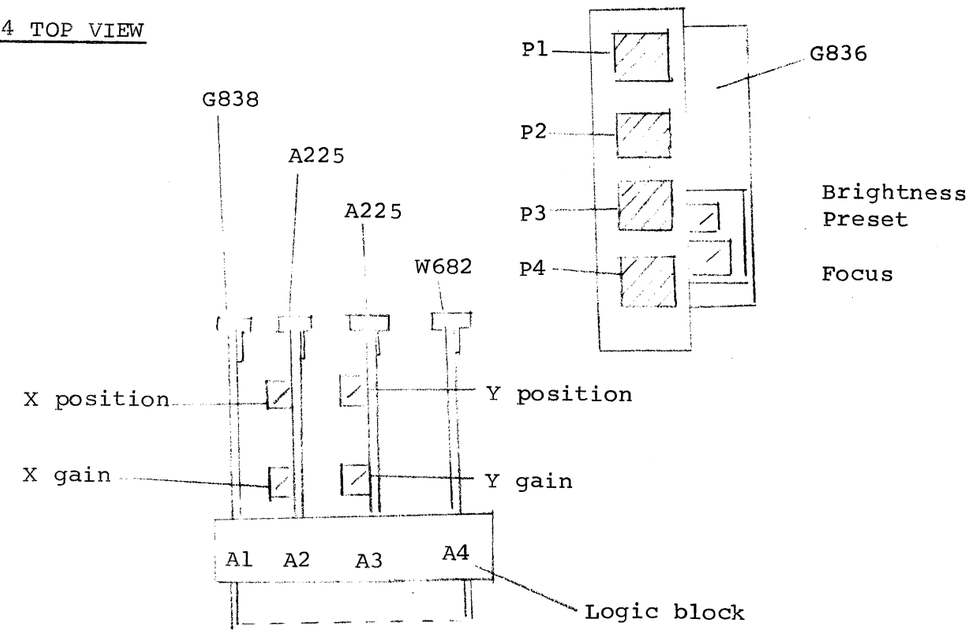


VR14 FRONT VIEW

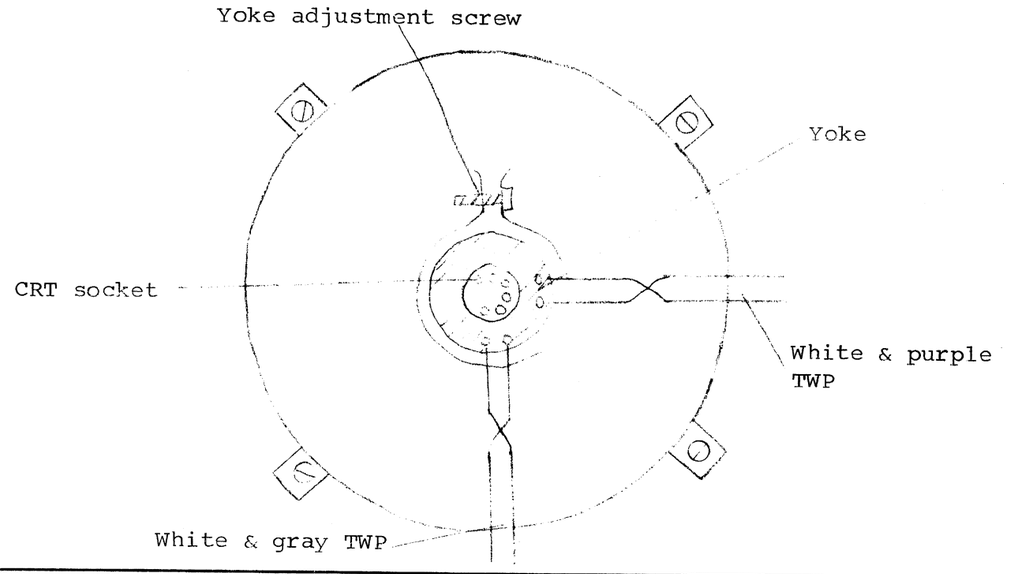


VR14 REAR VIEW

VR14 TOP VIEW



VR14 YOKE ADJUSTMENT



B. Basic Electrical Check

1. Remove the following modules from the VR14 under test.

   a. G838 Location - AØ1

   b. A225 Location - AØ2

   c. A225 Location - AØ3

   d. W682 Location - AØ4

2. Unplug the CRT socket from the CRT.

3. Check all fuses for proper value.

   a. F1 5 AMP Slow Blow (Line Fuse, 110v).

   b. F2 3 AMP Slow Blow (Line Fuse, 220v).

   c. F3 NEG 10 AMP

   d. F3 POS 10 AMP

4. Check the on-off brightness control and put it in the off position.

   NOTE: Check that the line voltage applied is the same as the voltage required by the unit under test.

5. Plug in AC line cord to the proper line voltage required.

DC VOLTAGE CHECKS

The next series of tests are voltage tests. The meter should be set up and connected to the test points first then power turned on for a minimum amount of time (1 to 3 seconds). It is very important that power be on only briefly because if a fault does exist damage to the unit can be avoided. Never leave power on even if correct voltage is observed because a fault may exist that will not be detected until a later test.

6. Perform the following voltage checks using the procedure outlined above.

   a. Perform voltage check number 1 of table 1.

   b. Perform voltage check number 2 of table 1.

   c. Perform voltage check number 3 of table 1.

   d. Perform voltage check number 4 of table 1.

   e. Plug in the W682 in location AØ4. Perform voltage check number 5 of table 1.

   f. Perform voltage check number 6 of table 1. Adjust the front panel brightness control through its full range.

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE

TEST	VOM SCALE	VOM RANGE	VOM + PROBE	VOM - PROBE	VOLTAGE	NOTES
7	DC	1200V	BØ4J	BØ1M	+350VDC TO -60VDC Tolerance = ±25VDC	ADJUST FOCUS CONTROL TO CHECK. (G836) CCW= -60VDC CW= +350VDC
8	AC	12V	CRT SOCKET PIN 1	CRT SOCKET PIN 12	6.3 VAC Tolerance = ± .3VAC	
9	DC	1200V	CRT SOCKET PIN 10	CHASSIS GND.	+350VDC Tolerance = ±25VDC	
10	DC	300V	CRT SOCKET PIN 2	CHASSIS GND.	-80VDC TO -20VDC Tolerance = +10V. THE -20VDC MAY BE 0.	ADJUST THE BRIGHTNESS CONTROL ON THE FRONT PANEL TO VARY THIS VOLTAGE.
11	DC	1200V	CRT SOCKET PIN 6	CHASSIS GND.	+350VDC TO -60VDC Tolerance = ±25VDC	ADJUST THE FOCUS CONTROL TO VARY THIS VOLTAGE. (G836) CCW= -60VDC CW= +350VDC
12	DC	60V	BØ1V	BØ1M	Nominal = +21.5V Tolerance = +2V, -1V.	THIS VOLTAGE SHOULD NOT EXCEED23.5VDC OR BE LESS THAN 20.5VDC.

RFV B | NUMBER VR14-0-5 | CODE SP | SIZE A

SHEET 10 OF 31

DEC FORM NO 16-1022
DRA 108

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE

TEST	VOM SCALE	VOM RANGE	VOM + PROBE	VOM - PROBE	VOLTAGE	NOTES
1	DC	60V	D1-4	CHASSIS GND.	+45VDC Tolerance = ±5V	D1-4 SHOULD HAVE AN ORANGE WIRE ON THIS TERMINAL.
2	DC	60V	CHASSIS GND.	D2-4	-45VDC Tolerance = ±5V	D2-4 SHOULD HAVE A GREEN WIRE ON THIS TERMINAL.
3	AC	12V	BØ4A	BØ4B	6.3VAC Tolerance = ± .3V	
4	DC	1200V	BØ4D	BØ1M	+350VDC Tolerance = ±25V	
5	DC	300V	CRT SOCKET, PIN 11	CHASSIS GND.	+60VDC Tolerance ±6V	PLUG IN THE W682 IN LOCATION AØ4.
6	DC	300V	BØ1M	BØ4F	-80VDC TO -20VDC Tolerance ±10V. The -20VDC COULD BE AS LOW AS 0.	ADJUST THE FRONT PANEL BRIGHTNESS CONTROL TO VARY THIS VOLTAGE.

RFV B | NUMBER VR14-0-5 | CODE SP | SIZE A

SHEET 9 OF 31

DEC FORM NO 16-1022
DRA 108

TABLE VR14-1

TEST	SCALE	VOM RANGE	+ PROBE	- PROBE	VOLTAGE	NOTES
13	DC	60V	BØ1M	BØ1R	Nominal = -21.5VDC Tolerance = -2V, +1V	THIS VOLTAGE SHOULD NOT EXCEED -23.5VDC OR BE LESS THAN -20.5VDC.
14	DC	12V	AØ2A	BØ1M	ØVDC	WITH THE A225 REMOVED FROM LOCATION AØ2 THIS VOLTAGE MUST BE ØVDC.
15	DC	12V	AØ3A	BØ1M	ØVDC	WITH THE A225 REMOVED FROM LOCATION AØ3 THIS VOLTAGE MUST BE ØVDC.
16	DC	12V	AØ4A	BØ1M	+5VDC (+4VDC MIN.) (+6VDC MAX.)	PLUG IN THE G838 LOCATION AØ1.
17	DC	12V	AØ2A	BØ1M	+2.6VDC TO -2.6VDC	A. PLUG IN THE A?25 LOC. AØ2. B. ADJUST THE POSITION PCT ON THE A225 IN LOC. AØ?.
18	DC	12V	BØ1M	AØ3A	+2.6VDC TO -2.6VDC	A. PLUG IN THE A?25 LOC. AØ3. B. ADJUST THE POSITION POT ON THE A225 IN LOC. AØ3.

TABLE VR14-1

VOLTAGE CHART

All voltages measured with respect to ground

(chassis or BØ1M, N)

*Indicates voltage depends upon input signal

Circuit Block		
AØ2A	* ±3 volts nominal	X Current Sample
AØ3A	* ±3 volts nominal	Y Current Sample
AØ2E, B	*	X Input Signal
AØ3E, B	*	Y Input Signal
AØ1U, BØ1V	+21.5 VDC (red)	+ Regulated D.C.
AØ1K, BØ1R	-21.5 VDC (blue)	- Regulated D.C.
AØ1P	+5 VDC	For W682
BØ4A	3.5 VRMS	1/2 Filament
BØ4B	3.5 VRMS	1/2 Filament
BØ4D	+400 VDC	G2
BØ4F	0 to -80 VDC	Brightness (G1)
BØ4J	-80 VDC to -400 VDC	Focus
BØ4L	* +60 volts	Cathode With Negative Pulses
Brightness Pot		
Gray/Green	-80 VDC	

TABLE VR14-2

VOLTAGE CHART - (CONTINUED)

Deflection Heat Sink - P5

X AXIS	Y AXIS		
P5 - 2	P5 - 14	+20.5 VDC	PNP Base (2N4399)
P5 - 1	P5 - 15	+21.5 VDC	PNP Emitter (2N4399)
P5 - 3	P5 - 13	* <1 volt	All Collectors
P5 - 4	P5 - 12	-20.5 VDC	NPN Base (2N5302)
P5 - 5	P5 - 11	-21.5 VDC	NPN Emitter (2N5302)

Regulator Heat Sink - P3

P3 - 1	+43 VDC Orange	Emitters of 2N4399
P3 - 2	+42 VDC Gray/Yellow	Bases of 2N4399
P3 - 3	+21.5 VDC Red	Collectors of 2N4399
P3 - 12	-43 VDC Green	Emitters of 2N5302
P3 - 11	-42 VDC Gray/Blue	Bases of 2N5302
P3 - 10	-21.5 VDC Blue	Collectors of 2N5302

G836 Regulator Circuit Connectors -- P1, P2, P4

P1 - 1	+43 VDC	Raw + D.C.
P1 - 3, 6	Ground	
P1 - 4	-43 VDC	Raw - D.C.

TABLE VR14-2

VOLTAGE CHART - (CONTINUED)

P2 - 1	3.5 VRMS	1/2 Filament
P2 - 2, 4, 7, 9	Ground	
P2 - 3	3.5 VRMS	1/2 Filament
P2 - 5	70 VRMS (200 P-P)	±80 v. tap
P2 - 6	150 VRMS (400 P-P)	+400 v. tap
P4 - 1	+21.5 VDC Red	+ Regulated
P4 - 2, 14	Ground Black	
P4 - 3	+21.5 VDC Red	Hot + Sense
P4 - 4	0 VDC Black	Cold + Sense
P4 - 5	-80 to +400 VDC Gray/Red	Focus
P4 - 6	+400 VDC Orange	G2
P4 - 7	3.5 VRMS Brown	Filament
P4 - 8	3.5 VRMS Brown	Filament
P4 - 9	-80 VDC Gray/Green	To Brightness Pot
P4 - 10	0 to -40 VDC Gray/Violet	Brightness Preset
P4 - 11	+80 VDC Gray/Orange	For W682
P4 - 12	-21.5 VDC Blue	Hot - Sense
P4 - 13	0 VDC Black	Cold - Sense
P4 - 15	-21.5 VDC Blue	- Regulated

TABLE VR14-2

(1) OFF = OVDC

(2) FULLY CCW -80VDC

(3) FULLY CW = between 0 and -20VDC

g. Perform voltage check number 7 of table 1 and vary the focus control pot. Adjust this pot to its limits. Reset to approximately + 300 VDC after testing.

h. Make the following voltage checks at the CRT socket.

(1) No. 8 Table 1

(2) No. 9 Table 1

(3) No. 10 Table 1. Vary the brightness control on the front panel to insure proper operation.

(a) OFF OVDC

(b) FULLY CCW -80 VDC

(c) FULLY CW between 0 and -20VDC

(4) Perform check number 11 Table 1. Adjust the focus control on the G836 a minimum amount to insure that the focus control varies this voltage. Reset to +300 after test.

i. Perform voltage check number 12 of table 1.

j. Perform voltage check number 13 of table 1.

k. Perform voltage check number 14 of table 1.

l. Perform voltage check number 15 of table 1.

m. Plug in the G838 in location AØ1 and perform voltage check number 16 of table 1.

NOTE: On A225 voltage checks number 17 and number 18, shut off the VR14 immediately if the voltage exceeds +2.6VDC and cannot be turned down by the position trim pot.

n. Plug in the A225 in location AØ2 and perform voltage check number 17 of table 1. Adjust the position trim pot on the A225 to insure proper control of this voltage. After test position to +2.5VDC.

o. Plug in the A225 in location AØ3 and perform voltage check number 18 of table 1. Adjust position pot on the A225 to insure proper control of the voltage. After test position to +2.5VDC

p. The case temperature of the "X" deflection 2N4399 must be measured while the X deflection current is set for 5 amps (+2.5V at AØ2-A). No unit is to ship if the case is greater than 72°C.

q. Same test for "X" 2N5302 for X current at -5A (-2.5V at AØ2-A). Must be less than 72°C.

r. With AØ2-A and AØ3-A adjusted to +5A (+2.5V on both) measure the case temperature on the top 2N4399 of the power supply. Must be less than 72°C.

s. With AØ2-A, AØ3-A at -2.5V measure the top 2N5302 case temperature on the power supply heat sink. Must be less than 72°C.

V. BASIC ON-LINE TEST PROCEDURE

NOTE: Before applying power check that the power applied is the same as the voltage required by the VR14 under test.

A. Cabling

1. Install the BC12 Display cable from location F38 of the EM12 to the Display under test. (For extended scope output use F39 of the EM12.)

B. Basic Set-Up

1. Set-Up the M711 location CD37 as follows:

   a. Intens - Negative

   b. P.R.R. - Fast

   c. Width - For cables less than 100' set to minimum, for cables over 100' set to maximum.

2. Check that the polarity switches located on the back of the VR14 are in the negative position (down).

3. Set the channel select control on the front panel to channel 1 and 2.

C. Basic On-line Checkout

1. Do not apply power to the VR14 under test at this point.

2. Load in the display diagnostic D6BC.

   a. The following switches control this test.

      (1) Setting Sense Switch -1 cause the display to freeze on the current test.

      (2) Resetting Sense Switches to zero will cause the display to cycle thru the patterns listed below.

         (a) Pattern 1 - Point Plotting (Box) Sense Sw Ø

         (b) Pattern 2 - Character Generation Sense Sw 1

         (c) Pattern 3 - Diagonal Lines Sense Sw 2

3. Start diagnostic D6BC and freeze on Pattern 3 (Diagonal lines). LINC mode/START 20.

4. Using an oscilloscope check the input to the X deflection Tp AØ2-E. This signal should be 6 volts in amplitude. From 0 to -6VDC.

5. Using an oscilloscope check the input to the Y deflection Tp AØ3E. This signal should be 6 volts in amplitude. From 0 to -6VDC.

   a. Make sure no oscillations are present at AØ2A and AØ3A.

6. Depress STOP and I/O PRESET on the PDP-12 console.

7. Apply power to the VR14 under test.

8. Using a meter perform voltage check number 17 of table 1.

9. Using a meter perform voltage check number 18 of table 1.

10. Depress "START 20" on the PDP-12 console.

11. **Select Sense Switch** when pattern 1, a box, is displayed.

12. VR14 Alignment.

    a. Adjust the X position pot so that the left side of the box pattern aligns with the left side of plastic display mask. The display should be parallel and about ¼" from the mask at its closest point.

    b. Perform the above step for the Y position using the bottom edge of the display mask.

    c. Adjust the horizontal gain so the right side of the pattern aligns with the right edge of the plastic mask, within ¼" at its closest point.

    d. Adjust the vertical gain in the same manner as above for the top edge of the pattern.

    e. On the G836 adjust the brightness preset to prevent the scope display from blooming (when front brightness control is fully CCW).

    f. Adjust the yoke for horizontal and vertical alignment by loosening the adjustment screw and turning the yoke by hand while watching the display. When aligned, the box should be parallel to the mask on all edges. Tighten the alignment screw down securely.

    g. **Reset Sense Switchs to zero.** This will cause patterns to rotate when pattern 2 appears on the scope **select sense switch. Pattern two will now freeze on the scope.**

    h. Adjust the focus for sharp clear character display dots.

    i. Fine tune the brightness preset and focus control for a very clear display.

j. Using character test, select channel 1 using the front channel select knob - only channel 1 should be displayed. Repeat for channel 2 - only channel 2 should be displayed.

k. Reset the front panel channel select to 1 and 2.

13. Stop D6BC Diagnostic

14. Load in DIAL

a. LSW = 701

b. RSW = 7300

c. Line Mode

d. I/O Preset

e. Do

f. The tape will move then stop

g. Hit start 20

h. Program will load in

15. At this point there will be a number 1 displayed in the upper left corner of the display. There will also be a cursor pointing to the present line position.

16. Strike "E" on the TTY and repeat. This will cause a row of E's to be displayed on the VR14 under test. Continue to strike E until 3 rows of E's are displayed.

17. Observe the display for acceptable limits of ripple.

18. Strike rub out and repeat on the TTY until the cursor returns to its original starting position.

19. Strike line feed on the TTY. This will cause the cursor to move to the lower left corner of the display.

20. Type "DX, comma, carriage return," this will cause the directory of tape unit 0 to be displayed. Check the general quality of the display for acceptable limits.

21. Power down the VR14 and disconnect the line cord. Wire the unit for 230VAC input.

22. Power up the VR14 with 230VAC and check display quality with DISPTST.

23. If O.K. remove line cord and rewire for 115VAC.

24. Hit stop and I/O PRESET on the PDP-12 console.

25. With a Variac set the line to each unit to 90VAC and with no signal connected and A02-A, A03-A at approximately +2.2V (standard settings for PDP-12), turn on off switch on and off rapidly (within ½ sec) about 5 times while monitoring the voltage at A02-A. Leave power on after the fifth time. If A02-A does not return to its original value (about 2.2V), but instead goes away negative shut down and do not ship this unit. It has power-on latch up.

26. All VR14/20's must be vibrated horizontally, vertically, and on its back facing up thru the range 0-60 on the vibration table while displaying DISPTST. Any breaking up or disappearing of the picture is a reject and cannot be retested unless the intermittent cause is found and fixed.

27. All units must be tested in a heat tent which has an ambient temperature between 45 and 55° C. For 3 hours with A02-A, A03-A at +2.0V (not 2.5) and then 3 hours with A02-A, A03-A adjusted to -2.0V (not 2.5). Now run DISPTST for 3 hours under heat tent. After both heat tent tests the following measurements must be made to see if any power transistors have become "leaky".

A. Turn the position pots on X and Y deflection (A225) so that +2.5 volts is measured at AØ2-A and AØ3-A. This causes +5 amps to flow from both amplifiers and represents the worst case dissipation for the 2N4399 transistors in the power supply and deflection.

B. **Measure the case temperature of the 2N4399 in the X and Y and power supply. The case temperature a room ambient should never exceed 72 °C (161 °F).**

C. **While the 2N4399's are still at full load, the 2N5302's are all unloaded and should be measured for leakage. Measure AØ2L to AØ2K, this voltage should read less than .75 volts. Measure AØ3L to AØ3K and should read less than .75 volts. This same measurement can be made at the power supply regulator board by measuring less than .75 volts between pin 11 (blue gray) and pin 12 (green) P3.**

D. **Now that the 2N4399's have been run full load, the 2N5302's should be done. Turn the X and Y position pots so that -2.5 volts is measured at AØ2-A and AØ3-A. This loads fully all the 2N5302's.**

E. Measure the case temperatures of all 2N5302's. They should also be less than 72°C (161°F).

F. Now measure the 2N4399's (which should all be off). Measure less than .75 volts between AØ2-R and AØ2-T and also between AØ3-R and AØ3-T. On the power supply measure less than .75 volts between pin 2 (yellow gray) and pin 1 (orange) on P3.

G. After the test return the position setting to 0, 0 in X and Y.

H. If any of the measurements are above limits, the unit should never be shipped to anyone as it is a potential failure.

VI. ON-LINE TEST

1. Plug in the signal input cable from the PDP-12 to the VR14.

2. Load in display test D6CB.

3. Turn on power to the VR14 and PDP-12. (On/off brightness fully CW).

4. Set the channel select on the front of the VR14 to channel 1 and 2.

5. Start the display test, LINC mode, start 20.

6. Freeze the display on pattern 2, character display.

7. Check the displayed characters for acceptable quality.

8. Turn the brightness control on the front panel. CCW fully, (No intensity,)

10. Run the display in this configuration for 48 hours.

11. After completion of the 48 hour run make the following checks.

    a. Turn the front panel intensity control fully CW and check the quality of the displayed characters.

    b. Check the VR14 transformer for excessive heat.

12. Hit I/O PRESET and STOP on the PDP-12 console.

13. Make the following voltage checks (remove signal cable)

    a. Voltage check number 12 of table 1.

    b. Voltage check number 13 of table 1.

    c. Replace signal cable

14. Start the display test D6BC (LINC mode, START 20).

15. Select Sense Switch while the display is running pattern 3.

16. Check pattern 3 for the quality of the display.

16. Check the yoke alignment and adjust if required.

17. Resetting Sense Switchs to zero will cause the display test to rotate thru the patterns.

18. Select Sense Switch while the display is running pattern 1.

19. Check the quality of the display. (The box should extend to within ¼" of the edge of the usable display area at its closest point).

20. Check the yoke alignment and adjust if required.

21. Remove input signal and zero position on X & Y (AØ2A, AØ3A = ØV).

VII. MARGINAL TEST

None Required

VIII. VIBRATION TEST

1. Power up the VR14 and PDP-12.

2. Load and start display test D6CB (LINC, mode, START 20).

3. Vibrate the logic in accordance with specification SP-7665057-0-0. Observe the display for no malfunctions while vibrating the logic.

IX. ACCELERATED LIFE TEST

None Required

X. RELIABILITY TEST

None required

XI VR14 PRODUCTION CHECKLIST

VR14 Serial Number _____

Phosphor _____

Power Required _____

Table Top _____

Chassis Mount _____

	Tech	Date
1. Basic Mechanical Check IV. A1 - A20	_____	_____
2. Basic Electrical Check IV. B1 - B7	_____	_____

Test 1	+ _____ VDC	
Test 2	- _____ VDC	
Test 3	_____ VAC	
Test 4	+ _____ VDC	
Test 5	+ _____ VDC	
Test 6	- _____ VDC	to - _____ VDC
	- _____ VDC	to _____ VDC
Test 7	+ _____ VDC	to - _____ VDC
Test 8	_____ VAC	
Test 9	+ _____ VDC	
Test 10	- _____ VDC	to - _____ VDC
	- _____ VDC	to _____ VDC

Test 11 + _____ VDC to - _____ VDC

Test 12 + _____ VDC

Test 13 - _____ VDC

Test 14 _____ VDC

Test 15 _____ VDC

Test 16 + _____ VDC

Test 17 + _____ VDC to - _____ VDC

Test 18 + _____ VDC to - _____ VDC

B1 - P _____ °C

B1 - Q _____ °C

B1 - R _____ °C

B1 - S _____ °C

3. Basic On Line Test

A. M711 Set up

V. B1 _____ Intens

_____ P.R.R.

_____ Width

B. Input Signal

V. C4 _____ VDC

C5 _____ VDC

C5A _____ yes _____ no

If yes do not proceed until oscillation has been fixed.

C. Brightness Preset

V. C12,i _____

D. Channel Select

V. C12,J _____ Channel 1

_____ Channel 2

V. C12,K _____ Channel 1 and 2

E. V. C25 _____ yes _____ no

If yes do not ship unit.

F. V. C26 _____ O.K.

H. V. $C27_a$ - C27h

C27b + _____ VDC

C27c + _____ VDC

C27d + _____ VDC

C27f - _____ VDC

C27g - _____ VDC

C27h - _____ VDC

4. On Line Testing

A. 48 hour reliability

VI. 10 _____ OK

13A _____ VDC

13b _____ VDC

B. Yoke tightened Down

VI. 16A _____ OK

5. Vidration Test

VIII. 1 - 3 _____ OK

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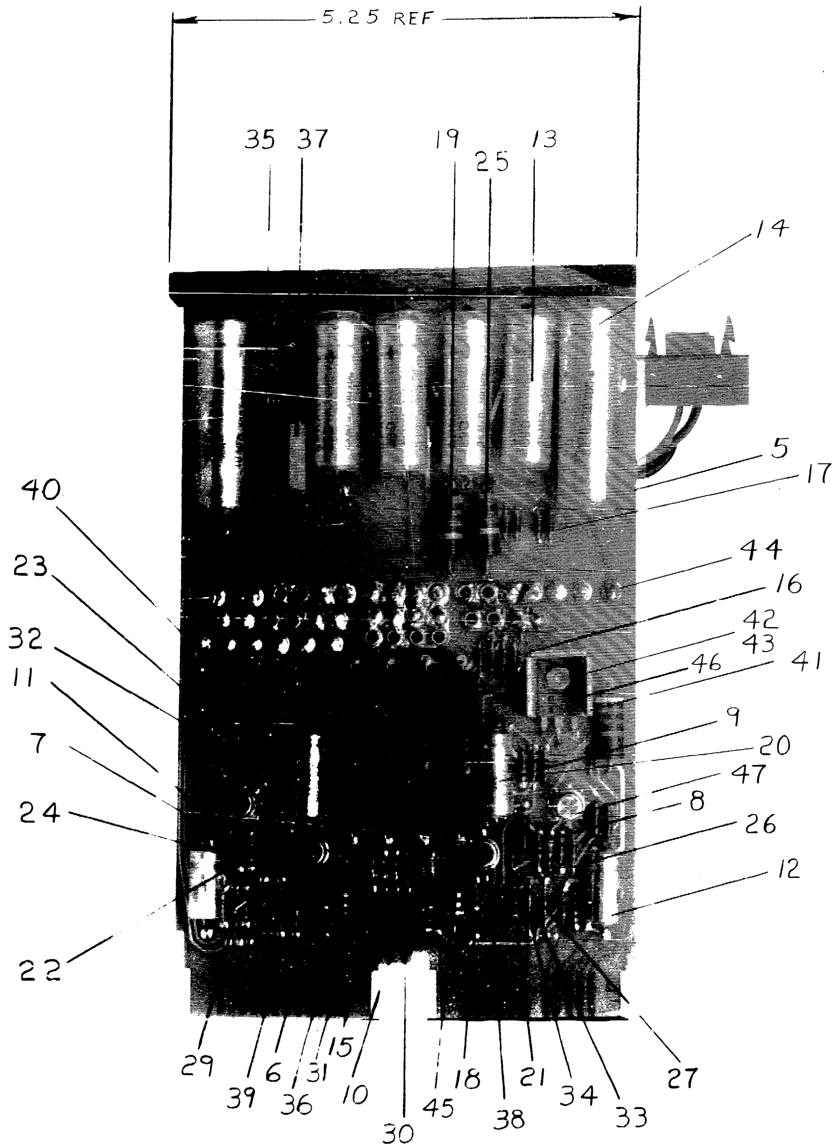
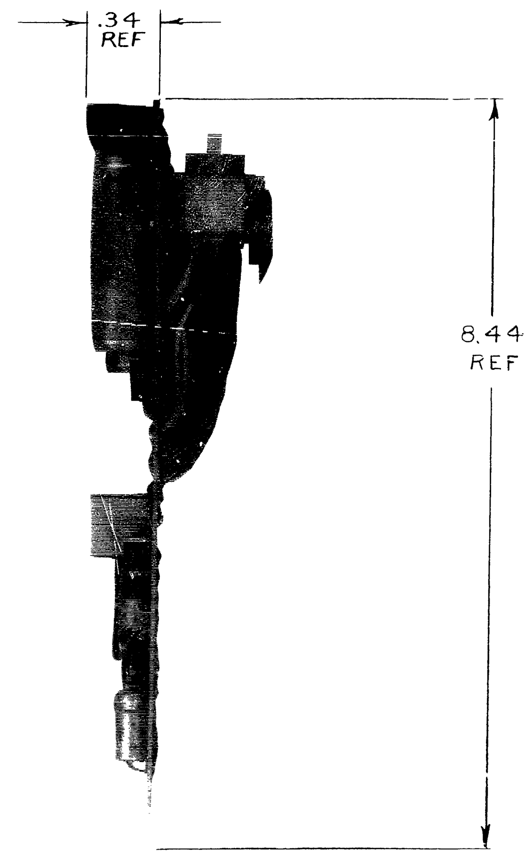




FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
VR14	PARTS LIST			

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 —

		DATE
DRN.	W. HOVEY	10/26/70
CHK'D.	D. CRABBE	11/2/70
ENG.	D. CRABBE	11/6/70
PROJ. ENG.	A. FISHMAN	11/6/70
PROD.	R. PETERSON	11/6/70

NEXT HIGHER ASSY.

SCALE —
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE G836 POWER REGULATOR BOARD ASSEMBLY

SIZE	CODE	NUMBER	REV
D	UA	G836-Ø-Ø	E

DIST.

REVISIONS

CHG	CHANGE NO	REV
	G836-00002	C
	REDRAWN + REVISED	
	A. FISHMAN 11-8-71	
	11-16-71	
	G836-00005	D
	COOPER 3/24/72	
	A. FISHMAN 3/29/72	
	G836-00006	E
	2-2-73	
	A. FISHMAN 2-12-73	

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY Mary Ann Gilbert DATE July 8, 1971 | CHECKED DATE 9-11-61 | SECTION
ENG DATE 10-15-71 | PROD DATE | ISSUED SECT.

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
1	D-CS-G836-0-1	CIRCUIT SCHEMATIC	
2	K-CO-G836-0-4	X-Y COORDINATE HOLE LOCATION	
3	E-AH-G836-0-5	ASSY/DRILLING HOLE LAYOUT	
4	B-MH-G836-0-6	MODULE ECO HISTORY	
4½	D-UA-G836-0-0	POWER REGULATOR BOARD ASSEMBLY	
5	5009224	ETCHED CIRCUIT BOARD	1
6	1000020	CAP. 180PF 100V 5% D.M.	1 C8,
7	1000024	CAP. 470PF 100V 5% DL.ML.	2 C4,10
8	1000042	CAP. 1000PF 100V 5% MICA	2 C5,20
9	1000080	CAP. 50UF 50V -10 +75% S.TANT	2 C6,11
10	1001610	CAP. .01UF 100V 20% DISC	2 C12,13
11	1001739	CAP. 27PF 100V 5% MICA	2 C3, 9
12	1001886	CAP. 270UF 15V 10% S.TANT	2 C1, 7
13	1009438	CAP. 25UF 150V 39D	4 C16,17,18,19
14	1009439	CAP. 10UF 450V 39D	2 C14,15
15	1102808	DIODE 1N752A 5.6V	6 D1, 2, 5, 6, 7, 8
16	1102942	DIODE 1N4001	4 D13,14,15,16
17	1105796	DIODE 1N4004	6 D3, 4, 9,10,11,12
18	1300220	RES. 68 ½W 10%	2 R11,31
19	1300245	RES. 120 2W 10%	1 R37
20	1301317	RES. 10 ¼W 5%	4 R10,27, 5,21
21	1300285	RES. 270 ½W 5%	2 R8,25

TITLE: VR-14 POWER SUPPLY AND REGULATOR BOARD | ASSY NO. | SHEET 1 OF 3 | SIZE A | CODE PL | NUMBER G836-0-0 | REV. E | ECO NO. 00006 | DIST.

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY Mary Ann Gilbert DATE July 8, 1971 | CHECKED | SECTION
ENG DATE 10-15-71 | PROD DATE | ISSUED SECT.

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
22	1300295	RES. 330 ¼W 5%	2 R4, 18
23	1300271	RES. 220 ¼W 5%	2 R9, 24
24	1300365	RES. 1K ¼W 5%	6 R7, 15,16,23,29,32
25	1300369	RES. 1K 2W 10%	1 R36
26	1300391	RES. 1.5K ¼W 5%	2 R6, 22
27	1300417	RES. 2.2K ¼W 5%	2 R39,40
~~28~~	~~1301317~~	~~RES. 10 ¼W 5%~~	~~2 R5, 21~~
29	1301890	RES. 560 ¼W 5%	2 R1, 20
30	1302385	RES. 750 1W 5%	2 R33,34
31	~~1302820~~ 1310701	RES. 80 10W 1% WW	4 R12,26,41,42
32	1303062	RES. 470 2W 5%	2 R14,30
33	1302612	RES. 1.78K 1/8W 1% MF	2 R2, 17
34	1304870	RES. 6.81K 1/8W 1% MF	2 R3, 19
35	1310179	RES. 500K 1W 10% 78PR POT	1 R35
36	1310382	RES. 2.7 1W 5%	2 R13,28
37	1309143-14	RES. 100K 3/4W 10% 76PR POT	1 R38
38	1501742	TRANSISTOR 2N2904	1 Q1
39	1501891	TRANSISTOR DEC 2219	1 Q3
40	1510556	TRANSISTOR MJE 2955	1 Q2
41	~~7408587~~ 5509718	HEAT SINK REV A	6
42	9006011	SCREW SLOTTED #4-40 x3/8 SST	2
43	9006556	NUT HEX #4-40 SST	2

TITLE: VR-14 POWER SUPPLY AND REGULATOR BOARD | ASSY NO. | SHEET 2 OF 3 | SIZE A | CODE PL | NUMBER G836-0-0 | REV. E | ECO NO. 00006 | DIST.

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY Mery Ann Gilbert	CHECKED	SECTION
DATE July 8, 1971	DATE	
ENG A Freshman ACE	PROD	ISSUED SECT.
DATE 10-11-71	DATE	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
44	9007836	EYELETS #GS4-3	41
45	9008085	SOLDERLESS TERMINAL	8
46	1510555	TRANSISTOR MJE 3055	1 Q4
47	1909344	I.C. MC 1709 OP AMP	2 E1, 2

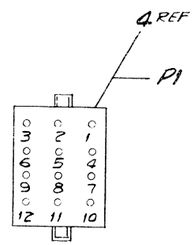
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
VR-14 POWER SUPPLY AND REGULATOR BOARD	SHEET 3 OF 3	A	PL	G836-0-0	E	00006
		DIST.				

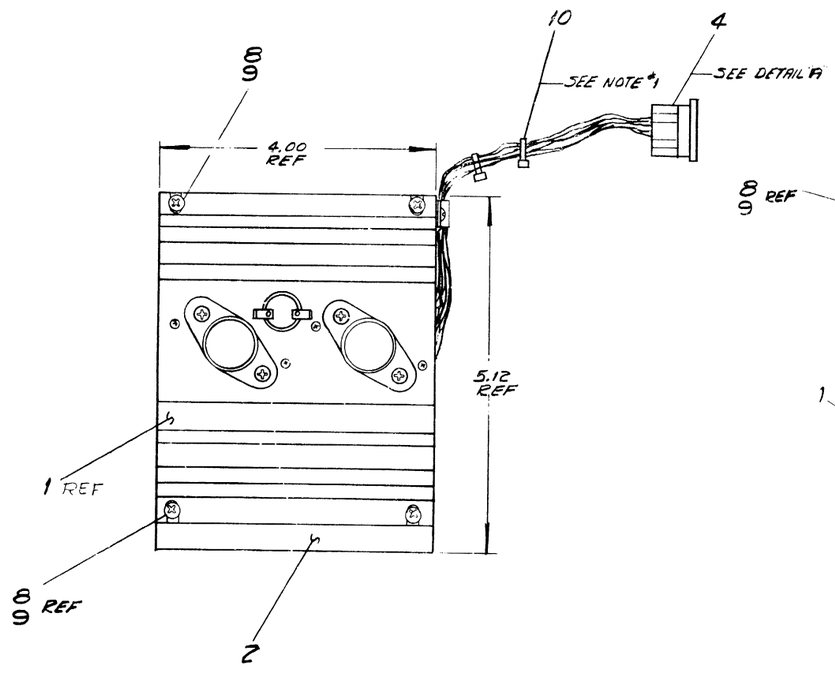
DEC FORM NO. 16-1031
DRA 110

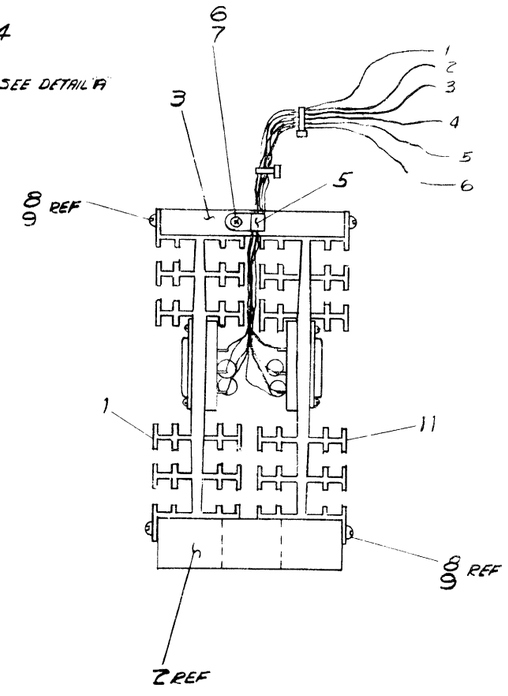
WIRE TABLE

ITEM NO.	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
1	14	GRN	BRADY M. # 4	—	P1-1	4
1	18	GRY/YEL	5	—	P1-2	4
1	14	RED	6	—	P1-3	4
1	14	BLU	1	—	P1-10	4
1	18	GRY/BLU	2	—	P1-11	4
1	14	GRN	BRADY M. 3	—	P1-12	4

NOTES:
1. USE TIE WRAPS WHEREEVER NECESSARY.







REVISIONS	CHANGE NO	CHK	REV

DEC FORM NO DMD 1100

FIRST USED ON OPTION/MODEL: VR14

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 —

QTY	DESCRIPTION	PART NO	ITEM NO

PARTS LIST

DRN		DATE 10-14-70
CHK'D		DATE 10/15/70
ENG		DATE 10/16/70
PROJ ENG		DATE 11-1-70
PROD		DATE 11-2-70

NEXT HIGHER ASSY: D-VA-1R14-0-0

SCALE —

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: P.S. HEAT SINK ASS'Y VR14

SIZE D | CODE AD | NUMBER 7007080-0-0 | REV

DIST

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY J. Devin	CHECKED D. Crabbe	SECTION 1
DATE 10/14/70	DATE 10/15/70	
ENG D. L. Crabbe	PROD R. Peterson	ISSUED SECT. 1
DATE 11/6/70	DATE 11/6/70	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
1	D-AD-7007081-1-0	REGULATOR HEAT SINK ASSY.	1
2	C-MD-7408437-0-0	BRKT, MTG. SPACER	1
3	C-MD-7408438-0-0	SPACER, MTG.	1
4	1209351-12	SOCKET HOUSING MATE-N-LOK	1
5	CPS-1953-4A	CLAMP NYLON ¼ I.D.	1
6	9006021-1	SCR, PHL HD PAN #6-32 x 5/16 LG	1
7	9006656	WASHER, FLAT #6 SST	1
8	9006020-1	SCR, PHL HD PAN #6-32 x ¼ LG SST	8
9	9006633	WASHER, INTERNAL #6-32 SST	8
10	9007031	TIE WRAPS SST-1B	2
11	D-AD-7007081-2-0	REGULATOR HEAT SINK ASSY.	1

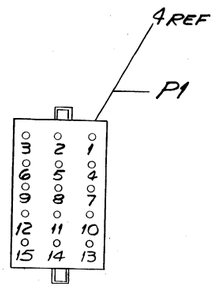
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
P.S. HEAT SINK ASSY.	D-AD-7007080-0-0	A	PL	7007080-0-0		
	SHEET 1 OF 1	DIST.				

DEC FORM NO.16-1031

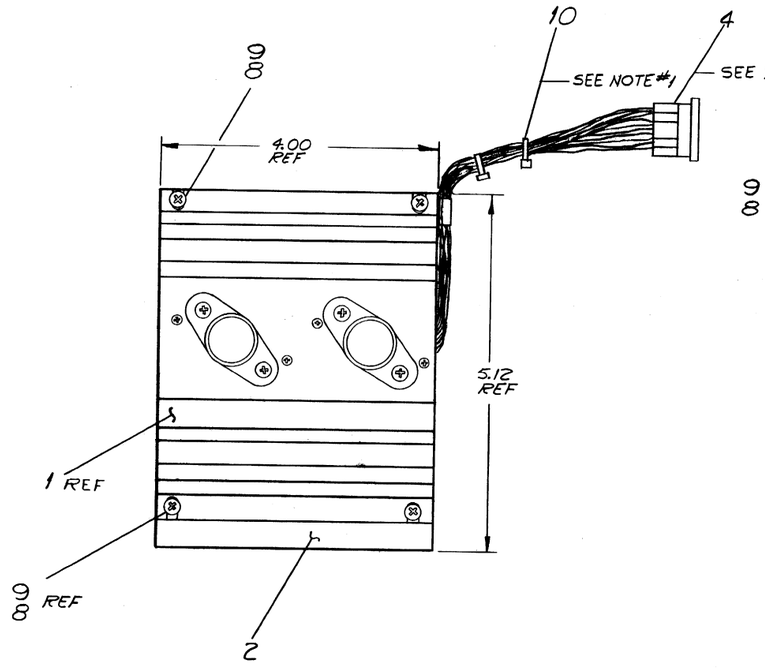
WIRE TABLE

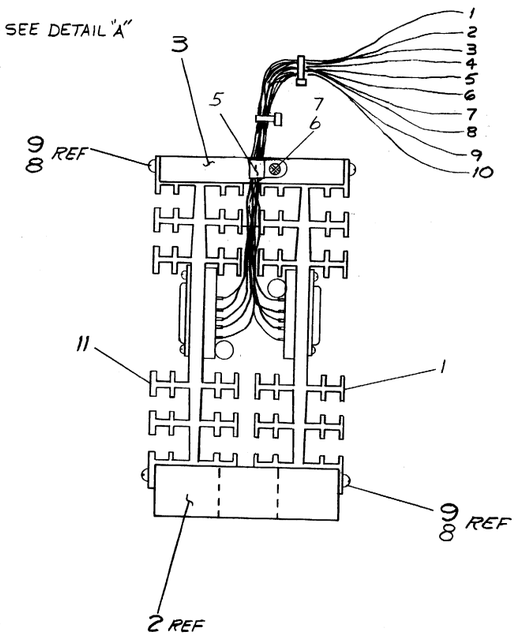
ITEM NO.	DESCRIPTION AWG	COLOR	FROM CONNECTION	WITH	TO CONNECTION	WITH
1	18	RED	BRADY M 1	—	P1-1	4
1	"	GRY/YEL	" 2	—	P1-2	4
1	"	GRY	" 3	—	P1-3	4
1	"	GRY/BLU	" 4	—	P1-4	4
1	"	BLU	" 5	—	P1-5	4
11	"	BLU	" 6	—	P1-11	4
11	"	GRY/BLU	" 7	—	P1-12	4
11	"	VIO	" 8	—	P1-13	4
11	"	GRY/YEL	" 9	—	P1-14	4
11	18	RED	BRADY M 10	—	P1-15	4

NOTES:
1. USE TIE-WRAPS WHEREVER NECESSARY.



DETAIL "A"





REVISIONS			
CHK	CHANGE NO		REV.
[illegible]	VR14-00003		A
FISHMAN	VR14-00015		B
L.GALE			

DEC FORM NO DRD 100

FIRST USED ON OPTION/MODEL: VR14

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY 125
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —

FINISH —

QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST			

DRN. W. Hooley	DATE 19 OCT 70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CH'D. R.K. Crabbe	DATE 10/15/70	
ENG. R.K. Crabbe	DATE 11/6/70	TITLE: DEFLECTION HEAT SINK ASSY
PROJ. ENG. [illegible]	DATE 11-6-70	
PROD. [illegible]	DATE 11/6/70	
NEXT HIGHER ASSY D-UA-VR14-Ø-Ø		SIZE D CODE AD NUMBER 7007082-0-0 REV. E
SCALE —		DIST.
SHEET 1 OF 1		

SIZE D CODE AD NUMBER 7007082-0-0 REV B

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY W. Hovey	CHECKED D.K. Crabbe	SECTION 1
DATE October 15, 1970	DATE Oct. 15, 1970	
ENG D.K. Crabbe	PROD R. Peterson	ISSUED SECT. 1
DATE 11/6/70	DATE 11/6/70	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
1	D-AD-7007083-1-0	DEFLECTION POWER AMP. ASSY.	1
2	C-MD-7408437-0-0	BRKT, MTG. SPACER	1
3	C-MD-7408438-0-0	SPACER, MTG	1
4	1209351-15	SOCKET HOUSING MATE-N-LOK	1
5	CPS-1953-4A	CLAMP NYLON ¼ I.D.	1
6	9006021-1	SCR PHL HD PAN #6-32 x 5/16 LG	1
7	9006656	WASHER, FLAT #6 SST	1
8	9006020-1	SCR, PHL HD PAN #6-32 x ¼ LG SST	8
9	9006633	WASHER, INTERNAL #6-32 SST	8
10	9007031	TIE-WRAPS SST-1B	A/R
11	D-AD-7007083-2-0	DEFLECTION POWER AMP. ASSY.	1
~~12~~	~~1209351-03~~	~~SOCKET HSG (MATE) MATE-N-LOK~~	~~1~~

TITLE DEFLECTION HEAT SINK ASSY.	ASSY NO. D-AD-7007082-0-0	SIZE A	CODE PL	NUMBER 7007082-0-0	REV. B	ECO NO. V-14-02315
	SHEET 1 OF 1	DIST.				

DEC FORM NO.16-1031
DRA 110

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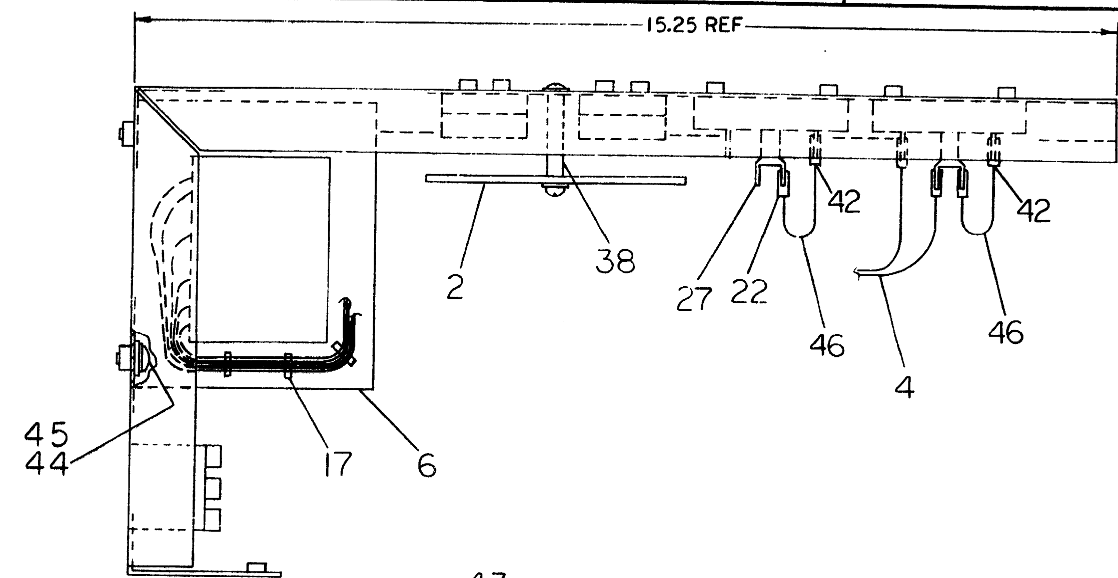
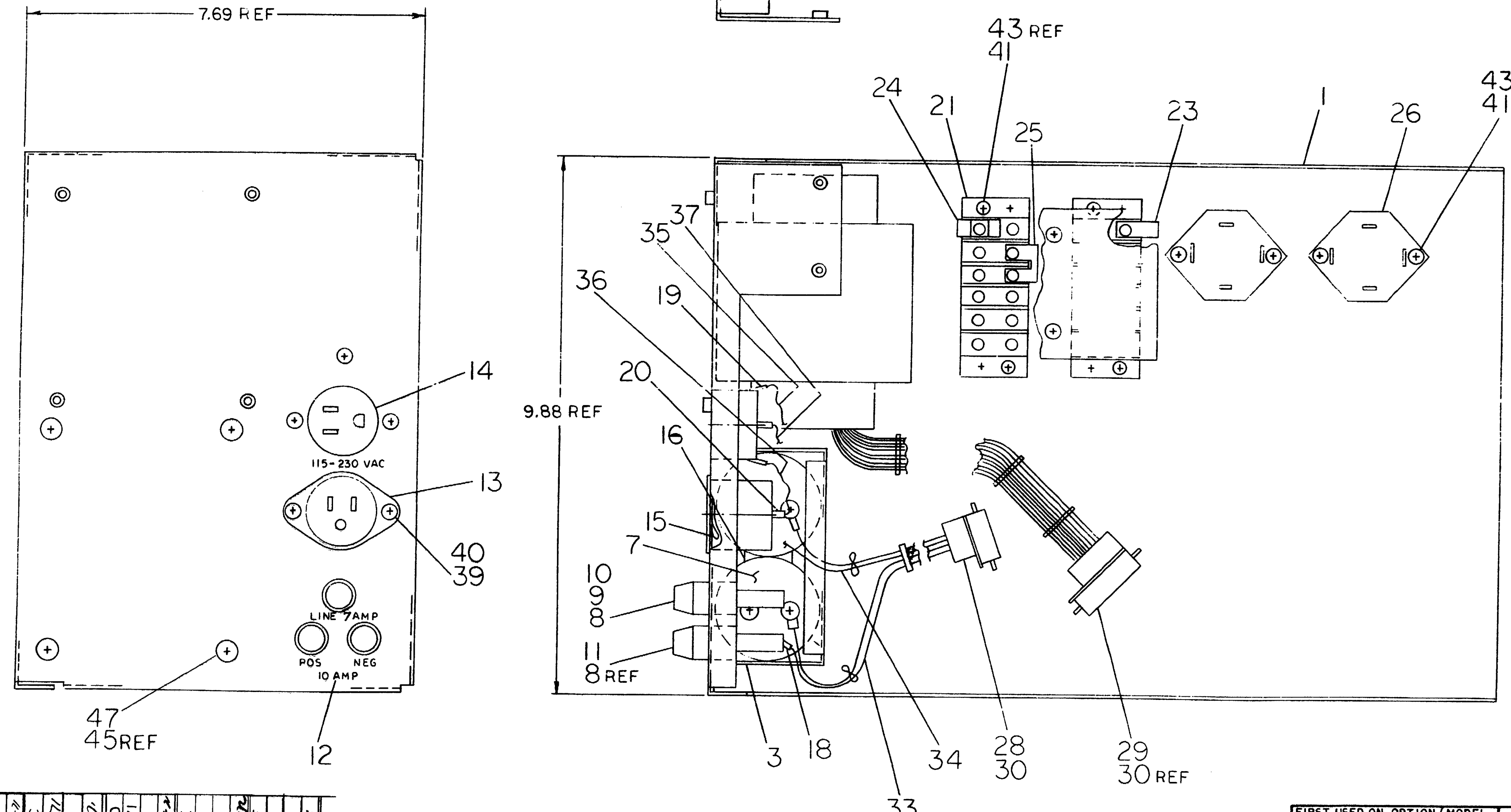
LEGEND	
NUMBER	VARIATION
7007084-1	115 VAC (50/60 HZ)
7007084-2	230 VAC (50/60 HZ)
7007084-3	100 VAC (50/60 HZ)
7007084-4	115 VAC (VR20)
7007084-5	230 VAC (VR20)
7007084-6	100 VAC (VR20)





REVISIONS			
CHK	CHANGE NO.		REV.
	VR14-00002	A. FISHMAN 1-6-71	A
	VR14-00007	A. FISHMAN 1-15-71	B
	VR14-00010	A. FISHMAN 5/25/71	C
	VR14-00014	FISHMAN 7-27-71	D
	VR14-00019	A. FISHMAN 11-2-71	E
	VR14-00022	A. FISHMAN 1-16-73	F

DEC FORM NO. DRD 100

FIRST USED ON OPTION/MODEL
VR14

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

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DRN. D. K. Cobble	DATE 10/20/70	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D D. K. Cobble	DATE 10/21/70	
ENG. D. K. Cobble	DATE 11/6/70	TITLE POWER SUPPLY ASSY (VR14)
PROJ. ENG. A. Fishman	DATE 11-6-70	
PROD. R. Peterson	DATE 11/11/70	
NEXT HIGHER ASSY D-UA-VR14-0-0		SIZE D CODE AD NUMBER 7007084-0-0 REV. F
SCALE NONE		
SHEET 1 OF 2		DIST. G

HARNESS TABLE

COLOR	HARN PT	P.S. LOCATION
RED	3	FAN2-1
WHT	4	FAN2-2
GRN	6	C2-NEG
GRN	7	C2-NEG
BLK	8	GND-1
RED	9	F1-2
WHT	10	PL2-T
ORN	11	C1-POS
ORN	12	C1-POS
RED	14	T1-2
WHT	15	T1-5
RED	16	T2-1
WHT	17	T2-5
GRN	22	D1-2
ORN	23	D1-1
GRN	25	D2-2
ORN	24	D2-1
RED	21	T2-1
WHT	20	T2-4
RED	19	T1-1
WHT	18	T2-4
BLK	30	GND-2 (ON H.V. ASSY)
RED	32	FAN1-1
WHT	31	FAN1-2

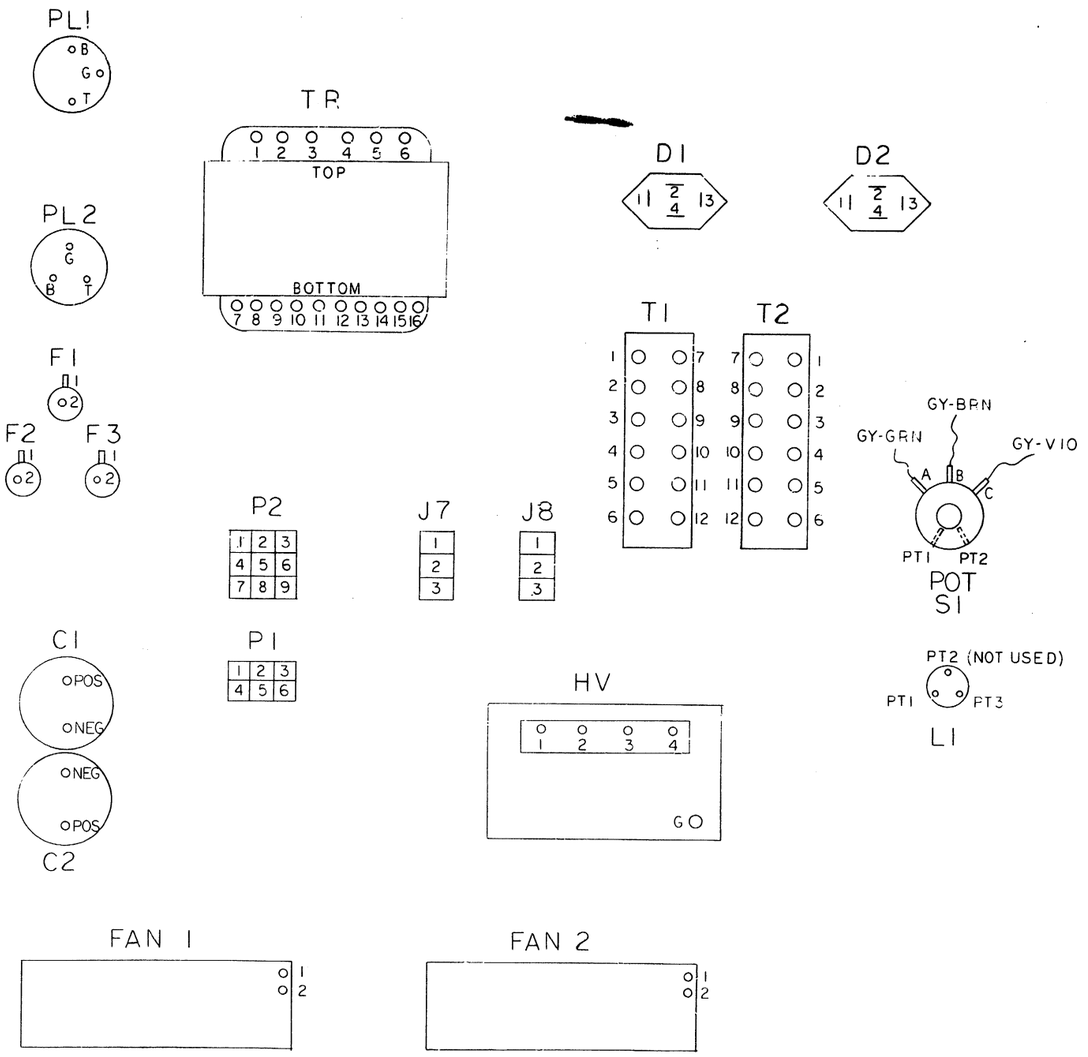
WIRE TABLE

ITEM NO.	WIRE COLOR	CONNECTIONS TYPE-ITEM	FROM	TO	TYPE-ITEM
46	BLU	22	D2-3	D2-4	22,27
46	BLU	22	D1-3	D1-4	22,27
35	RED	22,24	T1-2	T2-2	22,24
36	WHT	22,24	T1-6	T2-6	22,24
32	ORN	19	C1-POS	F3-1	*A,18
33	BLK	19	C1-NEG	P1-3	28,30
	ORN	*A,18	F3-2	P1-1	28,30
34	BLK	19	C2-POS	P1-6	28,30
	GRN	*A,18	F2-2	P1-4	28,30
31	GRN	*A,18	F2-1	C2-NEG	19
35	RED	*A,18	F1-2	PL2-B	20
35	RED	19	PL1-B	PL2-B	20
36	WHT	19	PL1-T	PL2-T	20
37	BLK	19	PL1-G	PL2-G	20
6	VIO	*A	TR-1	T2-6	22
6	GRY		TR-2	T2-3	22
6	WHT		TR-3	T2-2	22
6	BRN		TR-4	T1-6	22
6	RED		TR-5	T1-4	22
6	ORN		TR-6	T1-3	22
6	YEL		TR-7	P2-1	28,30
6	BLU		TR-8	D2-4	22,27
6	YEL-BLK		TR-9	P2-2	28,30
6	GRN		TR-10	P2-9	28,30
6	YEL		TR-11	P2-3	28,30
6	GRN		TR-12	P2-7	28,30
6	BLK		TR-13	P2-4	28,30
6	BLK-WHT		TR-14	P2-5	28,30
6	BLU		TR-15	D1-4	22,27
6	BLK-YEL	*A	TR-16	P2-6	28,30

*LETTER DESIGNATION "A" INDICATES WIRE IS TO BE SOLDERED PER TABLE ABOVE (WIRE TABLE)

JUMPER TABLE

ITEM NO.	FROM	TO
25	T1-7	T1-8
25	T1-8	T1-9
25	T1-11	T1-12
25	T2-7	T2-8
25	T2-10	T2-11
25	T2-11	T2-12



REVISIONS	REV.	CHANGE NO.	CHK

DEC FORM NO. DRD 100

FIRST USED ON OPTION/MODEL: VR14

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ~~X=.005~~ ~~FRACTIONS .0=.01~~ ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —

FINISH —

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DRN	W. Gabbe	DATE 10/15/70
CHKD	W. Gabbe	DATE 10/16/70
ENG	W. Gabbe	DATE 11/6/70
PROJ. ENG.	D. Thurman	DATE 11-6-70
PROD.	R. Peterson	DATE 11/11/70

NEXT HIGHER ASSY: D-UA-VR14-0-0

SCALE: NONE

SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: POWER SUPPLY ASSY (VR14)

SIZE	CODE	NUMBER	REV.
D	AD	7007084-0-0	F

DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. Crabbe	CHECKED D. Crabbe	SECTION
DATE 10/9/70	DATE 10/22/70	1
ENG D.K. Crabbe	PROD R. Peterson	ISSUED SECT.
DATE 11/6/70	DATE 11/11/70	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION 7007084-1	7007084-2	7007084-3	7007084-4	7007084-5	7007084-6
1	E-IA-7408402-0-0	PLATE, SIDE MTG.	1	1	1	1	1	1
2	B-MD-7408416-0-0	COVER, PROTECTION	1	1	1	-	-	-
3	D-IA-7408433-0-0	COVER, CAPACITOR HOLDDOWN	1	1	1	1	1	1
4	E-IA-7007147-0-0	POWER SUPPLY CABLE HARNESS	1	1	1	1	1	1
5	D-SC-7007084-0-1	POWER SUPPLY CIRCUIT SCHEMATIC	REF	REF	REF	REF	REF	REF
6	1610160-0	TRANSFORMER MMC-3833-1 MERRIMACK	1	1	1	1	1	1
7	1010143-0	CAPACITOR, 5900 MFD 75V SPRAGUE	2	2	2	2	2	2
8	9007242	FUSE HOLDER #HKP	3	3	3	3	3	3
9	9007224	7 AMP SLO BLO FUSE (115V)	1	-	1	1	-	1
10	9007218	3 AMP SLO BLO FUSE (230V)	-	1	-	-	1	-
11	9008838	10 AMP FAST BLO FUSE (230V)	2	2	2	2	2	2
12	A-DC-7408407-0-0	SCOTCHCALS (VR14)	A/R	A/R	A/R	A/R	A/R	A/R
13	1201252	RECEP #160-5 MALE AMPH.	1	1	1	1	1	1
14	1201251	RECEP #160-4 FEM AMPH.	1	1	1	1	1	1
15	9006760	TERMINAL #2101-06-00 SHAKE PROOF	1	1	1	1	1	1
16		FOAM ½ x 3/4 STICKY BACK 3M	A/R	A/R	A/R	A/R	A/R	A/R
17	9007031	TIE WRAP SST-1-B	A/R	A/R	A/R	A/R	A/R	A/R
18	9107305	SHRINKIES	A/R	A/R	A/R	A/R	A/R	A/R
19	9006776	SOLDERLESS CONN #31889 (RED) AMP	7	7	7	7	7	7
20	9006780	SOLDERLESS CONN #34144 (RED) AMP	4	4	4	4	4	4
21	9006904	TERM STRIP #6-541 CINCH JONES	2	2	2	2	2	2
22	9007917	FASTON TAB #50902 AMP	12	12	12	12	12	12

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
POWER SUPPLY ASSY (VR14)	D-AD-7007084-0-0	A	PL	7007084-0-0	F	VR14-00022
	SHEET 1 OF 3	DIST. 6				

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. Crabbe	CHECKED D. Crabbe	SECTION
DATE 10/9/70	DATE 10/22/70	1
ENG D.K. Crabbe	PROD R. Peterson	ISSUED SECT.
DATE 11/6/70	DATE 11/11/70	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION 7007084-1	7007084-2	7007084-3	7007084-4	7007084-5	7007084-6
23	9007112	FASTON TAB #60145-1 AMP	1	1	1	1	1	1
24	9007269	FASTON TAB # 41287-1 AMP	12	12	12	12	12	12
25	9007131	JUMPERS #541 CINCH JONES	6	6	6	6	6	6
26	1105799	DIODE PACK DM15 SOLARTRON	2	2	2	2	2	2
27	9007925	PIGGYBACK FASTONS #3000H21A ARKLESS	2	2	2	2	2	2
28	1209351-06	SOCKET HSG (MALE) #1480273-1 MATE-N-LOK	1	1	1	1	1	1
29	1209351-09	SOCKET HSG (MALE) #1480274-1 MATE-N-LOK	1	1	1	1	1	1
30	1209378-01	CONTACT PIN (MALE) MATE-N-LOK	12	12	12	12	12	12
31	9107370-55	#14GA TEF STRD INS WIRE (GRN)	A/R	A/R	A/R	A/R	A/R	A/R
32	9107370-33	#14GA TEF STRD INS WIRE (ORN)	↑	↑	↑	↑	↑	↑
33	9107440-03	#14GA TEF STRD INS TWP (BLK-ORN)	↓	↓	↓	↓	↓	↓
34	9107440-05	#14GA TEF STRD INS TWP (BLK-GRN)						
35	9107360-22	#18GA TEF STRD INS WIRE (RED)						
36	9107360-99	#18GA TEF STRD INS WIRE (WHT)	↓	↓	↓	↓	↓	↓
37	9107360-00	#18GA TEF STRD INS WIRE (BLK)	A/R	A/R	A/R	A/R	A/R	A/R
38	9006864	SPACER, AL. #6-32 TAP ¼ AF x 1¼	2	2	2	-	-	-
39	9006560	NUT, KEPS #6-32	4	4	4	4	4	4
40	9006021-1	SCR PHL PAN HD #6-32 x 5/16 SST	8	8	8	4	4	4
41	9006025-1	SCR PHL PAN HD #6-32 x 5/8 SST	4	4	4	4	4	4
42	9007919	FASTON TAP AMP	2	2	2	2	2	2
43	9006633	LOCK WASHER #6 INT TOOTH	12	12	12	8	8	8
44	9006070-1	SCR, PHL PAN HD #10-32 x 5/16 SST	8	8	8	8	8	8

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
POWER SUPPLY ASSY (VR14)	D-AD-7007084-0-0	A	PL	7007084-0-0	F	

SHEET 2 OF 3 DIST. 2

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY	D. Crabbe	CHECKED	D. Crabbe	SECTION	1
DATE	10/9/70	DATE	10/22/70		
ENG	O.K. Crabbe	PROD	R. Peterson	ISSUED SECT.	1
DATE	11/6/70	DATE	11/11/70		

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION 7007084-1	7007084-2	7007084-3	7007084-4	7007084-5	7007084-6
45	9006635	LOCK WASHER #10 INT TOOTH	12	12	12	12	12	12
46	9107370-66	# 14 AWG TEF STRDINS WIRE (BLUE)	A/R	A/R	A/R	A/R	A/R	A/R
47	9007019-3	SCR, PHL TRUSS HD #10-32 X 5/16SST	4	4	4	4	4	4

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
POWER SUPPLY ASSY (VR14)	D-AD-7007084-0-0	A	PL	7007084-0-0	F	
	SHEET 3 OF 3	DIST.				

DEC FORM NO.16-1031
DRA 110