DIGITAL EQUIPMENT CORPORATION

typeset 8

...dedicated to the future of Graphic Arts

typeset-8 systems— positive logic engineering drawings

digital

typeset-8 systems—positive logic engineering drawings

DEC-08-HMMPA-A-D

digital equipment corporation · maynard. massachusetts

TYPESET-8 – POSITIVE LOGIC, ENGINEERING DRAWINGS

Drawing No.	Title	No. of Sheets
A-ML-PA63-0	Master Drawing List for PA63 16-Channel Reader/Punch Multiplexer	2
A-ML-PA68-F	Master Drawing List for PA68-F Reader/Punch Control and Interface Unit	2
A-ML-PR68-B	Master Drawing List for PR68-B High-Speed Paper-Tape Reader	1
B-CS-G908-0-1	G908 Photoamplifier Module	1
A-ML-PR68-D	Master Drawing List for PR68-D High-Speed Paper-Tape Reader	2
A-ML-PR68-DA	Master Drawing List for PR68-DA High-Speed Paper-Tape Reader	2
A-ML-PP67-C	Master Drawing List for PP67-C High-Speed Paper-Tape Punch	2
REFER TO A-ML-PP67-C	Master Drawing List for PP67-D High-Speed Paper-Tape Punch	2
C-CS-G773-0-1	Cable Connector	1

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
D-UA-PA63-Ø-Ø	L	2	16 CHANNEL READER/PUNCH MUX
A-PL-PA63-Ø-Ø	L	4	16 CHANNEL READER/PUNCH MUX
D-DI-PA63-Ø-1	J	1	DRAWING INDEX LIST
D-BS-PA63=Ø-Ø2	A	1	PUNCH IN FOR SKIP AVAILABLE
D-BS-PA63-Ø-Ø3	A	1	PUNCH SELECT
D-BS-PA63-Ø-Ø4	C	1	READER SEL
D-BS-PA63-Ø-Ø5		1	RDR HOLE FLIP-FLOP
D-BS-PA63-Ø-Ø6		2	READER SOLENOIDS
D-BS-PA63-Ø-Ø7	D	1	IOT DECODE
D-BS-PA63-Ø-Ø8	C	2	PUNCH CONTROL
D-BS-PA63-Ø-Ø9	D	1	READER CONTROL
D-BS-PA63-Ø-1Ø	B	2	RDR HOLE MATRIX (IN)
D-IC-PA63-Ø-11	E	1	READER CABLE CONNECTORS
D-IC-PA63-Ø-12	C	1	PUNCH CABLE CONNECTORS
D-IC-PA63-Ø-13		1	I/O CONNECTORS POSITIVE BUS
D-BS-PA63-0-18		1	PUNCH MATRIX
D-MU-PA63-Ø-14	F	2	MODULE UTILIZATION
A-PL-PA63-Ø-14	F	1	MODULE UTILIZATION
K-WL-PA63-Ø-15	F		WIRE LIST
D-AD-7006490-0-0	C	1	WIRED ASSY
A-PL-7006490-0-0	C	1	WIRED ASSY
C-IC-PA63-Ø-16	C	1	POWER WIRING (PA63)
A-SP-PA63-0-17	D	4	ENGINEERING SPECS.
A-SP-PA63-0-23			FIELD ACCEPTANCE PROCEDURE
- FOR IN HOUSE USE ONLY			
A-SP-PA63-0-19	B	2	ACCEPTANCE CRITERIA
A-AL-PA63-0-20	A	1	ACCESSORY LIST
A-SP-PA63-0-22			OPTION CHECKLIST
A-SP-PA63-0-21	A	6	MANUFACTURING TEST PROCEDURE

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	3/70	PA63-2	I.M.
B	6/70	PA63-4	D.C.
C	7/70	PA63-5	H.J.
D	11/70	PA63-7	H.J.
E	12/70	PA63-8	H.J.
F	12/70	PA63-9	H.J.
H	12/70	PA63-10	B.D.
J	3/71	PA63-11	H.J.
K	5/71	PA63-12	H.J.
L	12/71	BC01H-2	H.J.
M	12/71	PA63-13	
N	1/72	PA63-14	
P	4/73	PA63-16	

DRN. A. PFYFFER	DATE 12/19/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. A. PFYFFER	DATE 12/19/29	
ENG.	DATE	TITLE: 16 CHANNEL READER/PUNCH MUX
PROJ. ENG.	DATE	
PROD.	DATE	
FIRST USED ON		
SCALE 3/5		SIZE A; CODE ML; NUMBER PA63-Ø; REV. P
SHEET 1 OF 2		DIST.

DEC FORM NO. DRA 103

ADDITIONAL CUSTOMER PRINTS

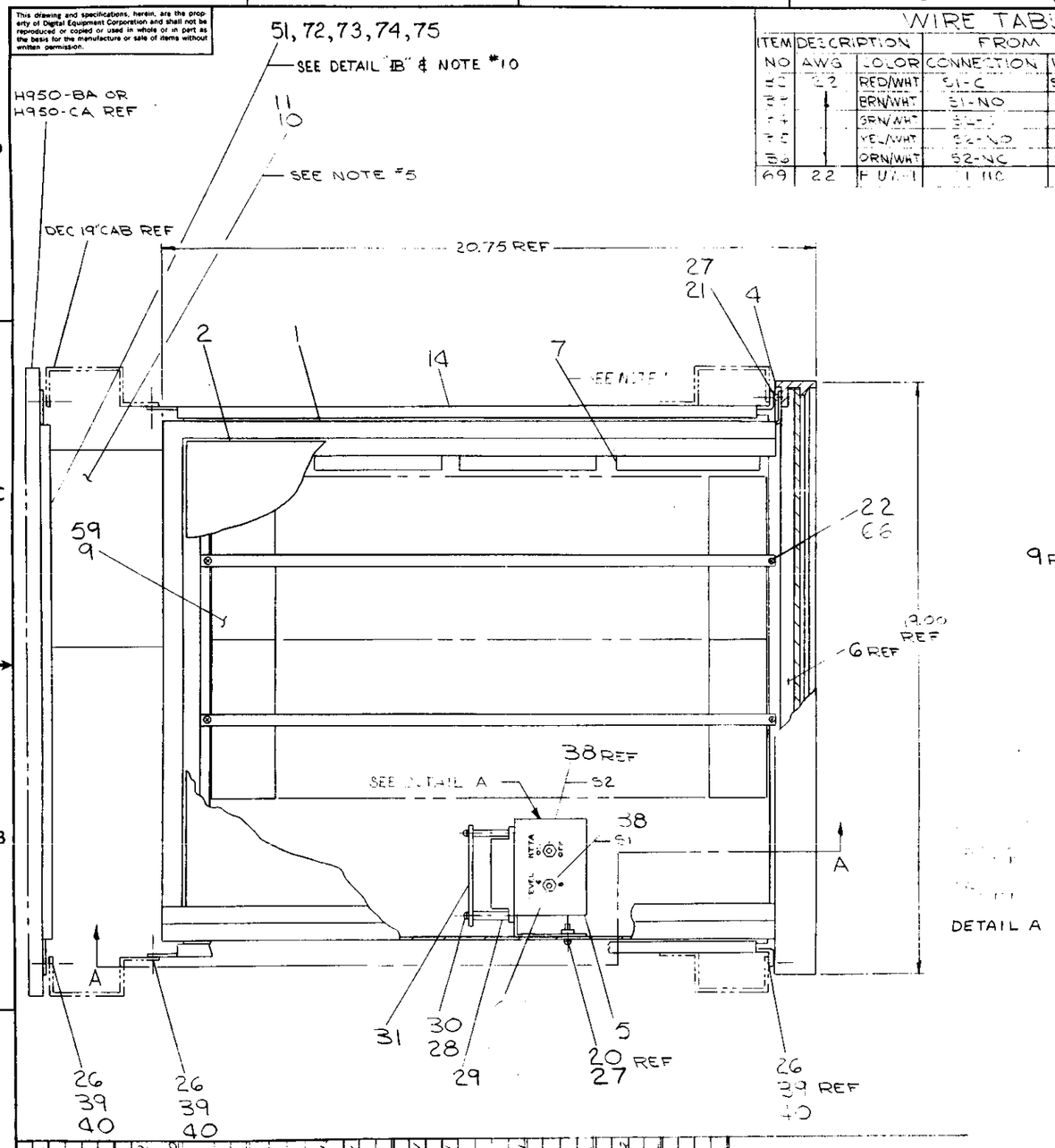
Drawing Number	Rev. Let.	Title
B-CS-M060-0-1	##	SOLENOID DRIVER
D-CS-M710-0-1	##	PUNCH CONTROL M710
D-UA-BC01F-0-0	##	PUNCH CABLE
D-UA-BC01H-0-0	##	READER CABLE
B-CS-798-0-1	##	DUAL 15V POWER SUPPLY
D-CS-H721-0-1	##	POWER SUPPLY
D-CS-M978-0-1	##	CONNECTOR MODULE
D-CS-M979-0-1	##	CONNECTOR MODULE

Rev.	Date	Change Number

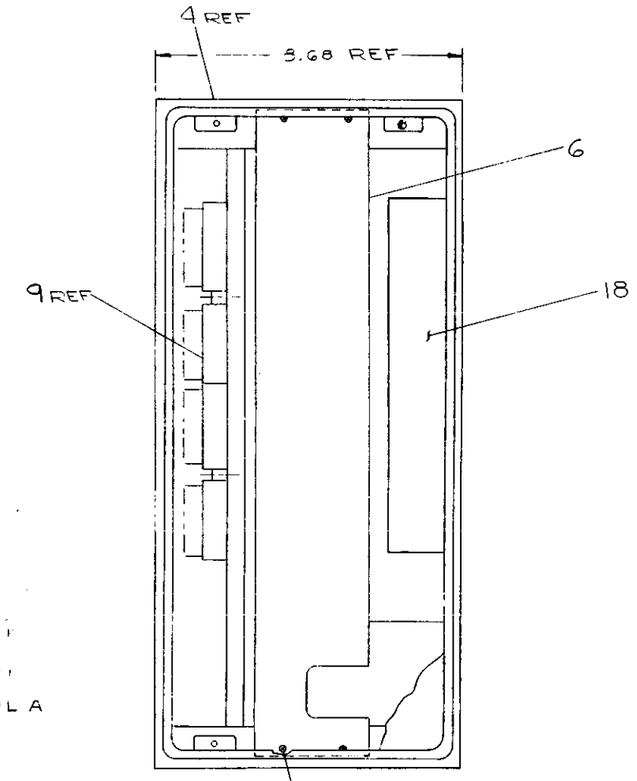
H. Jodice 3/22/71
Requested by Date

H. Jodice 3/22/71
Authorized by Date

Rev. P



DETAIL A



WIRE TABLE

ITEM NO	DESCRIPTION AWG	COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
50	22	RED/WHT	S1-C	SOLDER	A22B1	SOLDER
51		BRN/WHT	S1-NO		A28B2	
54		GRN/WHT	S2-C		A22B2	
55		YEL/WHT	S2-NO		A28B2	
56		ORN/WHT	S2-NC		A12A2	
69	22	BLU/WHT	J110	SOLDER	P1-1	SOLDER

NOTES:

1. FOR DRAWING INDEX LIST REFER TO DWG D-DI-PA63-Ø-1.
2. FOR PWR WIRING REFER TO DWG C-IC-PA63-Ø-1G.
3. IF FANS SUPPLIED ARE DEC # 12050B3-02(BOXER) MTG HDWR REQ'D IS ITEM #42 (SELF TAPPING SCR) ONLY.
   IF FANS ARE DEC #12050B3-01 (ROTRON) MTG HDWR REQ'D IS ITEM #23 (SCR) & #24 (MTG CLIP).
4. ~~REMOVE EXISTING PLATE FROM POWER SUPPLY & REPLACE WITH ITEM #9, USING EXISTING HDWR, BEFORE ASSEMBLING IN CHASSIS.~~
5. NOTE 798 OR H721 P/S CANNOT MOUNT BEHIND PA63 UNIT. MUST BE MTG'ED ABOVE OR BELOW UNIT ON REAR DOOR OF CAB AS SHOWN.
6. ~~TERMINATE C2CT2 THRU C5CT2 AS SHOWN BELOW, 16 PLACES.~~
7. AIR FLOW SHOULD BE FLOWING INTO CHASSIS
8. AC POWER TO FANS WILL HAVE TO BE TAKEN FROM CABINET AC BUSSES TABS PER C-IC-PA63-Ø-1G
9. ITEM 70 (.1 UFD, 100V, CAP) WHICH GOES FROM A28 B1 TO GND MUST BE COMPLETLY INSULATED WITH TUBING ON ITS LEADS & TERMI-POINT CONNECTORS.
10. RESISTOR TO BE MOUNTED BELOW THE TRANSFORMERS AND SECURED TO THE 6-32 RIVNUT INCORPORATED IN THE BASEPLATE. CENTER RESISTOR BETWEEN THE TRANSFORMERS.

ITEM NO	COMP	POL	FROM	TO	POL	REMARKS
71	RES		D21V1	+5V		TERM
70	CAP		A22B1	GND		TERM

EXTERNAL COMPONENT TABLE

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

REVISIONS REV.	CHANGE NO.	CHK	
A	PA63-00002		I. MORRIS
B	PA63-00004		JODICE
C	PA63-00005		JODICE
D	PA63-00007		JODICE
E	PA63-00010		JODICE
F	PA63-00011		JODICE
H	PA63-CC002		JODICE
J	PA63-00013		JODICE
K	PA63-00014		H. JODICE
L	PA63-00016		J. MILTON

FIRST USED ON OPTION / MODEL: PA63

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 10/1/70
CHK'D. — DATE 11/25/70
ENG. — DATE 9/1/70
PROJ. ENG. — DATE
PROD. — DATE

NEXT HIGHER ASSY A-ML-PA63-B

SCALE

SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

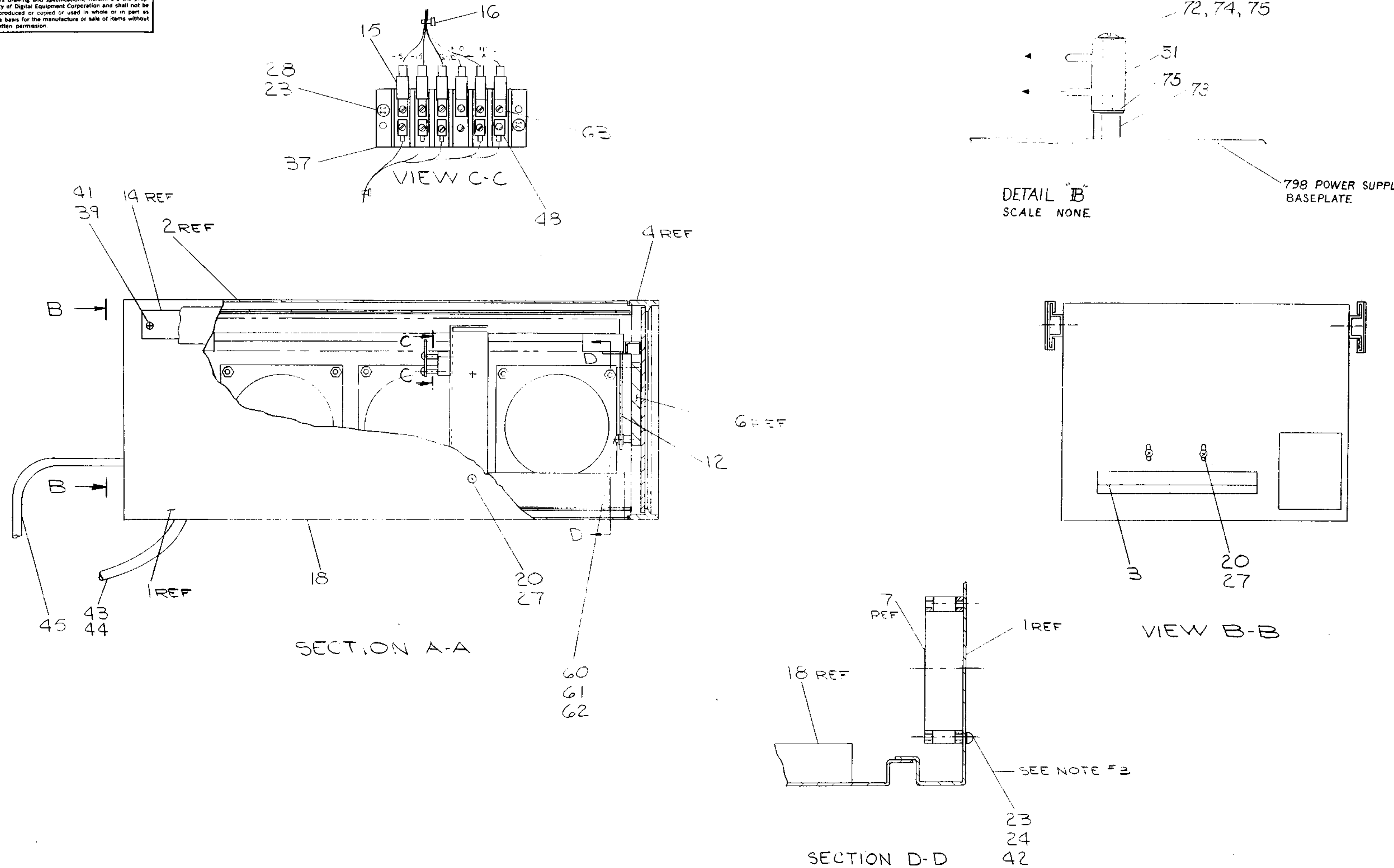
TITLE: 16 CHANNEL MULTIPLEXER (PA63)

SIZE CODE D — NUMBER PA63 Ø Ø — REV

DIST

DEC FORM NO. SRD 100

SIZE CODE D UA — NUMBER PA63-Ø-Ø — REV L



QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL

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
CHK'D. / DATE
ENG. / DATE
PROJ. ENG. / DATE
PROD. / DATE
NEXT HIGHER ASSY
SCALE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
16 CHANNEL MULTIPLEXER (PA63)

SIZE D CODE UA NUMBER PA63-Ø-Ø REV

DIST.

REVISIONS — REV — CHANGE NO — CHK

D UA PA63-Ø-Ø

DEC FORM NO DRD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 1/6/70	DATE 1/21/70	1
ENG [signature]	PROD [signature]	ISSUED SECT.
DATE 3/9/70	DATE 3-10-70	1

ITEM NO	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
1.	E-IA-7406757-0-0	FRAME, CHASSIS	1			
2.	D-IA-7406756-0-0	COVER CHASSIS	1			
3.	C-MD-7406762-0-0	CABLE, RETAINER	1			
4.	D-SC-1210065-0-0	BEZEL,	1			
5.	D-IA-7407848-0-0	PWR SUPPLY MTG BRKT	1			
6.	D-IA-7406738-0-0	SUPPORT, PLEXIGLASS	1			
7.	1205033	FAN	3			
8	D-IA-7407638-0-0	INDICATOR PANEL	1			
9.	D-AD-7006490-0-0	WIRED ASSY	1			
* 10.	D-UA-798-0-0	798 POWER SUPPLY	1			
11.	D-UA-H721-0-0	H721 POWER SUPPLY	1			
12.	D-IA-5408582-0-0	CONTROL PANEL ASSY	1			
14.	D-SC-1209154-0-0	CHASSIS SLIDES 22" TRAVEL	1			
15.	9007917	CONN, SOLDERLESS #50902 ARKLESS	15			
16	9007031	TY RAP #SST-1-B	A/R			
~~17.~~	~~9007655~~	~~TERMI POINT CLIP #83952-3~~	~~5~~			
18.	D-IA-7407857-0-0	COVER, BOTTOM CHASSIS	1			
~~19.~~	~~C-IA-7407852-0-0~~	~~AC PROT BRACKET~~	~~1~~			
20.	9006037-1	SCR PHL HD PAN #8-32 X 3/8 LG SST	11			
21.	9006040-2	SCR FLAT HD #8-32 X 1/4 LG SST	4			
22.	9006039-1	SCR PHL HD PAN #8-32 X ½ LG SST	4			
23.	9006024-1	SCR PHL HD PAN #6-32 X ½ LG SST	14			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
16 CHANNEL MULTIPLEXER (PA63)	D-UA-PA63-Ø-Ø	A	PL	PA63-Ø-Ø	L	PA63-00016
	SHEET 1 OF 4	DIST. G				

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 1-6-70	DATE 1-21-70	
ENG [signature]	PROD [signature]	ISSUED SECT.
DATE 3/9/70	DATE 3-10-70	

ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
24	9008202	MTG CLIP, FAN	12			
25.	9006563	NUT KEPS #8-32 SST	1			
26	9006074-3	SCR PHL HD TRUSS 10-32 X 5/8 LG	12			
27	9007903	WASH EXT TOOTH LOCK #8	12			
28	9007649	WASH EXT TOOTH LOCK #6	4			
29	9006803	SPACER HEX ¼ AF X ½ LG#6 HOLE	2			
30	9006029-1	SCR PHL HD PA #6-32 X1¼ LG SST	2			
31	B-MD-7407856-0-0	PLATE, SIX TERM PROTECTION	1			
32	9107400-29	#22 AWG TRACER WIRE (RED/WHT)	A/R			
33	9107400-19	#22 AWG TRACER WIRE (BRN/WHT)	A/R			
34	9107400-59	#22 AWG TRACER WIRE (GRN/WHT)	A/R			
35	9107400-49	#22 AWG TRACER WIRE(YEL/WHT)	A/R			
36	9107400-39	#22 AWG TRACER WIRE (ORN/WHT)	A/R			
37	9006905	BARRIER TERMINAL STRIP #6-540	1			
38	1201168	TOGGLE SWITCH #6AT1-T2 MICROSWITCH	2			
39	9007651	WASH LOCK EXT TOOTH #10	12			
40	9007786	SPEED NUT 10-32 #C31758-032-27	12			
41	9006070-3	SCR TRUSS HB 10-32 X 5/16 LG	6			
42	9006121	SCR SELF TAPPING #8-32 X 3/8 LG	12			
43	D-UA-BCØ1H-0-Ø	CONN. CABLE PR68D TO PA63	1			
44	D-UA-BCØ1F-0-Ø	CONN. CABLE PP67-C TO PA63	1			
45	D-UA-BCØ8A-Ø-Ø	BCØ8A CABLES	3			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
16 CHANNEL MULTIPLEXER (PA63)	D-UA-PA63-Ø-Ø	A	PL	PA63-Ø-Ø	L	
	SHEET 2 OF 4	DIST. G				

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 1-6-70	DATE 1-21-70	1
ENG Paul Reardon	PROD A. Hirsch	ISSUED SECT.
DATE 3/9/70	DATE 3-10-70	1

	ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
*	46	9107430-29	#18 AWG TWP WIRE (RED & WHT)	A/R			
*	47	9007927	CONN #50325 ARKLESS	2			
*	48	9007930	CONN #50360 ARKLESS	5			
*	49	9007919	CONN #50906 ARKLESS	6			
*	50	9107255	HYSHRINK TUBING WHT	A/R			
*	51	1300333	RESISTOR 25W 500 OHM	1			
*	52	9107360-22	#18 AWG STRD TEF WIRE (RED)	A/R			
*	53	9107360-66	#18 AWG STRD TEF WIRE (BLU)	A/R			
*	54	9107360-00	#18 AWG STRD TEF WIRE (BLK)	A/R			
*	55	9107440-30	#14 AWG TWP WIRE (ORN & BLK)	A/R			
*	56	9007245	TUBING SUFLEX 3/8 I.D	A/R			
*	~~57~~	~~9107673-0~~	~~POWER CORD #14/3 600V 9'LG~~	~~1~~			
*	58	9107360-33	#18 AWG STRD TEF INS WIRE (ORN)	A/R			
	59	A-PL-PA63-Ø-14	MODULE COUNT PA63	1			
	60	9006816	SPACER 5/16AF x 7/16 LG WITH 7/32 HOLE	4			
	61	9006041-1	SCR PHL HD PAN #6-32 X 3/4 LG	4			
	62	9006702	WASHER NYLON #8	8			
	63	9007112	CONN SLDS #60145-1 AMP	6			
	REF	C-IC-PA63-Ø-16	POWER WIRING DWG				
	*	ASTERISK	INDICATES ITEMS NOT SHOWN ON ASSY		REFER TO PWR WIRING DWG		
	~~64~~	~~7407749~~	~~RESISTOR 1K 1/4W 5%~~	~~16~~			
	~~65~~	~~7404657~~	~~CAPACITOR .01MFD 200V 20%~~	~~16~~			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
16 CHANNEL MULTIPLEXER (PA63)	D-UA-PA63-Ø-Ø	A	PL	PA63-Ø-Ø	L	
	SHEET 3 OF 4	DIST.	G			

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

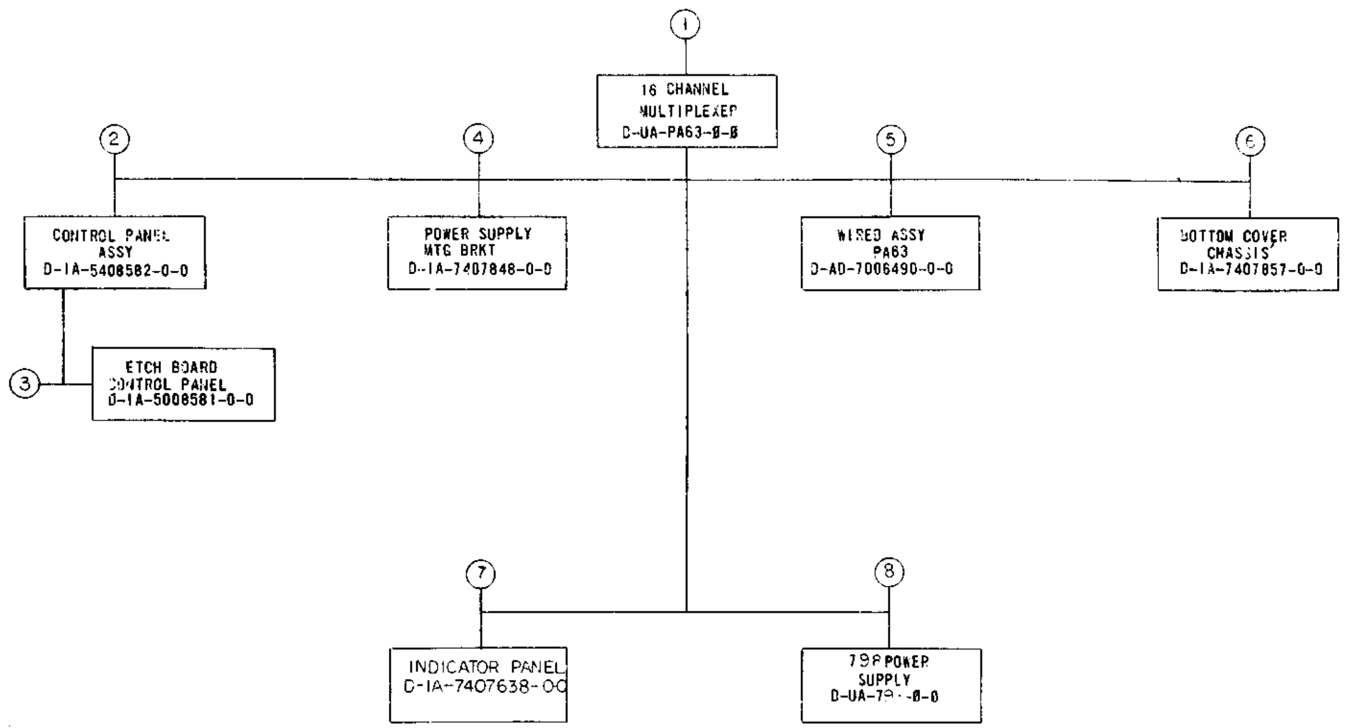
PARTS LIST

MADE BY G. Flanders	CHECKED K. Russ	SECTION
DATE 1-6-70,	DATE 1-21-70	1
ENG Paul Reardon	PROD A. Hirsch	ISSUED SECT.
DATE 3-9-70	DATE 3-10-70	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
66	9006634	LOCK WASHER #8 INT	4
67	9006712	WASHER NYLON	2
68	9107370-66	#14 AWG STRD TEF WIRE BLU	AR
69	9107400-69	#22 AWG TRACER WIRE BLU/WHT	A/R
70	1000030	CAPACITOR .1MFD, 100V, 20%	1
*	SEE NOTES 3 & 4	OF C-IC-PA63-Ø-16	
71	7407749	RES 1K 1/4W 5%	1
72	9007658	SCR PHL HD PAN #6-32 X 2 3/4	1
73	9006831	SPACER ½AF x ½LG #10 HOLE	1
74	9006633	WASHER LOCK INT. TH. #6	1
75	9006674	WASHER CENTERING WARD LEONARD 916	2

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
16 CHANNEL MULTIPLEXER (PA63)	D-UA-PA63-0-0	A	PL	PA63-0-0	L	
	SHEET 4 OF 4	DIST.	G			

DEC FORM NO.
DRA 110



MECHANICAL

FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C
1.	16 CHANNEL MULTIPLEXER	D-UA-PA63-Ø-Ø			
	16 CHANNEL MULTIPLEXER (PL)	A-PL-PA63-Ø-Ø			
	BEZEL	E-SC-1210065-0-0			
	CABLE CONN PR68 D TO PA63	D-UA-9CØ1H-0-0			
	FRAME CHASSIS	-IA-7406757-0-0			
	COVER CHASSIS	D-IA-7406756-0-0			
	CHASSIS SLIDES	D-SC-1209154-0-0			
	CABLE RETAINER	C-MD-7406762-0-0			
	SUPPORT PLEXIGLASS	D-IA-7406738-0-0			
	CONNECTOR CABLE (PP67-C TO PA63)	D-UA-BC01F-Ø-0			
	PLATE SIX TERM (PROT)	B-MD-7407856-0-0			
2.	CONTROL PANEL ASSY	D-IA-5408582-0-0			
	ASSY/DRILLING HOLE LAYOUT	D-AH-5408582-0-5			
3.	ETCH BOARD, CONTROL PANEL	D-IA-5008581-0-0			
4	BRKT MTG POWER SUPPLY	D-IA-7407848-0-0			
	BRKT MTG POWER SUPPLY SILK SCREEN	A-SS-7407848-0-1			
	BRKT MTG POWER SUPPLY SILK SCREEN	A-SS-7407848-0-2			
5	WIRED ASSY PA63	D-AD-7006490-0-0			
	WIRED ASSY PA63 (PL)	A-PL-7006490-0-0			
	288 PIN CONN BLOCK	E-SC-1205348-0-0			
	MTG BAP	D-IA-7406739-0-0			
6	BOTTOM COVER CHASSIS	D-IA-7407857-0-0			
	BACKING FOAM	B-MD-1809819-0-0			
7.	INDICATOR PANEL	D-IA-7407638-0-0			
	FRONT SILK SCREEN	D-SS-7407638-0-1			
	REAR SILK SCREEN	D-SS-7407638-0-2			
8	798 POWER SUPPLY	D-UA-79--Ø-Ø			
	798 POWER SUPPLY	A-PL-798-Ø-Ø			

ELECTRICAL

FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C
1.	16 CHANNEL MULTIPLEXER	A-ML-PA63-Ø			
	PUNCH IN FOR SKIP AVAILABLE	D-BS-PA63-Ø-Ø2			
	PUNCH SELECT	D-BS-PA63-Ø-Ø3			
	READER SEL	D-BS-PA63-Ø-Ø4			
	RDR HOLE FLIP FLOP	D-BS-PA63-Ø-Ø5			
	READER SOLENIODS	D-BS-PA63-Ø-Ø6			
	IOT DECODE	D-BS-PA63-Ø-Ø7			
	PUNCH CONTROL	D-BS-PA63-Ø-Ø8			
	READER CONTROL	D-BS-PA63-Ø-Ø9			
	RDR HOLE MATRIX (I)	D-BS-PA63-Ø-1Ø			
	READER CABLE CONNECTIONS	D-BS-PA63-0-11			
	PUNCH CABLE CONNECTIONS	D-IC-PA63-Ø-12			
	I/O CONNECTIONS POSITIVE BUS	D-IC-PA63-Ø-13			
	MODULE UTILIZATION	D-MU-PA63-Ø-14			
	MODULE UTILIZATION (PL)	A-PL-PA63-Ø-15			
	POWER WIRING	C-IC-PA63-Ø-16			
	H721P/S CIRCUIT SCHEMATIC	D-CS-H721-Ø-1			
	ENGINEERING SPECS	A-EI-PA63-0-17			
	PUNCH MATRIX	D-BS-PA63-0-18			
	ACCEPTANCE CRITERIA	A-SP-PA63-0-19			
	ACCESSORY LIST	A-AL-PA63-0-20			
	MFG TEST PROCEDURE	A-SP-PA63-0-21			
	OPTION CHECKLIST	A-SP-PA63-0-22			
	FIELD ACCEPTANCE PROCEDURE	A-SP-PA63-0-23			
2.	CONTROL PANEL CIRCUIT SCHEMATIC	C-CS-5408582-0-1			
3.	PRINTED CIRCUIT	PC-5008581-0-1			
5.	WIRED ASSY (PA63)	D-AD-7006490-0-0			
	WIRED ASSY (PA63) (PL)	A-PL-7006490-0-0			
	WIRE LIST	K-WL-PA63-Ø-15			
8.	798PS CIRCUIT SCHEMATIC	D-CS-798-Ø-1			

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

REVISIONS

REV	CHANGE NO.	CHK
A	PA63 00002	
B	PA63-00004	
C	PA63-00005	
D	PA63-0007	
E	PA63-00010	
F	PA63-00011	
H	PA63-00012	
J	PA63-00013	

FIRST USED ON OPTION/MODEL: PA63

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

CHK'D. DATE

ENG. DATE

PROJ. ENG. DATE

PROD. DATE

NEXT HIGHER ASSY

SCALE

SHEET 1 OF

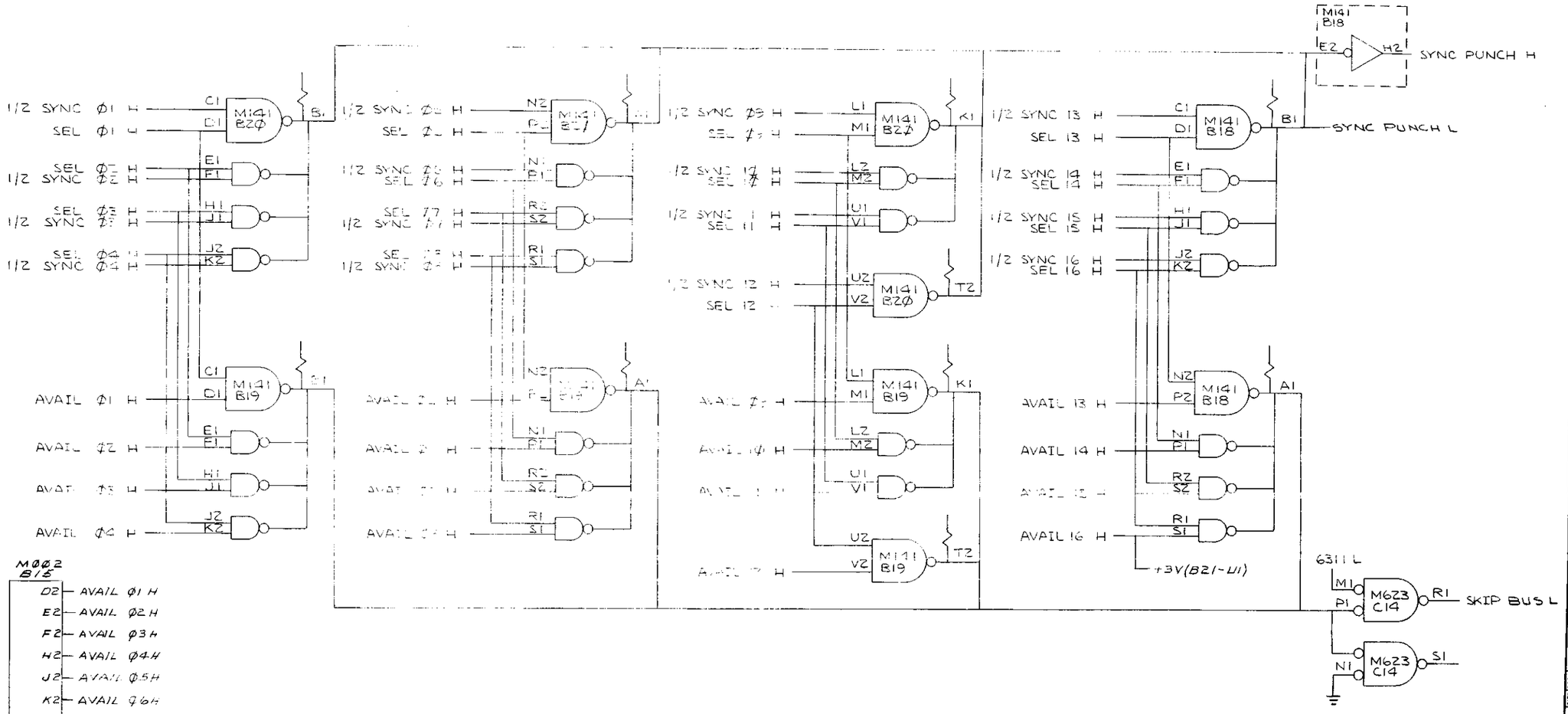
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DRAWING INDEX LIST (PA63)

SIZE: D CODE: DI NUMBER: PA63-Ø-1 REV: J

DIST.

DEC FORM NO DRD 100



REVISIONS	REV	CHANGE NO	CHK
	A	PA63-00013	JDEICE

FIRST USED ON ASSEMBLY	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP8		PARTS LIST		

UNLESS OTHERWISE SPECIFIED	DRN.	DATE 9-11-69
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30 FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D	DATE
	ENG.	DATE
	PROJ. ENG.	DATE
	PROD.	DATE
MATERIAL	NEXT HIGHER ASSY A-ML-PA65-Ø	
FINISH	SCALE NONE	
	SHEET 1 OF 1	

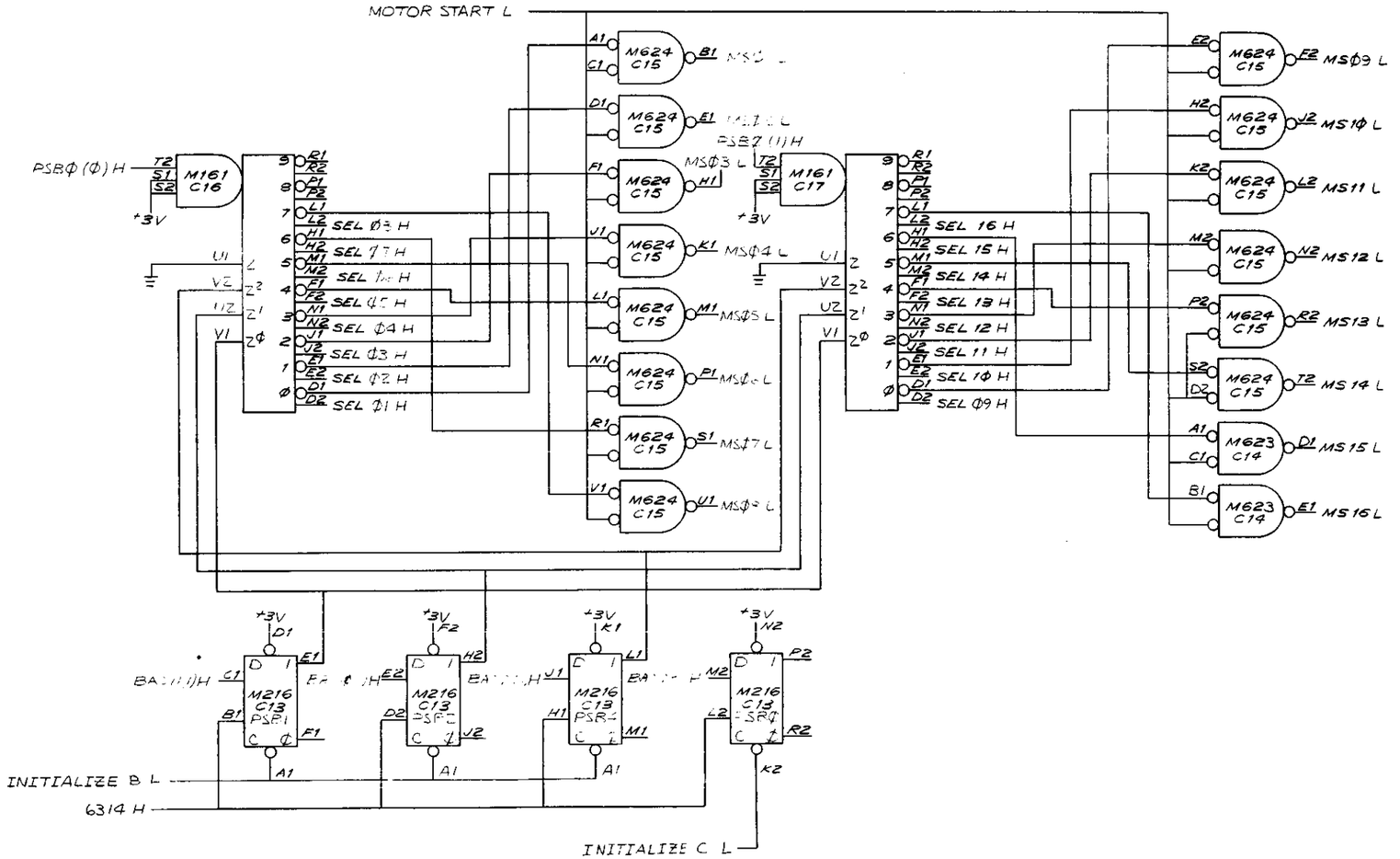
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PUNCH IN FOR SKIP AVAILABLE

SIZE	CODE	NUMBER	REV
D	BS	PA63-Ø-Ø2	A

DIST.

DEC FORM NO DRO 1024



QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION / MODEL: PDP8

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

		DATE
DRN	[illegible]	2-64
CHK'D		
ENG.	[illegible]	3/64
PROJ. ENG.	[illegible]	
PROD.	[illegible]	

NEXT HIGHER ASSY: A-ML-PA63-Ø

SCALE: NONE

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PUNCH SELECT

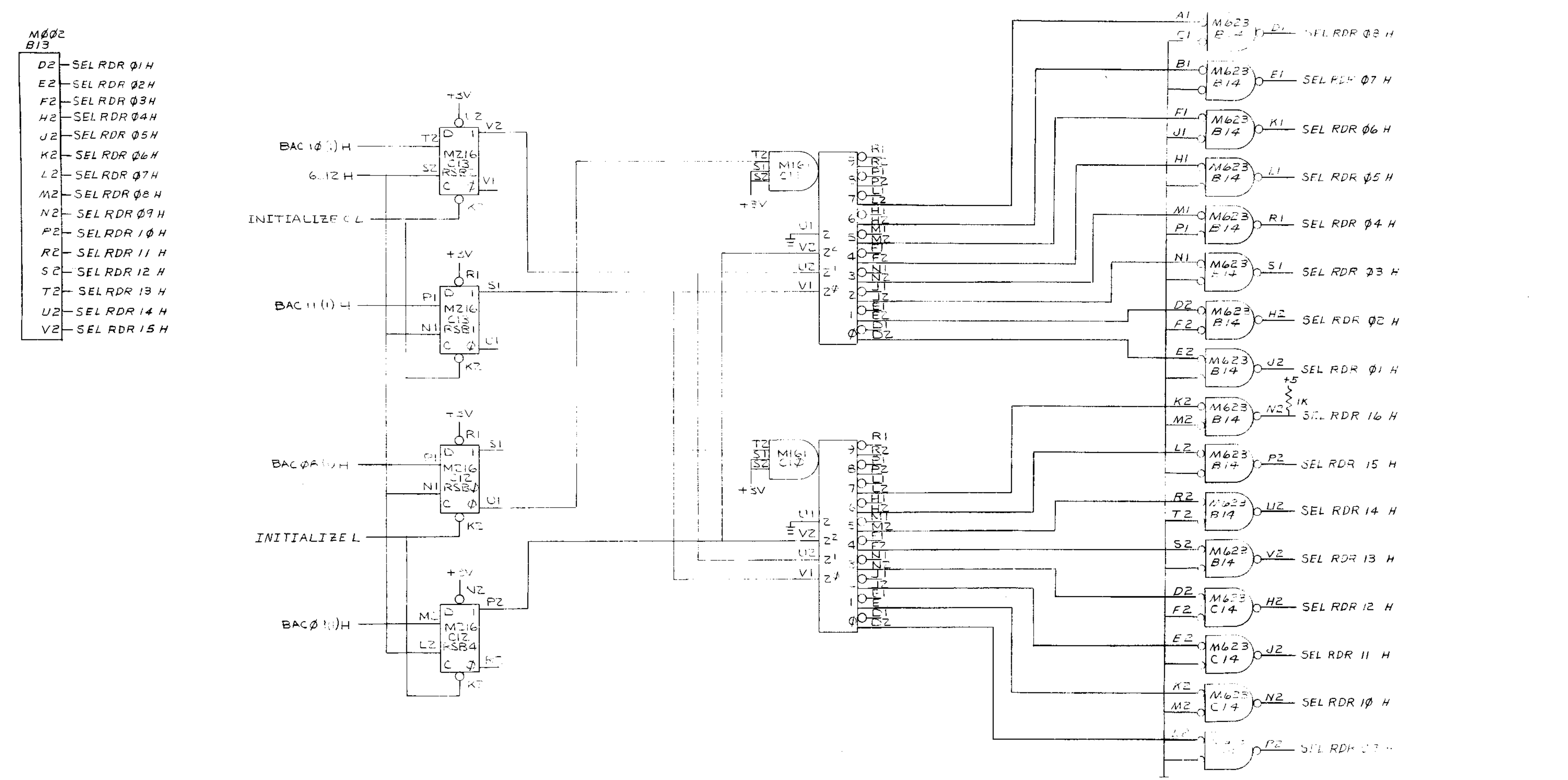
SIZE	CODE	NUMBER	REV
D	BS	PA63-Ø-Ø3	A

DIST.

REVISIONS	REV	CHK	CHANGE NO.
	A		PA63-00012

JODICE 6-8-71

DEC FORM NO. DRD 100



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REVISIONS			
REV	CHANGE NO.		CHK
A	PA63-00012	JODICE	
B	PA63-00013	JODICE	
C	PA63-00014	H. JODICE	

FIRST USED ON OPTION/MODEL: PDP8

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 9-18-69

NEXT HIGHER ASS'Y A-ML-PA63-0

SCALE NONE SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: READER SEL

SIZE D CODE BS NUMBER PA63-0-04 REV C

DEC FORM NO DRD 102A

SEL RDR Ø9 H
SEL RDR 1Ø H
SEL RDR 11 H
SEL RDR 12 H
SEL RDR 13 H
SEL RDR 14 H
SEL RDR 15 H
SEL RDR 16 H

B(1)H B(Ø)H A(1)H A(Ø)H B(1)H B(Ø)H A(1)H A(Ø)H

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP8		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 —

		DATE
DRN.		9-16-69
CHK'D.		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

NEXT HIGHER ASSY
A-MIL-1A63-Ø
SCALE NONE
SHEET OF

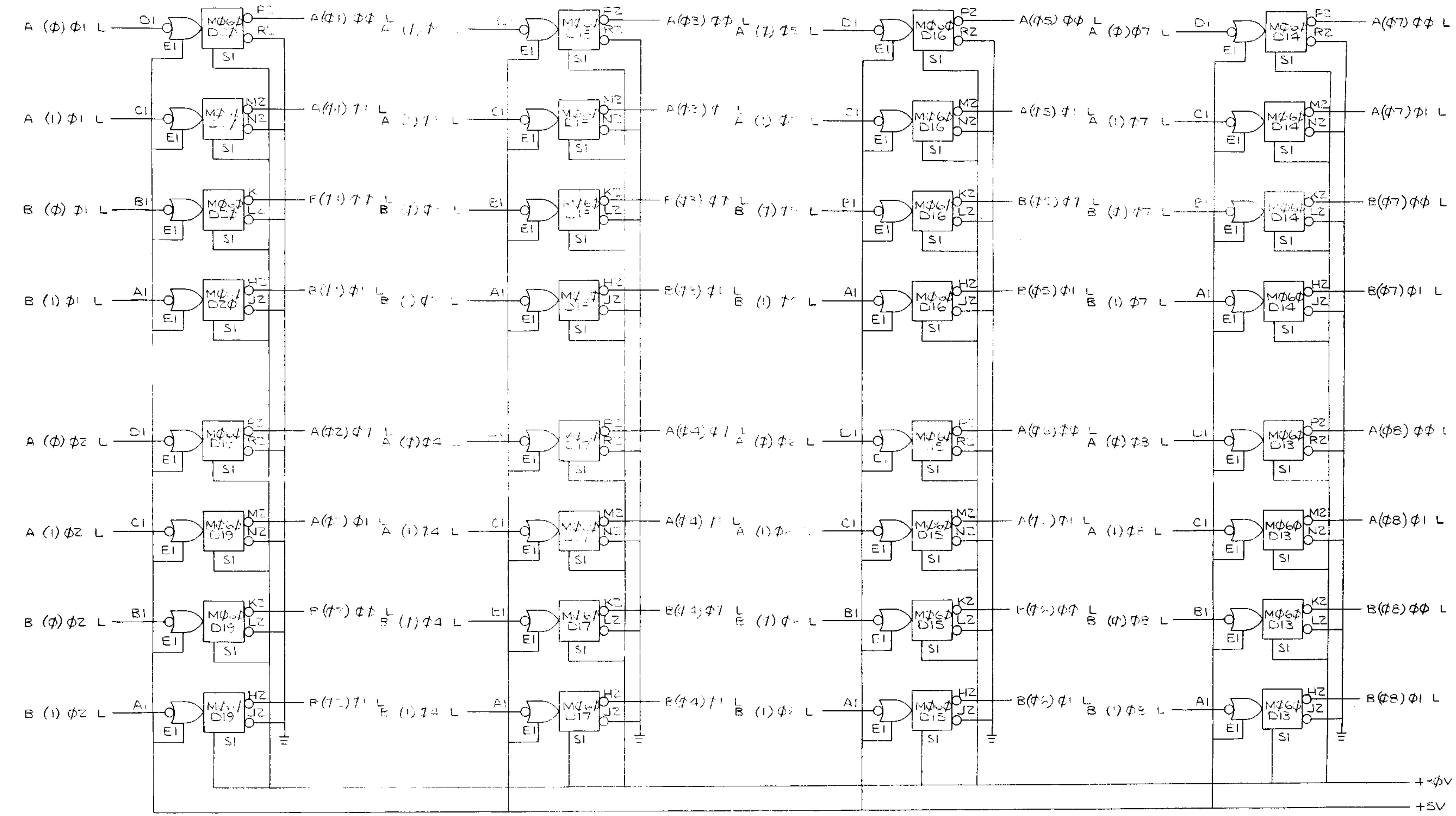
digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
RDR HOLE FLIP-FLOP

SIZE D | CODE BS | NUMBER PA63-Ø-Ø5 | REV
DIST.

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 102A



FIRST USED ON OPTION/MODEL PDP8	QTY.	DESCRIPTION	PART NO. / ITEM NO.
		PARTS LIST	

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 9-19-69
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
READER SOLENOIDS

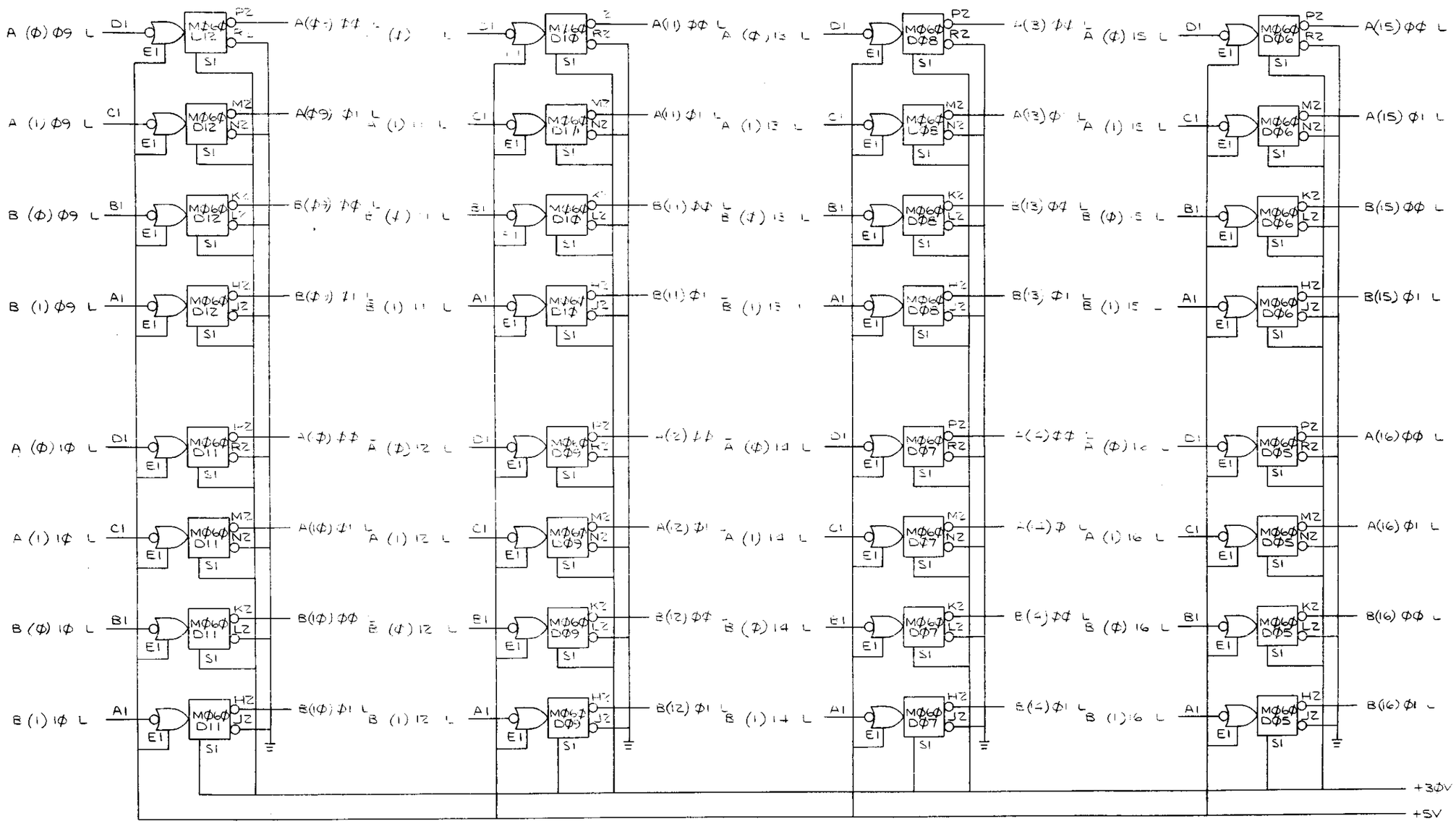
NEXT HIGHER ASS'Y A-ML-PA63-Ø

SIZE D CODE BS NUMBER PA63-Ø-Ø6 REV

SCALE NONE
SHEET 1 OF 2
DIST.

REVISIONS: REV / CHANGE NO / CHK

DEC FORM NO DRD 102A



REVISIONS	REV	CHANGE NO.	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO	ITEM NO.
PDP8		PARTS LIST		

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	9-23-68
CHK'D.	DATE	
ENG.	DATE	3/7/70
PROJ. ENG.	DATE	3/7/70
PROG.	DATE	2-17-70

NEXT HIGHER ASSY
A-ML-PA63-Ø

SCALE NONE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
READER SOLENOIDS

SIZE	CODE	NUMBER	REV
D	BS	PA63-Ø-Ø6	

DIST.

DEC FORM NO DRD 102A

BMB Ø3(Ø) H
BMB Ø4(1) H
BMB Ø5(1) H
BMB Ø6(Ø) H
BMB Ø7(Ø) H
BMB Ø8(1) H
+3V

M119 CØ9 → M111 CØ8 → M113 CØ7 → 6311 L

(SKIP PUNCH AVAILABLE)

M111 CØ5 → 6311 H

IOP2 H → M113 CØ7 → 6312 L

(SELECT RDR)

M111 CØ8 → 6312 H

IOP4 H → M113 CØ7 → 6314 L

(SELECT PUNCH)

M111 CØ4 → 6314 H

PUN DATA B 7	L	AJ2
6	L	AK1
5	L	AL2
4	L	AR2
3	L	BD2
2	L	BF2
1	L	BK2
PUN DATA B Ø	L	BR2
RB-Ø7 (Ø)	L	AK2
RB-Ø6 (Ø)	L	AH1
RB-Ø5 (Ø)	L	AL1
RB-Ø4 (Ø)	L	AN2
RB-Ø3 (Ø)	L	AT2
RB-Ø2 (Ø)	L	BE2
RB-Ø1 (Ø)	L	BJ2
RB-ØØ (Ø)	L	BL2
PSBØ (Ø)	H	BS2
PSB1 (1)	H	CP2
PSB2 (Ø)	H	CK1
PSB4 (Ø)	H	CF1
RSBØ (Ø)	H	BU2
RSB1 (Ø)	H	CH1
RSB2 (Ø)	H	CD1
RSB4 (Ø)	H	BV2
NO TAPE	L	CM2
OUT OF TAPE	L	CS2
MOTOR START	L	CV2
PUNCH DONE	L	DE2
RUN (Ø)	H	CT2
1 SEC	L	DJ2
MOTOR START	L	DK2
A (Ø)	H	DF2
B (Ø)	H	DH2
INT RQST BUS	L	CR2
SKIP BUS	L	CU2

CONTROL PANEL
ABCD Ø1
#5408582

NTTA SWITCH
+5V — OFF — ON
M9Ø8 D21 — V2

#5408582 — CONTROL PANEL ABCD Ø1

6.8 MFD — 68 MFD — 100Ω — 5Ø MFD — 5Ø MFD — 39K — 15Ø MFD — 27K — 15Ø MFD — 3K — 6.8 MFD — 15Ø MFD

+5V — 100Ω — AB2 — −15V — AV2 — BH2 — BM2 — BN2 — CF2 — CJ2 — CL2 — CE2 — CA1

(FOR REFERENCE ONLY)

REVISIONS	CHK	CHANGE NO	REV
	FV	PA63-00004	A
		PA63-00007	B
		PA63-00008	C
		PA63-00012	D

FIRST USED ON OPTION/MODEL	PDP8
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.	DATE 9-10-69
CHK'D.	DATE 9-2-69
ENG.	DATE
PROJ. ENG.	DATE
PROD.	DATE 9-1-69
NEXT HIGHER ASSY	A-ML-PA63-Ø
SCALE	NONE
SHEET	1 OF 1

PARTS LIST

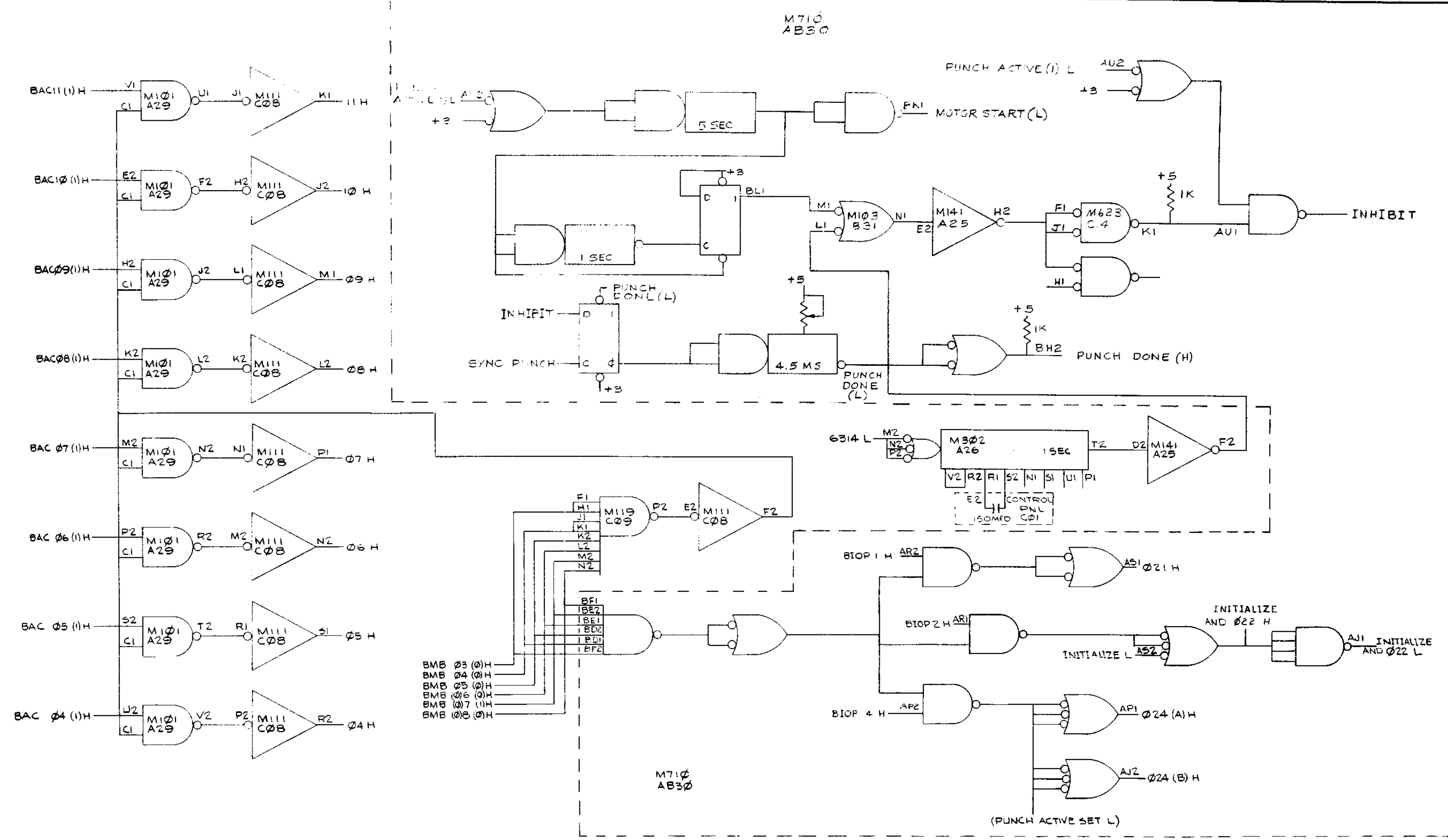
QTY.	DESCRIPTION	PART NO.	ITEM NO.

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: IOT DECODE

SIZE D | CODE BS | NUMBER PA63-Ø-Ø7 | REV D | DIST.

OEC FORM NO DPD 102A



M71Ø AB3Ø
BAC11 (1) H
BAC1Ø (1) H
BACØ9 (1) H
BACØ8 (1) H
BAC Ø7 (1) H
BAC Ø6 (1) H
BAC Ø5 (1) H
BAC Ø4 (1) H
M1Ø1 A29
M111 CØ8
11 H
1Ø H
Ø9 H
Ø8 H
Ø7 H
Ø6 H
Ø5 H
Ø4 H
PUNCH ACTIVE (1) L
5 SEC
MOTOR START (L)
1 SEC
M1Ø3 B31
M141 A25
M623 C4
INHIBIT
PUNCH DONE (L)
SYNC PUNCH
4.5 MS
PUNCH DONE (L)
PUNCH DONE (H)
6314 L
M3Ø2 A26
1 SEC
CONTROL PNL CØ1
15Ø MFD
M119 CØ9
BMB Ø3 (Ø) H
BMB Ø4 (Ø) H
BMB Ø5 (Ø) H
BMB (Ø)6 (Ø) H
BMB (Ø)7 (1) H
BMB (Ø)8 (Ø) H
BIOP 1 H
Ø21 H
BIOP 2 H
INITIALIZE AND Ø22 H
INITIALIZE L
INITIALIZE AND Ø22 L
BIOP 4 H
Ø24 (A) H
Ø24 (B) H
(PUNCH ACTIVE SET L)
M71Ø AB3Ø

REV.	CHANGE NO.
A	PA63-00007
B	PA63-00011
C	PA63-00213

FIRST USED ON OPTION/MODEL: PA63

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.

NEXT HIGHER ASSY: A-ML-PA63-Ø

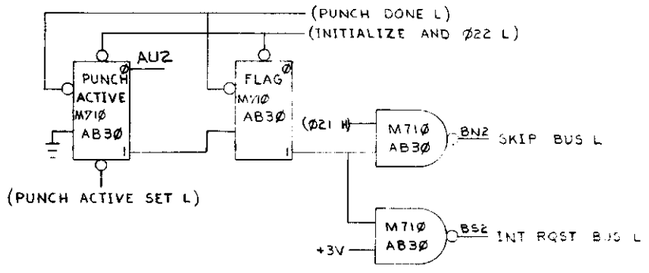
digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

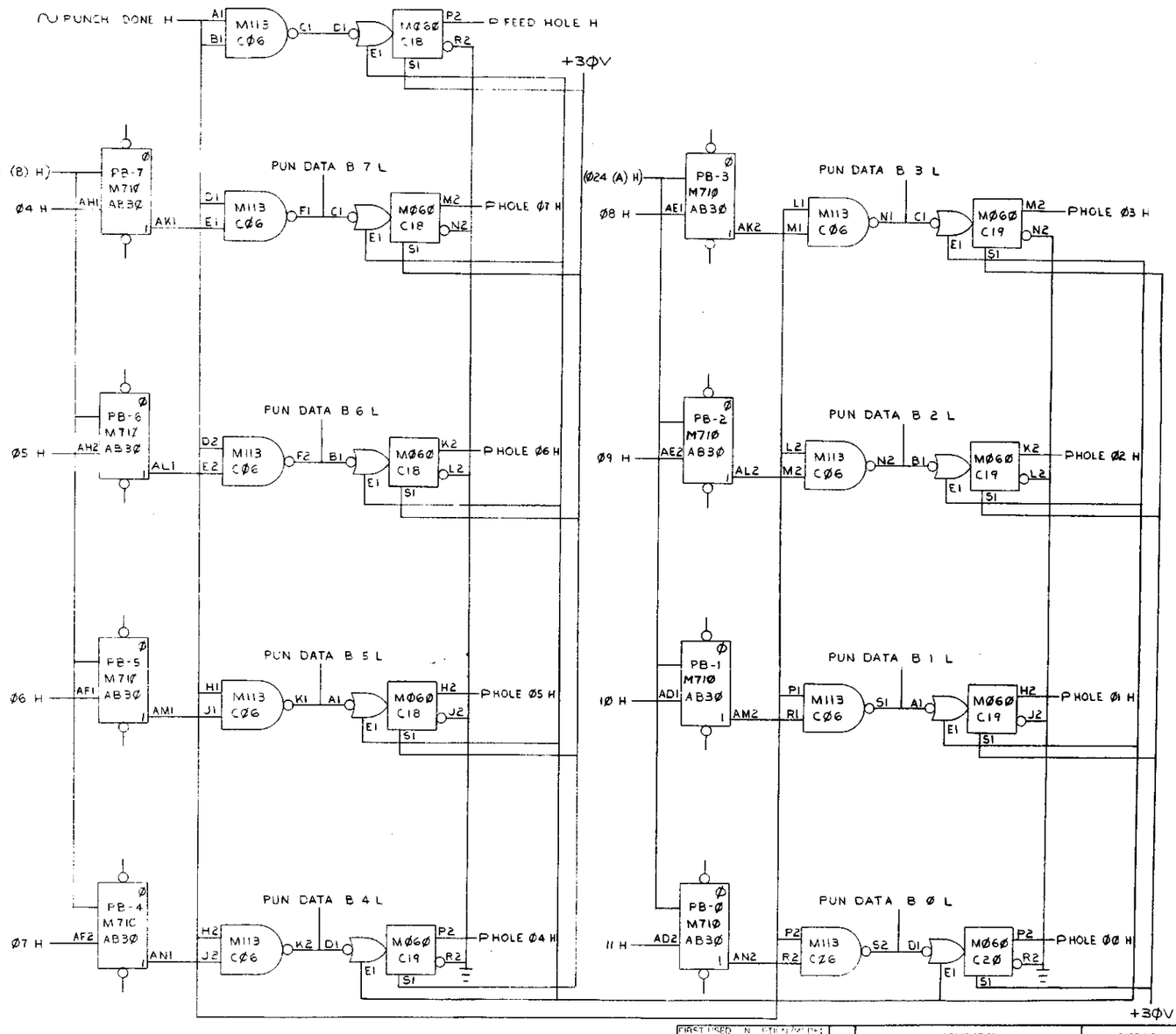
TITLE: PUNCH CONTROL

SIZE D, CODE BS, NUMBER PA63-Ø-Ø8, REV C

SCALE NONE, SHEET 1 OF 2

DEC FORM NO. DRD 100





REVISIONS	REV.	CHANGE NO.	CHK.

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON ITEM NO:
PDP-5

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

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

NEXT HIGHER ASSY
A-ML-PA63-Ø

SCALE NONE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
PUNCH CONTROL

SIZE	CODE	NUMBER	REV.
D	BS	PA63-Ø-Ø8	C

DIST.

SIZE D CODE BS NUMBER PA63-Ø-Ø8 REV C

DEC FORM NO 4MD 102A

AC Ø4 L
AC Ø5 L
AC Ø6 L
AC Ø7 L
AC Ø8 L
AC Ø9 L
AC 10 L
AC 11 L
M624 A27
6Ø12 L
6Ø14
RB-Ø7 M216 B28
RB-Ø6 M216 B28
RB-Ø5 M216 B28
RB-Ø4 M216 B28
RB-Ø3 M216 E28
RB-Ø2 M216 B28
RB-Ø1 M216 B27
RB-ØØ M216 B27
+3V
6 LEVEL
8 LEVEL
+3
HOLE Ø7 H
HOLE Ø6 H
HOLE Ø5 H
HOLE Ø4 H
HOLE Ø3 H
HOLE Ø2 H
HOLE Ø1 H
HOLE ØØ H

RDR STROBE ! L
B(Ø) H
RUN(1) H
M115 CØ5
M111 CØ8

IOP1 H
IOP2 H
IOP4 H
MIØ3 B31
6Ø11 L
6Ø11 H
6Ø12 H
6Ø14 L
BMB Ø3(Ø) H
BMB Ø4(Ø) H
BMB Ø5(Ø) H
BMB Ø6(Ø) H
BMB Ø7(Ø) H
BMB Ø8(1) H
MIØ3 B31

FLAG M216 B27
NO TAPE M216 A28
RUN M216 C12
RUN(Ø) H
OUT OF TAPE (h)
.1MFD 100V
+3V
INIT H
M115 CØ5
M111 CØ8

A(Ø) H
A(1) H
B(Ø) H
B(1) H
A M216 C12
B M216 C12
RUN(1) L

INITIALIZE H
INITIALIZE L
INITIALIZE AH
MIØ3 B31
M141 A16
M141 A17
INITIALIZE BL
INITIALIZE CL

M4Ø1 A15 2.3 MS
M3Ø2 A26 4 MS
6312(L)

6Ø11 L
FLAG (1) L
M624 A27
SKIP BUS L
INT RQST BUS L

REVISIONS

REV.	CHANGE NO	CHK.	
A	PA63-00008		H. JODICE
B	PA63-00011		JODICE
C	PA63-00012		JODICE
D	PA63-00013		JODICE

DEC FORM NO DRD 102A

FIRST USED ON OPTIMODE-PDP8	QTY.	DESCRIPTION	PART NO. / ITEM NO.
		PARTS LIST	
UNLESS OTHERWISE SPECIFIED	DRN.	DATE	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D.	DATE	TITLE: READER CONTROL
	ENG.	DATE	
	PROJ. ENG.	DATE	
	PROD.	DATE	
MATERIAL	A-MIL-PA63-2		SIZE D CODE BS NUMBER PA63-2-09 REV C
FINISH	SCALE		
	SHEET OF 1		DIST.

HOLE ØØ (Ø1)H — C1 / D1 — M141 A25 — E1
SEL R (Ø1) H
HOLE ØØ (Ø2)H — E1 / F1
SEL R (Ø2)H
HOLE ØØ (Ø3)H — H1 / J1
SEL R (Ø3)H
HOLE ØØ (Ø4)H — J2 / K2
SEL R (Ø4)H

HOLE Ø1 (Ø1)H — N2 / P2 — M141 A24 — A1
HOLE Ø1 (Ø2)H — N1 / P1
HOLE Ø1 (Ø3)H — R2 / S2
SEL R (Ø3)H
HOLE Ø1 (Ø4)H — R1 / S1
SEL R (Ø4)H

HOLE Ø2 (Ø1)H — L1 / M1 — M141 A23 — K1
HOLE Ø2 (Ø2)H — L2 / M2
HOLE Ø2 (Ø3)H — U1 / V1
SEL R (Ø3)H
HOLE Ø2 (Ø4)H — U2 / V2 — M141 A25 — T2
SEL R (Ø4)H

~T(Ø1)L — A1 / B1 — M111 A12 — C1 / D1 — M141 A24 — E1
~T(Ø2)L — C1 / D2 — M111 A12 — E1 / F1
~OT(Ø3)L — R1 / S1 — M111 A12 — H1 / J1
SEL R (Ø3) H
~OT(Ø4)L — E1 / F1 — M111 A12 — J2 / K2
SEL R (Ø4) H

HOLE Ø3 (Ø1)H — N2 / P2 — M141 A24 — A1
HOLE Ø3 (Ø2)H — N1 / P1
HOLE Ø3 (Ø3)H — R2 / S2
SEL R (Ø3)H
HOLE Ø3 (Ø4)H — R1 / S1
SEL R (Ø4)H

HOLE Ø4 (Ø1)H — L1 / M1 — M141 A24 — K1
HOLE Ø4 (Ø2)H — L2 / M2
HOLE Ø4 (Ø3)H — U1 / V1
SEL R (Ø3)H
HOLE Ø4 (Ø4)H — U2 / V2
SEL R (Ø4)H — M141 A24 — T2

HOLE ØØ (Ø5)H — C1 / D1 — M141 A22 — B1
SEL R (Ø5) H
HOLE ØØ (Ø6)H — E1 / F1
SEL R (Ø6) H
HOLE ØØ (Ø7)H — H1 / J1
SEL R (Ø7)H
HOLE ØØ (Ø8)H — J2 / K2
SEL R (Ø8)H

HOLE Ø1 (Ø5)H — N2 / P2 — M141 A22 — A1
HOLE Ø1 (Ø6)H — N1 / P1
HOLE Ø1 (Ø7)H — R2 / S2
SEL R (Ø7)H
HOLE Ø1 (Ø8)H — R1 / S1
SEL R (Ø8)H

HOLE Ø2 (Ø5)H — L1 / M1 — M141 A22 — K1
HOLE Ø2 (Ø6)H — L2 / M2
HOLE Ø2 (Ø7)H — U1 / V1
SEL R (Ø7)H
HOLE Ø2 (Ø8)H — U2 / V2 — M141 A22 — T2
SEL R (Ø8)H
HOLE ØØ L

~OT(Ø5)L — F1 / H1 — M111 A12 — C1 / D1 — M141 A21 — B1
~OT(Ø6)L — E2 / F2 — M111 A12 — E1 / F1
~OT(Ø7)L — P2 / R2 — M111 A12 — H1 / J1
SEL R (Ø7) H
~OT(Ø8)L — J1 / K1 — M111 A12 — J2 / K2
SEL R (Ø5) H
HOLE Ø2 L

HOLE Ø3 (Ø5)H — N2 / P2 — M141 A21 — A1
HOLE Ø3 (Ø6)H — N1 / P1
HOLE Ø3 (Ø7)H — R2 / S2
SEL R (Ø7)H
HOLE Ø3 (Ø8)H — R1 / S1
SEL R (Ø5)H
~ OUT OF TAPE L

HOLE Ø4 (Ø5)H — L1 / M1 — M141 A21 — K1
HOLE Ø4 (Ø6)H — L2 / M2
HOLE Ø4 (Ø7)H — U1 / V1
SEL R (Ø7)H
HOLE Ø4 (Ø8)H — U2 / V2 — M141 A21 — T2
SEL R (Ø8)H
HOLE Ø3 L
HOLE Ø4 L

HOLE ØØ (Ø9)H — C1 / D1 — M141 A19 — B1
SEL R (Ø9)H
HOLE ØØ (1Ø)H — E1 / F1
SEL R (1Ø)H
HOLE ØØ (11)H — H1 / J1
SEL R (11)H
HOLE ØØ (12)H — J2 / K2
SEL R (12)H

HOLE Ø1 (Ø9)H — N2 / P2 — M141 A19 — A1
HOLE Ø1 (1Ø)H — N1 / P1
HOLE Ø1 (11)H — R2 / S2
SEL R (11)H
HOLE Ø1 (12)H — R1 / S1
SEL R (12)H

HOLE Ø2 (Ø9)H — L1 / M1 — M141 A19 — K1
HOLE Ø2 (1Ø)H — L2 / M2
HOLE Ø2 (11)H — U1 / V1
SEL R (11)H
HOLE Ø2 (12)H — U2 / V2 — M141 A19 — T2
SEL R (12)H

~OT(Ø9)L — M2 / J2 — M111 A12 — C1 / D1 — M141 A18 — E1
~OT(1Ø)L — M1 / F1
~OT(11)L — L2 / H1 — M111 A12 — J1
SEL R (11) H
~OT(12)L — N1 / P1 — M111 A12 — J2 / K2
SEL R (12) H

HOLE Ø3 (Ø9)H — N2 / P2 — M141 A18 — A1
HOLE Ø3 (1Ø)H — N1 / P1
HOLE Ø3 (11)H — R2 / S2
SEL R (11)H
HOLE Ø3 (12)H — R1 / S1
SEL R (12)H

HOLE Ø4 (Ø9)H — L1 / M1 — M141 A18 — K1
HOLE Ø4 (1Ø)H — L2 / M2
HOLE Ø4 (11)H — U1 / V1
SEL R (11)H
HOLE Ø4 (12)H — U2 / V2 — M141 A18 — T2
SEL R (12)H

HOLE ØØ (13)H — C1 / D1 — M141 A16 — B1
SEL R (13) H
HOLE ØØ (14)H — E1 / F1
SEL R (14) H
HOLE ØØ (15)H — H1 / J1
SEL R (15) H
HOLE ØØ (16)H — J2 / K2
SEL R (16) H

HOLE Ø1 (13)H — N2 / P2 — M141 A16 — A1
HOLE Ø1 (14)H — N1 / P1
HOLE Ø1 (15)H — R2 / S2
SEL R (15)H
HOLE Ø1 (16)H — R1 / S1
SEL R (16)H

HOLE Ø2 (13)H — L1 / M1 — M141 A16 — K1
HOLE Ø2 (14)H — L2 / M2
HOLE Ø2 (15)H — U1 / V1
SEL R (15)H
HOLE Ø2 (16)H — U2 / V2 — M141 A16 — T2
SEL R (16)H

~OT(13)L — M2 / N2 — M111 A12 — C1 / D1 — M141 B17 — B1
~OT(14)L — V1 / E1 / F1
~OT(15)L — S2 / T2 — M111 A12 — H1 / J1
SEL R (15) H
~OT(16)L — U2 / V2 — M111 A12 — J2 / K2
SEL R (16) H
+3V(B22 U1)

HOLE Ø3 (13)H — N2 / P2 — M141 B17 — A1
HOLE Ø3 (14)H — N1 / P1
HOLE Ø3 (15)H — R2 / S2
SEL R (15)H
HOLE Ø3 (16)H — R1 / S1
SEL R (16)H

HOLE Ø4 (13)H — L1 / M1 — M141 B17 — K1
HOLE Ø4 (14)H — L2 / M2
HOLE Ø4 (15)H — U1 / V1
SEL R (15)H
HOLE Ø4 (16)H — U2 / V2 — M141 B17 — T2
SEL R (16)H

U2 / T2 — M113 B 21 — V2 — ~ OUT OF TAPE H

M8Ø2 B11
D2 ~ O.T Ø/L
E2 ~ O.T Ø2L
F2 ~ O.T Ø3L
H2 ~ O.T Ø4L
J2 ~ O.T Ø5L
K2 ~ O.T Ø6L
L2 ~ O.T Ø7L
M2 ~ O.T Ø8L
N2 ~ O.T Ø9L
P2 ~ O.T 1ØL
R2 ~ O.T 11L
S2 ~ O.T 12L
T2 ~ O.T 13L
U2 ~ O.T 14L
V2 ~ O.T 15L

REVISIONS	REV	CHANGE NO.	CHK
	A	PA63-00008	
	B	PA63-00013	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP8		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

		DATE
DRN.	T.	9-24-69
CHK'D.		
ENG.		
PROJ. ENG.		
PROD.		31 OCT 69

NEXT HIGHER ASSY
A-ML-PA63-Ø
SCALE NONE
SHEET 1 OF 2

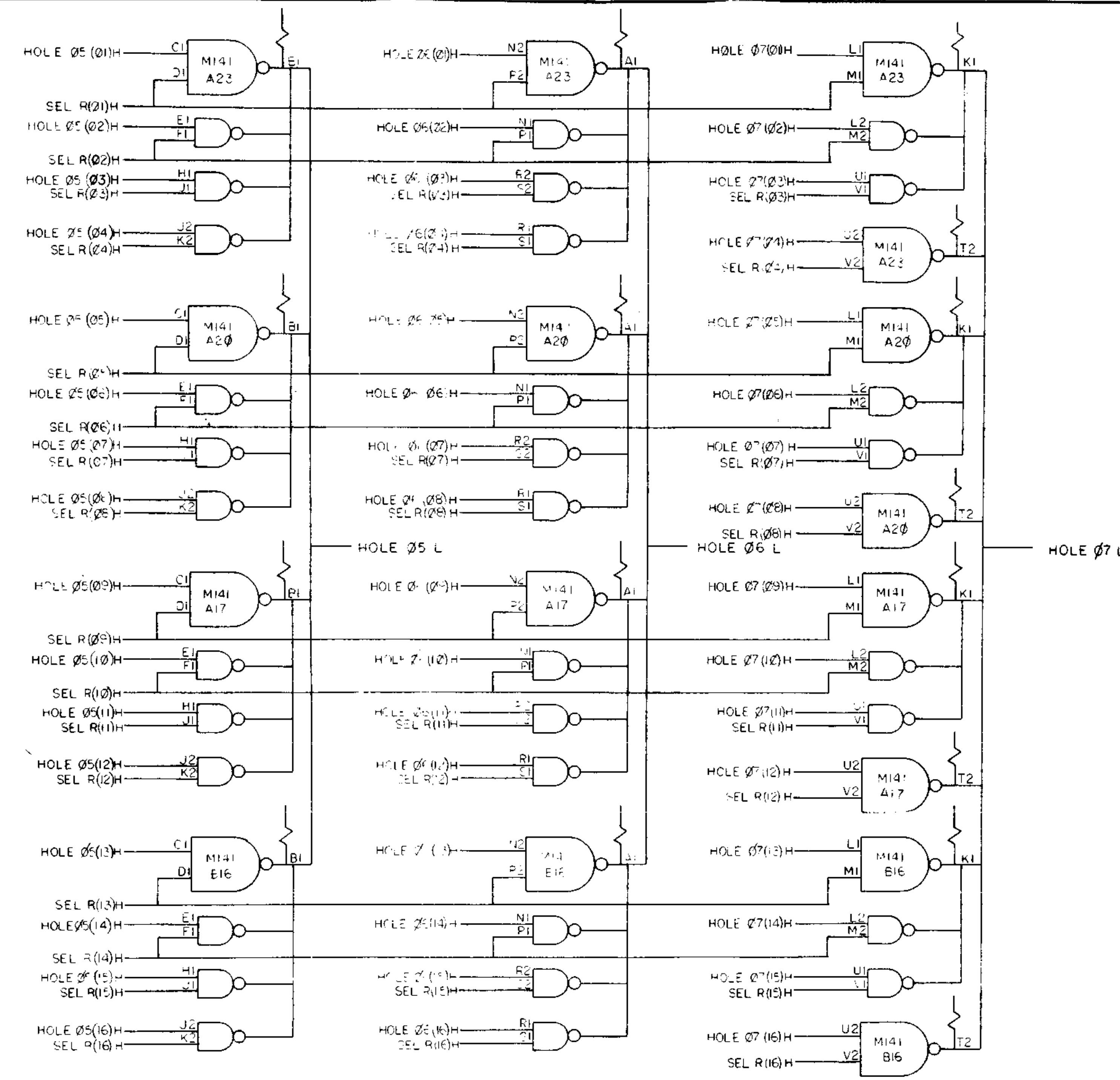
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
RDR HOLE MATRIX (IN)

SIZE	CODE	NUMBER	REV
D	BS	PA63-Ø-1Ø	B

DIST.

DEC FORM NO DRD 102A



FIRST USED ON OPTION/MODEL: PDP8

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

PARTS LIST

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

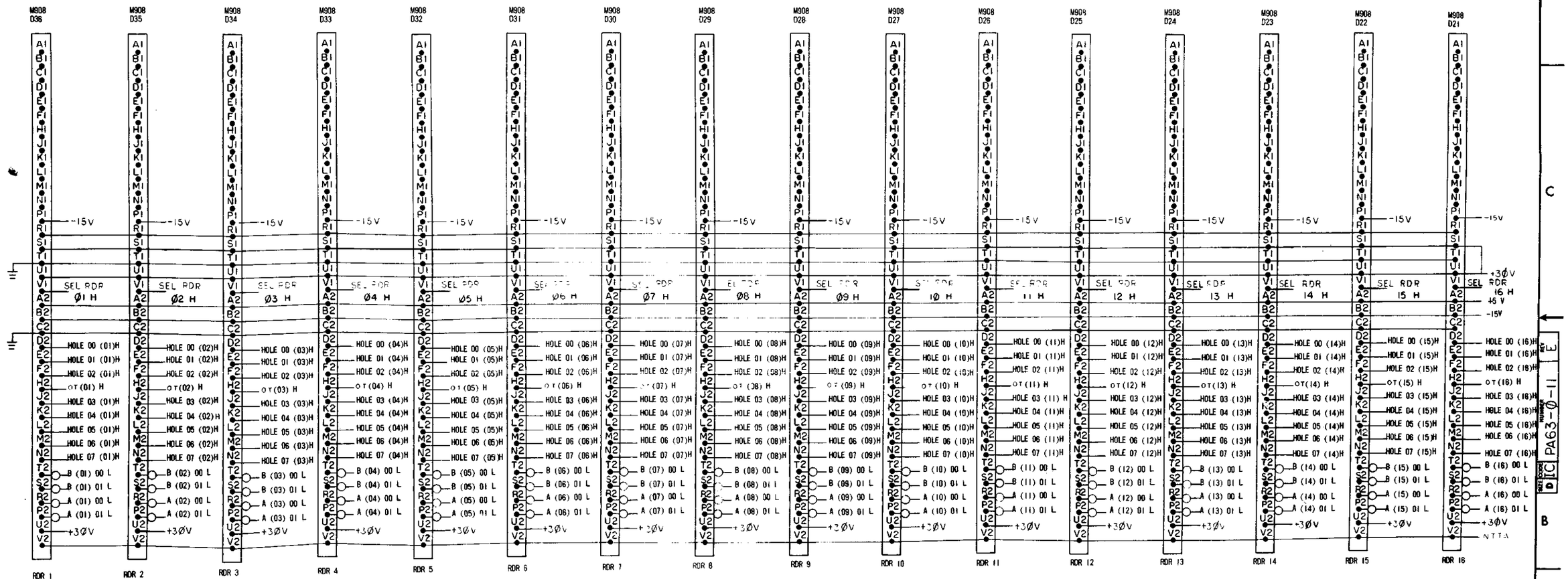
TITLE: RDR HOLE MATRIX (IN)

NEXT HIGHER ASSY: A-ML-PA63-Ø

SIZE D CODE ES NUMBER PA63-Ø-1Ø

SCALE NONE

SHEET 2 OF 2



REVISIONS					
CHK	CHANGE NO.	REV			
EV	PA63-00004	A	H. JODICE 7-10-70		
	PA63-00008	B	H. JODICE 12-22-70		
	PA63-00011	C	H. JODICE 4-19-71		
	PA63-00012	D	JODICE 6-21-71		
	PA63-00013	E	JODICE 12-27-71		

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 8		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

		DATE
DRN.	A. L.	9-12-69
CHK'D		DATE
ENG.		DATE 3/7/70
PROJ. ENG.		DATE 3/7/70
PROD.		DATE

NEXT HIGHER ASSY
A-ML-PA63-Ø

SCALE NONE
SHEET 1 OF 1

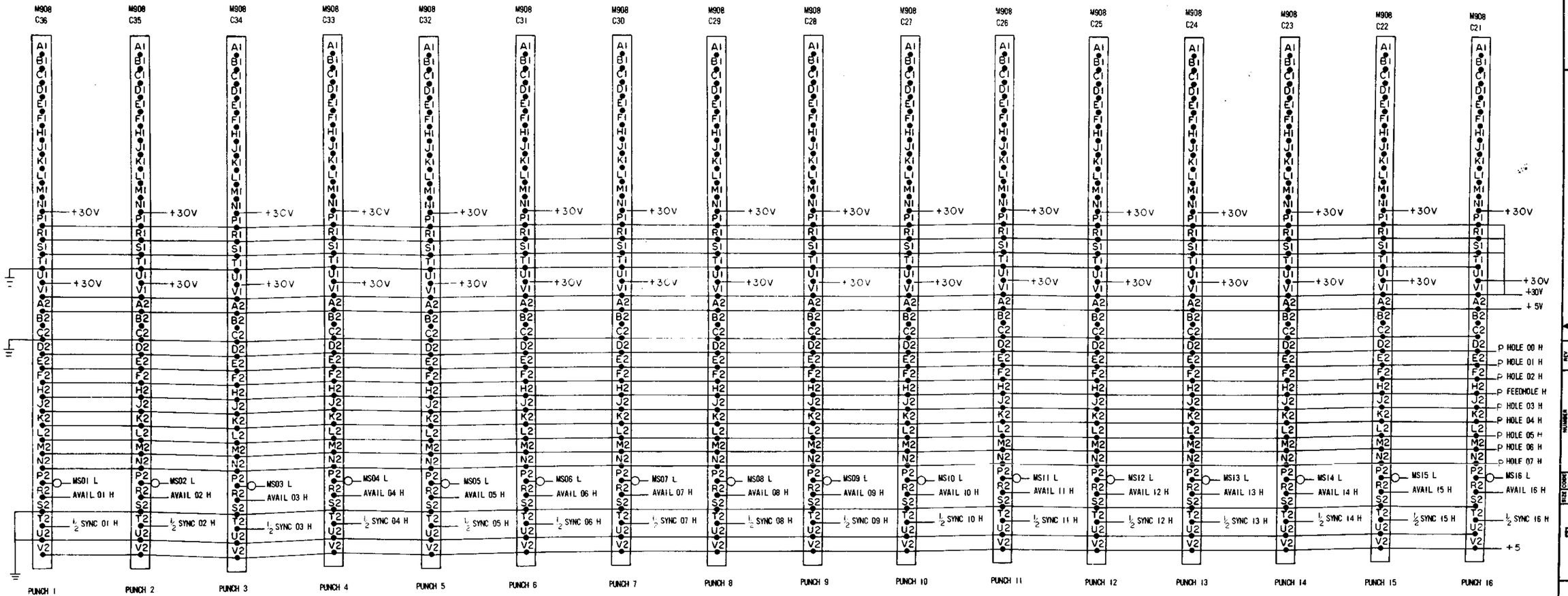
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
READER CABLE CONNECTORS

SIZE	CODE	NUMBER	REV
D	IC	PA63-Ø-11	E

DIST.

DEC FORM NO. ORD 102A



REVISIONS			
REV	CHANGE NO.	CHK	
A	PA63-00004	F.V.	12 JUNE 71 JODICE
B	PA63-00011		8 JULY 71 JODICE
C	PA63-00012		6 AUG 71 JODICE

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 8		PARTS LIST		

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	8-15-69
CHK'D.	DATE	8-21-70
ENG.	DATE	8/9/70
PROJ. ENG.	DATE	8/9/70
DRDN	DATE	

NEXT HIGHER ASSY
A-ML-PA63-Ø

SCALE NONE
SHEET 1 OF 1

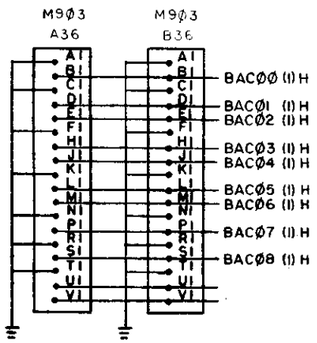
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

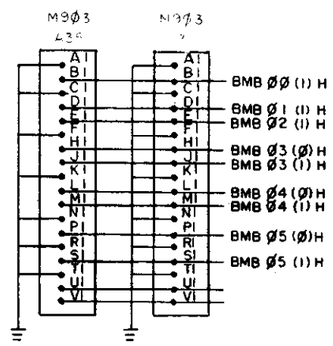
TITLE
PUNCH CABLE CONNECTORS

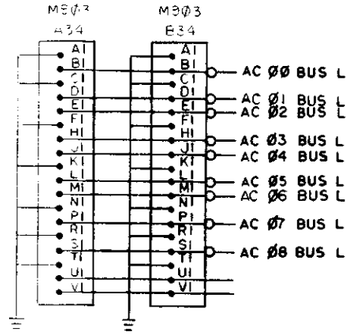
SIZE	CODE	NUMBER	REV.
D	IC	PA63-Ø-12	C

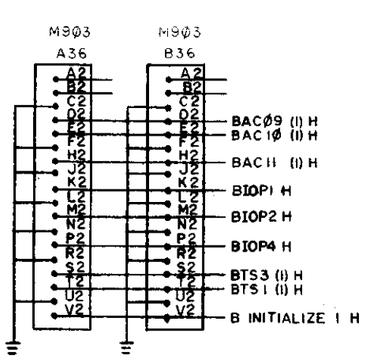
DIST.

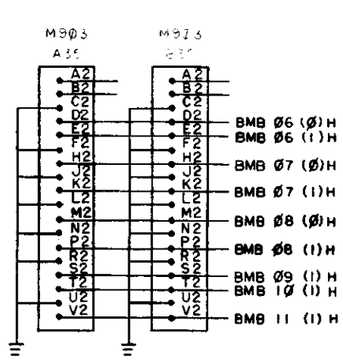
DEC FORM NO DRD 102A

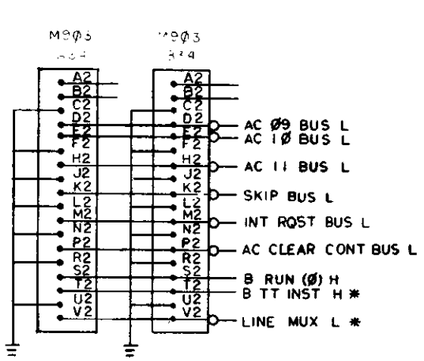












NOTES:

1. SIGNALS MARKED WITH AN ASTERISK ARE NOT USED IN PDP 8/L BUT RESERVED FOR SPECIFIC USE IN PDP 8/I
2. ALL DATA BREAK DEVICES MUST USE "B INITIALIZE 2 H"

REVISIONS	REV.	CHANGE NO.	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-8		PARTS LIST		

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 7/16/70
CHK'D		DATE 7-2-70
ENG.		DATE 7/16/70
PROJ. ENG.		DATE 7/16/70
PROD		DATE 7/22/70

NEXT HIGHER ASSY
A-ML-PA63-Ø

SCALE NONE
SHEET 1 OF 1

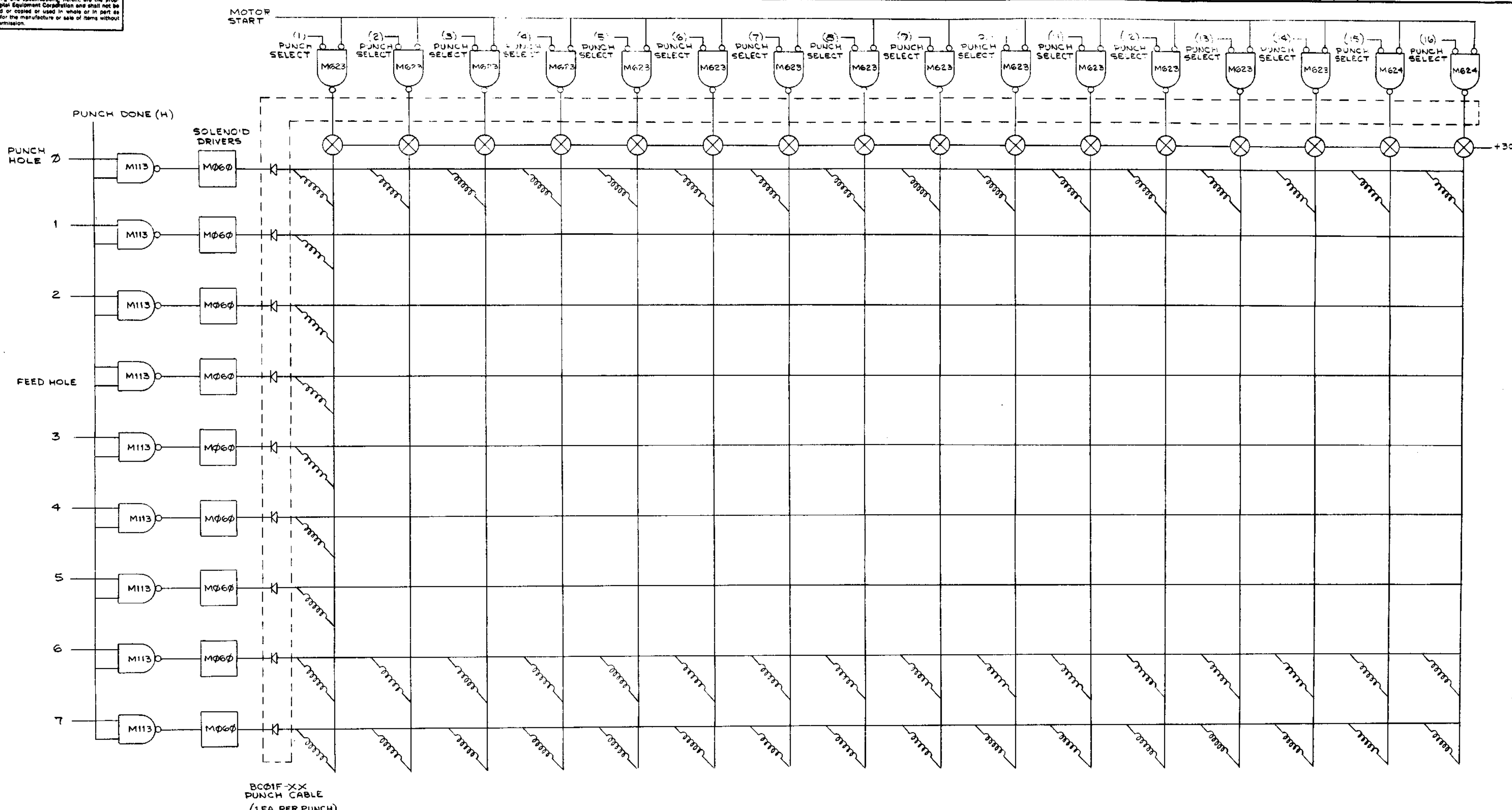
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
I/O CONNECTORS
POSITIVE BUS

SIZE	CODE	NUMBER	REV.
D	IC	PA63-Ø-13	

DIST.

G.J.H.


MOTOR START
(1) PUNCH SELECT
(2) PUNCH SELECT
(3) PUNCH SELECT
(4) PUNCH SELECT
(5) PUNCH SELECT
(6) PUNCH SELECT
(7) PUNCH SELECT
(8) PUNCH SELECT
(9) PUNCH SELECT
(10) PUNCH SELECT
(11) PUNCH SELECT
(12) PUNCH SELECT
(13) PUNCH SELECT
(14) PUNCH SELECT
(15) PUNCH SELECT
(16) PUNCH SELECT
M623
M624
+30V
PUNCH DONE (H)
SOLENOID DRIVERS
PUNCH HOLE Ø
1
2
FEED HOLE
3
4
5
6
7
M113
MØ6Ø
BCØ1F-XX PUNCH CABLE (1 EA PER PUNCH)
INDICATES SCR SWITCH LOCATED ON PUNCH
PUNCH SOLENOIDS USED AS REQUIRED

FIRST USED ON OPT/MOD	PDP8
DRN	T. Quillin, DATE 7-6-70
CHK'D	DATE 7-7-70
ENG	DATE 7-8-70
PROJ. ENG.	
PROD	DATE 7/9/70
NEXT HIGHER ASSY	A-ML-PA63-0
TITLE	PUNCH MATRIX
SIZE / CODE / NUMBER	D / BS / PA63-0-18
SHEET	1 OF 1

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

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

REV: ORIGINATED

MODULE UTILIZATION — PA63-Ø-14

Row A (slots 1–22)

Slot	Module	Pin side 1	Pin side 2
1	5408582	CONTROL PANEL (CONT. ON ROW C AND D)	
2–11			
12	M111	OUT OF TAPE (H) RDRS 1-16	
13			
14			
15	V401		A & B CLOCK
16	M141	HOLE Ø1; HOLE ØØ; HOLE Ø2	INIT BL; INIT CL; HOLE Ø2
17	M141	HOLE Ø6; HOLE Ø5; HOLE Ø7	INIT L; HOLE Ø7
18	M141	HOLE Ø3; FEED HOLE; HOLE Ø4	HOLE Ø4
19	M141	HOLE Ø1; HOLE ØØ; HOLE Ø2	HOLE Ø2
20	M141	HOLE Ø6; HOLE Ø5; HOLE Ø7	HOLE Ø7
21	M141	HOLE Ø3; FEED HOLE; HOLE Ø4	HOLE Ø4
22	M141	HOLE Ø1; HOLE ØØ; HOLE Ø2	HOLE Ø2

Row B (slots 1–22)

Slot	Module	Pin side 1	Pin side 2
1	(CONTROL PANEL, cont.)		
2–10			
11	M7??		O.T. [illegible]L TO 15L
12			
13	M7?2		SEL RDR Ø1H TO 15H
14	M623	SEL RDR Ø3H; THRU; SEL RDR Ø?H	SEL RDR Ø1H; Ø2H; SEL RDR 16H; SEL RDR 13H
15	M7?2		PUNCH AVAIL Ø1H TO 15H
16	M141	HOLE Ø6; HOLE Ø5; HOLE Ø7	HOLE Ø7
17	M141	HOLE Ø3; FEED HOLE; HOLE Ø4	HOLE Ø4
18	M141	SKIP AVAIL; SYNC PUNCH	SYNC PUNCH
19	M141	SKIP AVAIL	SKIP AVAIL
20	M141	SYNC PUNCH	SYNC PUNCH
21	M113	B(Ø)16; B(1)16	+3V PUNCH AVAIL 16; +3V SEL RDR 16H; RDR NO TAPE(L)
22	M113	A(Ø)14; A(1)14; B(1)14; A(1)15; B(1)15; +3V O.T. 16L	B(Ø)14; A(Ø)15; B(Ø)15; A(Ø)16; A(1)16

Row C (slots 23–44)

Slot	Module	Pin side 1	Pin side 2
23	M141	HOLE Ø6; HOLE Ø5; HOLE Ø7	HOLE Ø7
24	M141	HOLE Ø3; FEED HOLE; HOLE Ø4	HOLE Ø4
25	M141	HOLE Ø1; HOLE ØØ; HOLE Ø2	INHIBIT; HOLE Ø2
26	M302		6312 LEVEL; INHIBIT
27	M624	AC Ø4; AC Ø5; AC Ø6; AC Ø7; AC Ø8; AC Ø9; AC 1Ø	AC 11; INT RQST; SKIP
28	M216	NO TAPE	
29	M101	BAC 11	BAC 1Ø; BAC Ø9; BAC Ø8; BAC Ø7; BAC Ø6; BAC Ø5; BAC Ø4
30	M710	PB-7 TO PB-Ø INITIALIZE AND Ø22 Ø24 Ø21 INHIBIT	PUNCH DONE Ø24 SKIP BUS INT RQST BUS
31–33			
34	M9Ø3 CABLE	AC ØØ BUS TO AC Ø8 BUS	AC Ø9 BUS TO AC 11 BUS SKIP INT RQST AC CLR CONT & RUN
35	M9Ø3 CABLE	BMB ØØ (Ø) TO BMB Ø5 (1)	BMB Ø6 (Ø) TO BMB 11 (1)
36	M9Ø3 CABLE	BAC ØØ (1) TO BAC Ø8 (1)	BAC Ø9 (1) TO BAC 11 (1) BIOP 1 BIOP 2 BIOP 4 BTS 3 BTS 1 & INITIALIZE
37–44			

Row D (slots 23–44)

Slot	Module	Pin side 1	Pin side 2
23	M113	B(Ø)11; B(1)11; A(1)12; B(1)12; A(1)13	A(Ø)12; B(Ø)12; A(Ø)13; B(Ø)13; B(1)13
24	M113	A(Ø)Ø9; A(1)Ø9; B(1)Ø9; A(1)1Ø; B(1)1Ø	B(Ø)Ø9; A(Ø)1Ø; B(Ø)1Ø; A(Ø)11; A(1)11
25	M113	B(Ø)Ø6; B(1)Ø6; A(1)Ø7; B(1)Ø7; A(1)Ø8	A(Ø)Ø7; B(Ø)Ø7; A(Ø)Ø8; B(Ø)Ø8; B(1)Ø8
26	M113	A(Ø)Ø4; A(1)Ø4; B(1)Ø4; A(1)Ø5; B(1)Ø5	B(Ø)Ø4; A(Ø)Ø5; B(Ø)Ø5; A(Ø)Ø6; A(1)Ø6
27	M216	RBØ1	RBØØ; FLAG
28	M216	RBØ7; RBØ5; RBØ3	RBØ6; RBØ4; RBØ2
29			
30	(M710, cont.)		
31	M103	6Ø11; 6Ø12; 6Ø14; INITIALIZE; INHIBIT	IOP DECODE
32–33			
34	M9Ø3 CABLE	AC ØØ BUS TO AC Ø8 BUS	AC Ø9 BUS TO AC 11 BUS SKIP INT RQST AC CLR & RUN
35	M9Ø3 CABLE	BMB ØØ (Ø) TO BMB Ø5 (1)	BMB Ø6 (Ø) TO BMB 11 (1)
36	M9Ø3 CABLE	BAC ØØ (1) TO BAC Ø8 (1)	BAC Ø9 (1) TO BAC 11 (1) BIOP 1 BIOP 2 BIOP 4 BTS 3 BTS 1 & INITIALIZE
37–44			

NOTES:

◆ = THESE CABLES ARE PLUGGED INTO THE APPROPRIATE LOCATION AS THE PUNCH OPTIONS ARE ADDED TO THE SYSTEM

▼▼ = THESE CABLES ARE PLUGGED INTO THE APPROPRIATE LOCATION AS THE READER OPTIONS ARE ADDED TO THE SYSTEM

▲ = THESE MODULES ARE ADDED IN THE SEQUENCE INDICATED AS EACH READER IS ADDED TO THE SYSTEM

REVISIONS: REV. A, B, C, D, E, F — CHANGE NO. PA63-00007, PA63-00008, PA63-00011, PA63-00012, PA63-00013, PA63-00014 — H. JODICE

FIRST USED ON OPTION/MODEL: PA63

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.

digital EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

TITLE: MODULE UTILIZATION

NEXT HIGHER ASSY: A-ML-PA63-Ø

SIZE: D | CODE: MU | NUMBER: PA63-Ø-14 | REV: F

SCALE: NONE | SHEET 1 OF 2

DEC FORM NO. DRD 1-2

SIZE DMU CODE NUMBER PA63-0-14 REV. F

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	5408582				M115	M113	M113	M111	M119	M161	M161	M216	M216	M623	M624	M161	M161	M868	M868	M868	M868	M868
USAGE	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	CABLE 2 1	CABLE 2 1
C	CONTROL PANEL (CONT. FROM ROW A AND B)				FLAG RUN RDR STROBE 1 A(0)Ø1 A(0)Ø2 A(1)Ø1 B(0)Ø1 B(1)Ø1	FEED HOLE PUN DATA B 7 PUN DATA B 6 PUN DATA B 5 PUN DATA B 4 PUN DATA B 3 PUN DATA B 2 PUN DATA B 1 MOTOR START	6311 6312 A(1)Ø2 B(1)Ø2 A(1)Ø3 PUN DATA B 8 PUN DATA B 7 PUN DATA B 6 PUN DATA B 5 PUN DATA B 4	6314 B(0)Ø2 A(0)Ø3 B(0)Ø3 B(1)Ø3 6311 6312 6314 11 09 07 05 RB Ø0	6311 BAC ENABLE 10 08 06 04 RUN FLAG	6311 SMB CODE	SEL RDR 09 TO SEL RDR 16	SEL RDR Ø1 TO SEL RDR Ø8	A RUN RSØ0	B RSØ4	PSB1 PSB4 RSB1	PSB2 PSB0 RSB2	MS15 MS16 INHIBIT SEL RDR 11H SKIP BUS 6312 LEVEL SEL RDR 10H RB07 RB06	MSØ1 MSØ2 MSØ3 MSØ4 MSØ5 MSØ6 MSØ7 MSØ8 MSØ9 MS10 MS11 MS12 MS13 MS14	SEL Ø1 TO SEL Ø8	SEL Ø9 TO SEL 16	P HOLE Ø5 P HOLE Ø6 P HOLE Ø7 P FEED HOLE	P HOLE Ø1 P HOLE Ø2 P HOLE Ø3 P HOLE Ø4	P HOLE Ø0	PUNCH 16	PUNCH 15
USAGE					M868 16TH 2 1	M868 15TH 2 1	M868 14TH 2 1	M868 13TH 2 1	M868 12TH 2 1	M868 11TH 2 1	M868 10TH 2 1	M868 9TH 2 1	M868 8TH 2 1	M868 7TH 2 1	M868 6TH 2 1	M868 5TH 2 1	M868 4TH 2 1	M868 3RD 2 1	M868 2ND 2 1	M868 2 1	M868 CABLE 2 1	M868 CABLE 2 1
D					B(16)Ø1 B(16)Ø0 A(16)Ø1 A(16)Ø0	B(15)Ø1 B(15)Ø0 A(15)Ø1 A(15)Ø0	B(14)Ø1 B(14)Ø0 A(14)Ø1 A(14)Ø0	B(13)Ø1 B(13)Ø0 A(13)Ø1 A(13)Ø0	B(12)Ø1 B(12)Ø0 A(12)Ø1 A(12)Ø0	B(11)Ø1 B(11)Ø0 A(11)Ø1 A(11)Ø0	B(10)Ø1 B(10)Ø0 A(10)Ø1 A(10)Ø0	B(09)Ø1 B(09)Ø0 A(09)Ø1 A(09)Ø0	B(08)Ø1 B(08)Ø0 A(08)Ø1 A(08)Ø0	B(07)Ø1 B(07)Ø0 A(07)Ø1 A(07)Ø0	B(06)Ø1 B(06)Ø0 A(06)Ø1 A(06)Ø0	B(05)Ø1 B(05)Ø0 A(05)Ø1 A(05)Ø0	B(04)Ø1 B(04)Ø0 A(04)Ø1 A(04)Ø0	B(03)Ø1 B(03)Ø0 A(03)Ø1 A(03)Ø0	B(02)Ø1 B(02)Ø0 A(02)Ø1 A(02)Ø0	B(01)Ø1 B(01)Ø0 A(01)Ø1 A(01)Ø0	RDR 16	RDR 15

	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	M908	M908	M908	M908	M908	M908	M908	M908	M908	M908	M908	M908	M908	M908								
USAGE	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	CABLE 2 1	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
C	PUNCH 14	PUNCH 13	PUNCH 12	PUNCH 11	PUNCH 10	PUNCH 9	PUNCH 8	PUNCH 7	PUNCH 6	PUNCH 5	PUNCH 4	PUNCH 3	PUNCH 2	PUNCH 1								
USAGE	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1	M908 CABLE 2 1								
D	RDR 14	RDR 13	RDR 12	RDR 11	RDR 10	RDR 9	RDR 8	RDR 7	RDR 6	RDR 5	RDR 4	RDR 3	RDR 2	RDR 1								

REVISIONS | REV. | CHANGE NO. | CHK.

FIRST USED ON OPTION / MODEL: PA63

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

		DATE
DRN.		10-22-67
CHK'D.		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

NEXT HIGHER ASSY: A-ML-PA63-Ø

SCALE: NONE

SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MODULE UTILIZATION

SIZE D | CODE MU | NUMBER PA63-Ø-14 | REV. F

DIST.

DEC FORM NO. ORD 112

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY A. RAIMONDI DATE 10/22/69	CHECKED A. PFYFFER DATE 12/9/69	SECTION 1
ENG DATE 3/3/70	PROD DATE 3-10-70	ISSUED SECT. 1

ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR PA63	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
	~~K303~~	~~THREE TIMERS~~	~~1~~			
	M060	SOLENOID DRIVER	3			
	M101	BUS DATA INTERFACE	1			
	M103	DEVICE SELECTOR	1			
	M111	INVERTER	2			
	M113	10-2 INPUT NAND GATES	8			
	M115	8-3 INPUT NAND GATES	1			
	M119	3-8 INPUT NAND GATES	1			
	M141	AND/NOR GATES	15			
	M161	BINARY TO OCTAL/DECIMAL DECODER	4			
	M216	SIX FLIP-FLOPS	5			
	M302	ONE SHOT DELAY	1			
	M401	CLOCK	1			
	M623	BUS DRIVER	2			
	M624	BUS DRIVER	2			
	M710 REV F OR LATER	PUNCH CONTROL	1			
	M002	LOGIC 1 SOURCE	3			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE UTILIZATION	D-MU-PA63-0-14	A	PL	PA63-0-14	F	PA63-00014
	SHEET 1 OF 1	DIST				

DEC FORM NO
DRA 123

DRWG NO	REV LTR
K-WL-PA63-Ø-15	F

REVISIONS				
REV LTR	ECO NO	DATE	ENG
A	PA63-00004	7-2-70	
B	PA63-00008	12-27-70	
C	PA63-00011	4/15/71	
D	PA63C0012	6-2-71	
E	PA63-00013	12-27-71	
F	PA63-00014	1-21-72	

FIRST USED ON OPTION / MODEL	PA63		
DRAWN	A. Raimondi	DATE	9-4-69
CHECKED	T. Chikada	DATE	1-16-70
ENG		DATE	
PROJ ENG		DATE	3/1/70
PROD		DATE	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ASSY NO D-AD-7006490-0-0

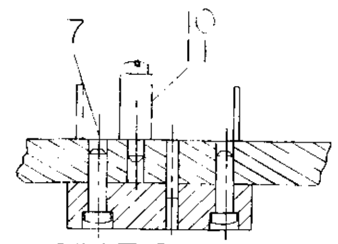
SCALE NONE | SHEET 1 OF 1

TITLE
WIRE LIST

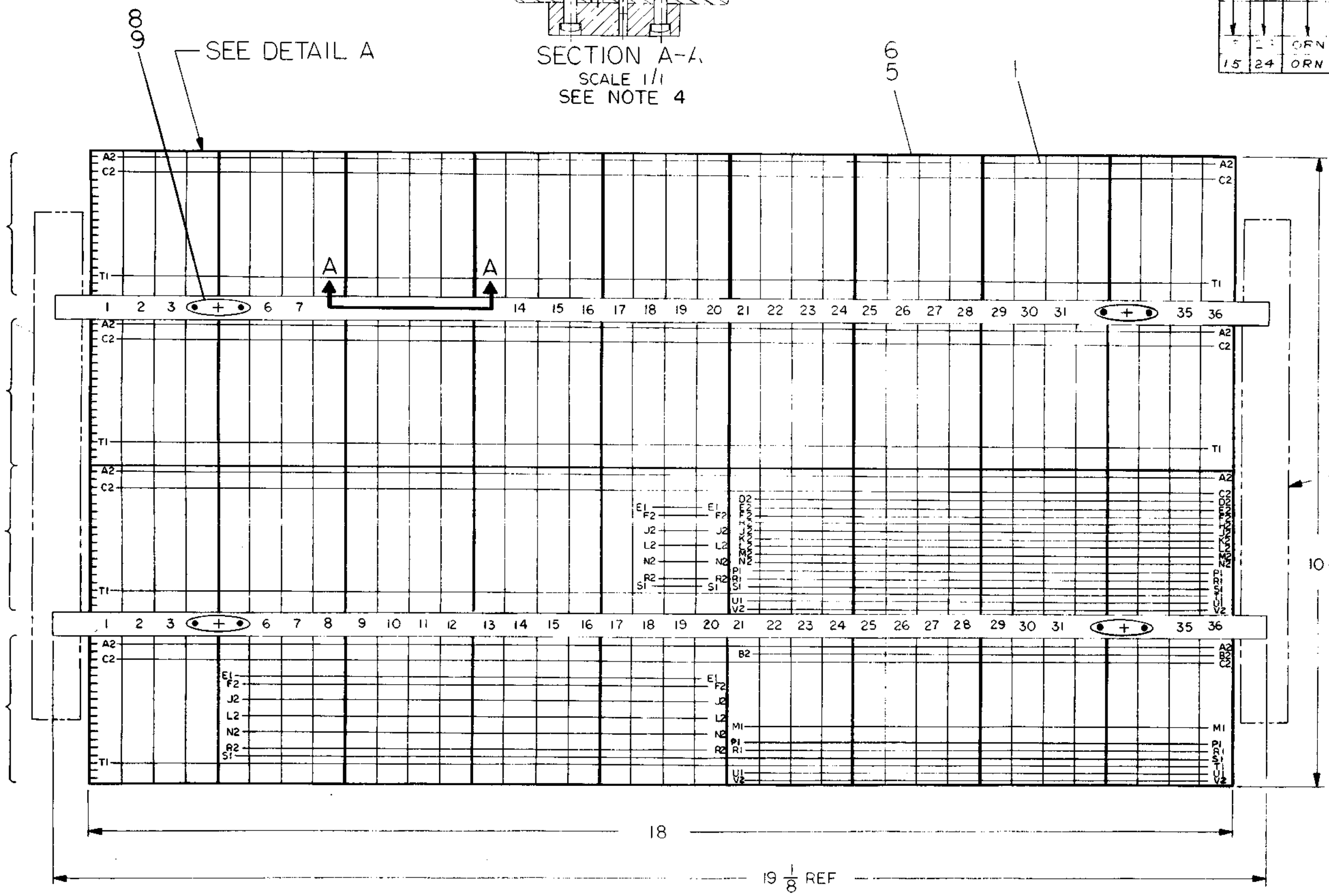
FOR TAPE* FILE*

SIZE	CODE	DWG. NO.	REV LTR
K	WL	PA63-Ø-15	F

DIST.



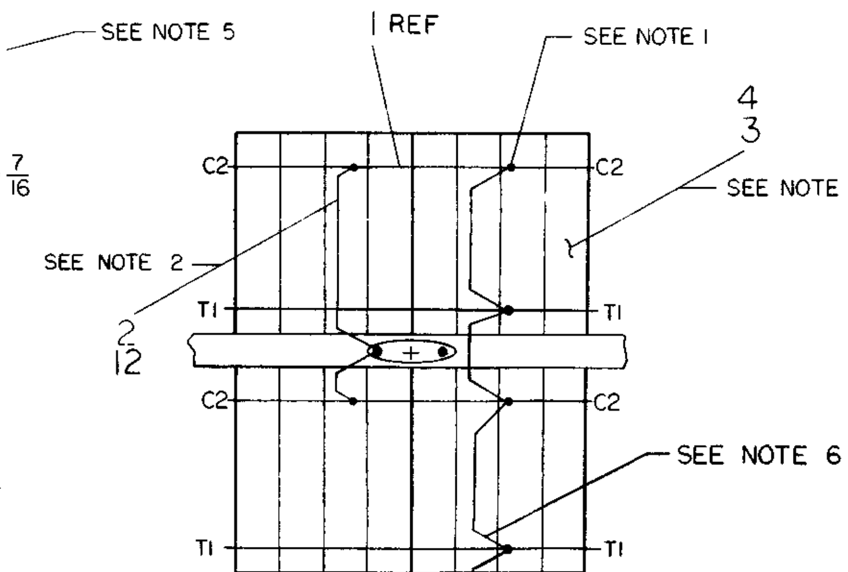
SECTION A-A
SCALE 1/1
SEE NOTE 4



WIRE TABLE					
ITEM NO.	DESCRIPTION [illegible]	[illegible]	CONNECTIONS FROM	TO	REMARKS
[illegible]	[illegible]	[illegible]	D21R2	D21T1	SOLDER
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SOLDER
15	24	ORN	C28P1	C28U1	WIRE WRAP
			C29P1	C29S1	
			C30P1	C30U1	
			C29U1	[illegible]	
[illegible]	[illegible]	ORN	[illegible]	D28U1	WIRE WRAP
15	24	ORN	D0551	B0IN2	WIRE WRAP

NOTES:

1. CONNECTIONS ON ITEMS 1 & 2 TO BE SOLDERED AND LOCATED AT MINIMUM PRACTICAL HEIGHT ABOVE BLOCK
2. ALL CONN BLOCKS TO BE GROUNDED TO GND LUGS AS SHOWN, 4 PLACES.
3. USE YELLOW WIRE (ITEM NO. 3) FOR MACHINE WRAPPED AND BLUE WIRE (ITEM NO. 4) FOR HAND WRAPPED WIRING
4. INSTALL ITEMS 10 & 11 AFTER WIRING OPERATIONS ARE COMPLETE. THEY ARE LOCATED AT THE THIRD AND SEVENTH BLOCK FROM LEFT (4 PLACES)
5. USE WIRING BLOCK *C-MD-7605449-0-0 (SHOWN IN PHANTOM) BOTH ENDS REMOVE BLOCKS WHEN LOGIC IS INSTALLED AT ASSY
6. *WIRE GROUNDS AS SHOWN (9 PLACES)*



DETAIL A
TYPICAL GROUNDING

REVISIONS			
REV.	A	B	C
CHANGE NO.	PA63-00007	PA63-00011	PA63-00012
	JODICE	JODICE	JODICE

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: PDP-8

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 9-4-69
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
NEXT HIGHER ASSY D-UA-PA63-0-0
SCALE NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
WIRED ASS'Y
(PA63)

SIZE D CODE AD NUMBER 7006490-0-0 REV C

DIST.

DEC FORM NO DRD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY A. RAIMONDI	CHECKED AL PFYFFER	SECTION
DATE 9/3/69	DATE 12/2/69	1
ENG [illegible]	PROD A Hurst	ISSUED SECT.
DATE 3/2/70	DATE 3-10-70	1

ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR PA63	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
1	1205541	VOLTAGE CHAIN	A/R			
2	9107560-1	#22 WIRE, BUSSING	A/R			
3	9105740-44	#30 AWG SOLID KYNAR YEL	A/R			
4	9105740-66	#30 AWG SOLID KYNAR BLU	A/R			
5	E-SC-1205348-0-0	288 PIN CONN BLOCK	18			
6	D-IA-7406739-0-0	MTG BAR	2			
7	9006423	SCR PHL HD FIL POSI DRIVE #8-32X3/4 CPS	36			
8	9006121	SCR PHL HD FIL POSI DRIVE #8-32X3/8 CPS	4			
9	9006775	TERMINAL 2116-08-00 SHAKEPROOF	4			
10	9007868	SPACER 1/4 X 3/4 LG #8 HOLE	4			
11	9006043-1	SCR PHL HD PAN #8-32 X 1" LG	4			
12	9107265-09	#22 TUBING, WHITE	A/R			
~~13~~	~~9107360-66~~	~~#18 AWG STRD TEF BLU~~	~~AR~~			
~~14~~	~~9107360-33~~	~~#18 AWG STRD TEF ORN~~	~~AR~~			
REF	K-WL-PA63-Ø-15	WIRE LIST				
15	9107470	#24 AWG SOLID TEFLON ORANGE	A/R			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
WIRED ASSY (PA63)	D-AD-7006490-0-0	A	PL	7006490-0-0	C	PA63-0012
	SHEET 1 OF 1	DIST	G			

DEC FORM NO 16 [illegible]
DRA 123

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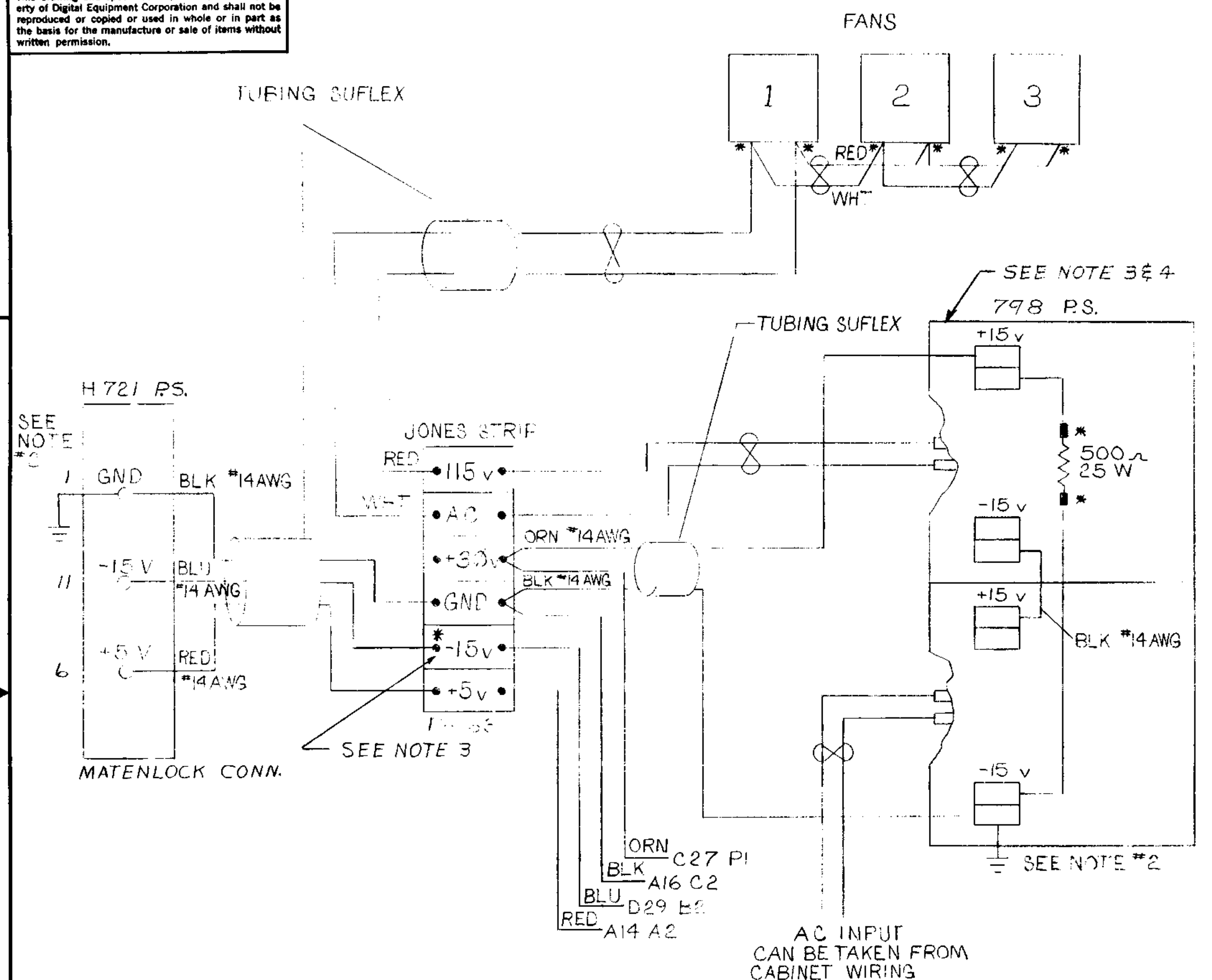


NOTES.

1. ALL WIRE TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.

* APPLY HY-SHRINK TUBING PLACED AS SHOWN.

2. THE PA63, H721, AND 798 MUST ALL BE WIRED TO GROUND. GROUND BEING THE 'GREEN' (SAFETY GROUND) CONDUCTOR ON THE AC POWER CORD.

3. *IF MORE THAN 6 PR68D (DA) READERS APPEAR ON SYSTEM. AN ADDITIONAL 798 P.S. MUST BE ADDED TO SUPPLY -15V. IF THIS IS DONE, THE H721 CANNOT BE USED TO SUPPLY -15V AT THE SAME TIME.*

4. *ON 50 HZ SYSTEMS, AN 798A P.S. MUST REPLACE THE 798 P.S.*

REV.	CHANGE NO.	CHK
B	PA63-00011 REVISED & REDRAWN 4-8-71 JOYCE	K.
C	PA63-00013 JUSTICE	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PA63		PARTS LIST		

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 —/—/—

		DATE
DRN.	G. FLANDERS	12-22-69
CHK'D.	K. RUSS	1-23-70
ENG.	P. GARDNER	3-1-70
PROJ. ENG.	B. DOUCETT	3-10-70
PROD.	A. RINSCH	3-10-70

NEXT HIGHER ASSY. D-UA-PA63-0-0

SCALE / / SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE POWER WIRING (PA63)

SIZE	CODE	NUMBER	REV.
C	IC	PA63-Ø-16	C

DIST.

DEC FORM NO. DRC 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 9-22-70

TITLE PA63

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A		00009				1-5-71
B		00011	H.JODICE	3-8-71		3/3/71
C		00012	H JODICE	6-2-71		6/4/71
D		00013	H JODICE	1-4-72		1/10/72

ENG	APPD	CODE	SIZE	NUMBER	REV
G. Miller		SP	A	PA63-0-17	D

SHEET ____ OF ____

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PA63

I. Description

The PA63 is a controller for; up to 16 PR68D paper tape readers and up to 16 PP67C or PP67D paper tape punches. It can interface to any one of the positive bus family of PDP-8 computers. One reader and one punch can be selected at a time. The punch section controls the turning on and turning off of the selected punch motor; it also controls the solenoids which determine the bits to be punched. The reader section controls the selected stepping motor; it also buffers the data bits after it commands the selected reader to fetch a character.

II. General Specifications

A. Mechanical Packaging

The PA63 consists of a standard H925 module drawer with 36 H803 mounting blocks. The drawer is mounted using chassis tracks.

B. Environmental Specifications

The PA63 will operate at a temperature range of 20°C to 50°C.

The power required is supplied by an H721 power supply for +5v and -15v and a DEC 793 power supply for +30v.

C. Programming Specifications

Instructions

Punch	PSF	6021	Skip if punch flag = 1
	PCF	6022	Clear flag and punch buffer
	PPC	6024	Load buffer and punch
	PLS	6026	Clear flag and buffer; load and punch.
Reader	RSF	6011	Skip if reader flag = 1
	RRB	6012	Read reader buffer, and clear flag
	RFC	6014	Clear flag and buffer and fetch character.

	SIZE	CODE	NUMBER	REV
	A	SP	PA63-0-17	D

DEC FORM NO
DEA 108

SHEET 2 OF 6

Instructions (Continued)

General		6311	Skip if punch not ready
		6312	Select reader
		6314	Select punch

Programming Examples

Reader	7604	LAS	(Octal Code SR_{8-11} for
	6312	SEL Rdr	reader to be sel)
	7300	CLA CLL	
SR=7000	6014	RFC	
Load Address	6011	RSF	
SR_{8-11} = Reader Number	5204	Jmp .-1	
	6012	RRB	
START	5202	Jmp .-5	

This program will command the selected reader to read the paper tape which is placed in its tape path guide.

Punch	7604	LAS	(Oct. Code SR_{8-11} for punch
	6314	Sel Punch	to be selected)
	6311		Skip if punch not available
	7410	SKP	
	7402	HLT	
	7300	CLA CLL	
SR=7000	7040	CMA	
Load Address	6026	PLS	
SR_{8-11}=Punch Number	6021	PSF	
	5210	JMP.-1	
START	5206	JMP.-4	

The program will command the selected punch to punch a continuous pattern of one's and zero's.

III. System Components

A. Modules - See print UML PA63
B. Cables - 1) Standard applicable I/O cables
2) One BCØ1H-0-0 cable per reader
One BCØ1F-0-0 cable per punch
C. Power Supplies: DEC 778
H720(C)

IV. Interface Specifications

A. The I/O signals are detailed in the PDP-8 Small Computer Handbook.
B. Reader Signals

Pin	Signal	Description
P1,B2	-15v	Supplies current to reader amplifiers and bulbs
R1,A2	+5v	Supplies current to all logic components
S1,U1,U2	+30v	Supplies current to drive stepping motor
V1	Sel.Rdr	When signal is asserted, reader is selected.
C2,T1	GND	
D2	Hole ØØ (H)	Signal is asserted when a hole is detected.
E2	Hole Ø1 (H)	Signal is asserted when a hole is detected.
F2	Hole Ø2 (H)	Signal is asserted when a hole is detected.
H2	FH(H)	Signal is asserted when a hole is detected. Used to detect out of tape.
J2	Hole Ø3 (H)	Signal is asserted when a hole is detected.
K2	Hole Ø4 (H)	Signal is asserted when a hole is detected.
L2	Hole Ø5 (H)	Signal is asserted when a hole is detected.
M2	Hole Ø6 (H)	Signal is asserted when a hole is detected.
N2	Hole Ø7 (H)	Signal is asserted when a hole is detected.
T2	BØØL	+30v to GND. Used to increment motor.

B. Reader Signals (Continued)

Pin	Signal	Description
S2	BØ1L	+30v to GND. Used to increment motor.
R2	AØØL	+30v to GND. Used to increment motor.
P2	AØ1L	+30v to GND. Used to increment motor.
V2	NTTA	When signal is at GND, it places the readers in the non-torn tape allotment mode.

C. Punch Signals

N1,P1,R1,S1 U1,V1	+30v	Supplies current to solenoids
T1,C2	GND	
A2,V2	+5v	Supplies voltage to control circuitry
D2	P Hole ØØ(L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
E2	P Hole Ø1(L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
F2	P Hole Ø2(L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
H2	P Feed Hole (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state. This signal should be set to a 4.5ms positive width.
J2	P Hole Ø3 (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
K2	P Hole Ø4 (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
L2	P Hole Ø5 (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.

C. Punch Signals (Continued)

M2	P Hole Ø6 (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
N2	P Hole Ø7 (L)	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
P2	MS(L)	When signal is at GND, the selected punch motor will start.
R2	AVAIL (L)	When signal is at GND, the selected punch is available.
T2	½ Sync (H)	A signal supplied from the punch to sync the strobing (feed hole) pulse.

V. Checkout Specifications

See A-SP-PA63-Ø-21 and A-SP-PA63-Ø-22

VI. Acceptance Procedures

See A-SP-PA63-Ø-19

VII. Engineering Drawings

See A-ML-PA63-Ø

VIII. System Configuration

See D-UA-PTS8-L-Ø

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 6/11/71

TITLE PA63 ACCEPTANCE CRITERIA - FIELD ONLY

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
	Fred Miller 6/11/71	A	SP	PA63-0-23	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PA63 ACCEPTANCE CRITERIA - FIELD ONLY

SCOPE - To define the criteria necessary to accept the positive bus PA63 16 channel reader/punch multiplexer. This criteria assumes that:

a. The PA63, if an add-on, has been connected into the system, and

b. All preceding diagnostics for the computer and any other peripherals; DF32, DECtape, etc., have been run successfully.

c. The user is familiar with the operation of the Typeset-8 Systems Exerciser (TCSE). Reference document Maindec-08-07AO-D which should be available at all local Field Service Offices.

PRELIMINARY

Before checking out the PA63, make sure that all readers and punches are aligned correctly (refer to alignment procedures for PR68B/D/DA readers and PP67C/D punches).

NOTE: Use the customers tape for these tests if it falls within specs. Refer to the Typeset-8 System Users Guide (DEC-08-HGZA-D) SECTION 3.5 for paper tape specifications.

Check that the reader clock M401 location A15 pin D2 is set at 2.3 ms exactly. Check that the punch done level M710 location AB30 pin BH2 has a positive delay of 4.5 ms exactly.

PROCEDURE

I System without NTTA Option

a. Make sure the NTTA switch in the PA63 is in the OFF position.

b. Load a full roll of paper tape (as used by the customer for his keyboads) in each punch.

c. Load the customized version of the system exerciser (supplied with each system), overlay 3.

	SIZE	CODE	NUMBER	REV
	A	SP	PA63-0-23	

DEC FORM NO 15-1022

PROCEDURE (continued)

I d. Commence punching out the test pattern on all punches using Segment 1 of Overlay 3. After two or three passes, as each punch is punching its test (special binary count) pattern, turn the punch to the STOP WHEN DONE position. The punch should continue to the end of the test pattern. Make sure that the message "EDV3S1 PUNCH XX NOT AVAILABLE" is typed out for each punch as each punch is again checked and found to be unavailable. Discontinue running of segment 1.

e. Make a loop of each tape generated in step d and load in each reader, placing all reader switches in the ON position. Commence reading using Segment 0 of overlay 3. After two or three passes, as each reader finishes reading the test pattern, place the reader switch in the OFF position. Make sure that the message "EOV3S0 RDR XX NO RESPONSE" is typed out for each reader as each reader is again checked and found to be unavailable. Discontinue running of segment 0, and remove the tape loops. Recommence running of segment 0 with all reader switches in the ON position but no tape in the readers. The same error messages should again be typed out.

f. Run all segments of Overlay 3 until the tape in each punch has been expended. There should be no errors in reading or punching for a full roll of tape, excluding those due to tape skewing or dirt picked up off the floor, etc.

Since the punch segment runs faster than the reader segment, large amounts of tape tend to pile up in the buffer area between the reader and the punch. This buffer area is usually the floor and gives trouble in tape skewing and dirt pick-up. An acceptable alternative to feeding the tape direct from the punch to the reader is to run the reader segment using the tape loops generated in step e). However, when punching is finished, the tapes punched out by segment 1 must be verified by the readers; running all segments but segment 1 of overlay 3.

PROCEDURE (continued)

II System with NTTA option

In addition to steps a) through f) in the preceding section, perform the following:

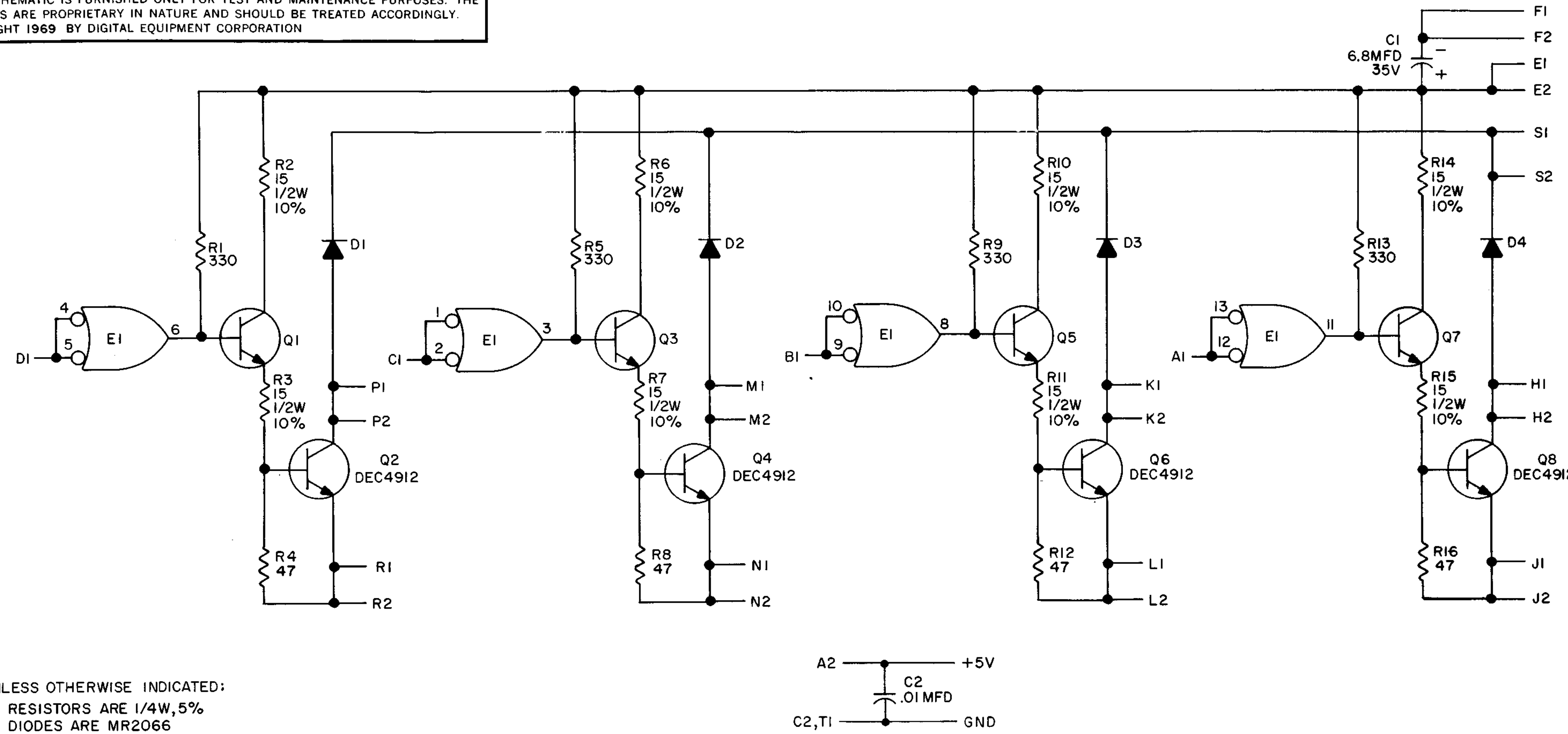
a. Throw the NTTA switch in the PA63 to the ON position.

b. Place a tape loop in each reader and press the reader switches. Observe that the "available" light in each reader is extinguished. Run segment 0, noting that after a test pattern has been tested in a reader, the "available" lamp will be lit again. Press the switch again on each reader after this occurs. After running for three or four passes do not press the reader switches anymore, noting that as each reader is checked again and found to be unavailable, the message "EOV3S0 RDR XX NO RESPONSE" is typed out. Discontinue running segment 0.

NOTE 1

If mixed input levels are to be used by the customer, when the PA63 has been checked out, the switch in the PA63 must be left in the 8 level position.

SIZE	CODE	NUMBER	REV.
B	CS	M060-0-1	



UNLESS OTHERWISE INDICATED:

- RESISTORS ARE 1/4W, 5%
- DIODES ARE MR2066
- TRANSISTORS ARE DEC2219
- PIN 7 ON EACH IC = GND
- PIN 14 ON EACH IC = +5V
- E1 IS DEC7400N

REVISIONS		
REV.	CHG NO.	CHK

DRN. BUTLER	DATE 9/12/69	
CHK'D	DATE 9/15/69	
ENG. R. Vogelsang	DATE 11/10/69	
PROD.	DATE	

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA
MR2206	1N4003		
DEC2219	SAME		
DEC4912	NONE		

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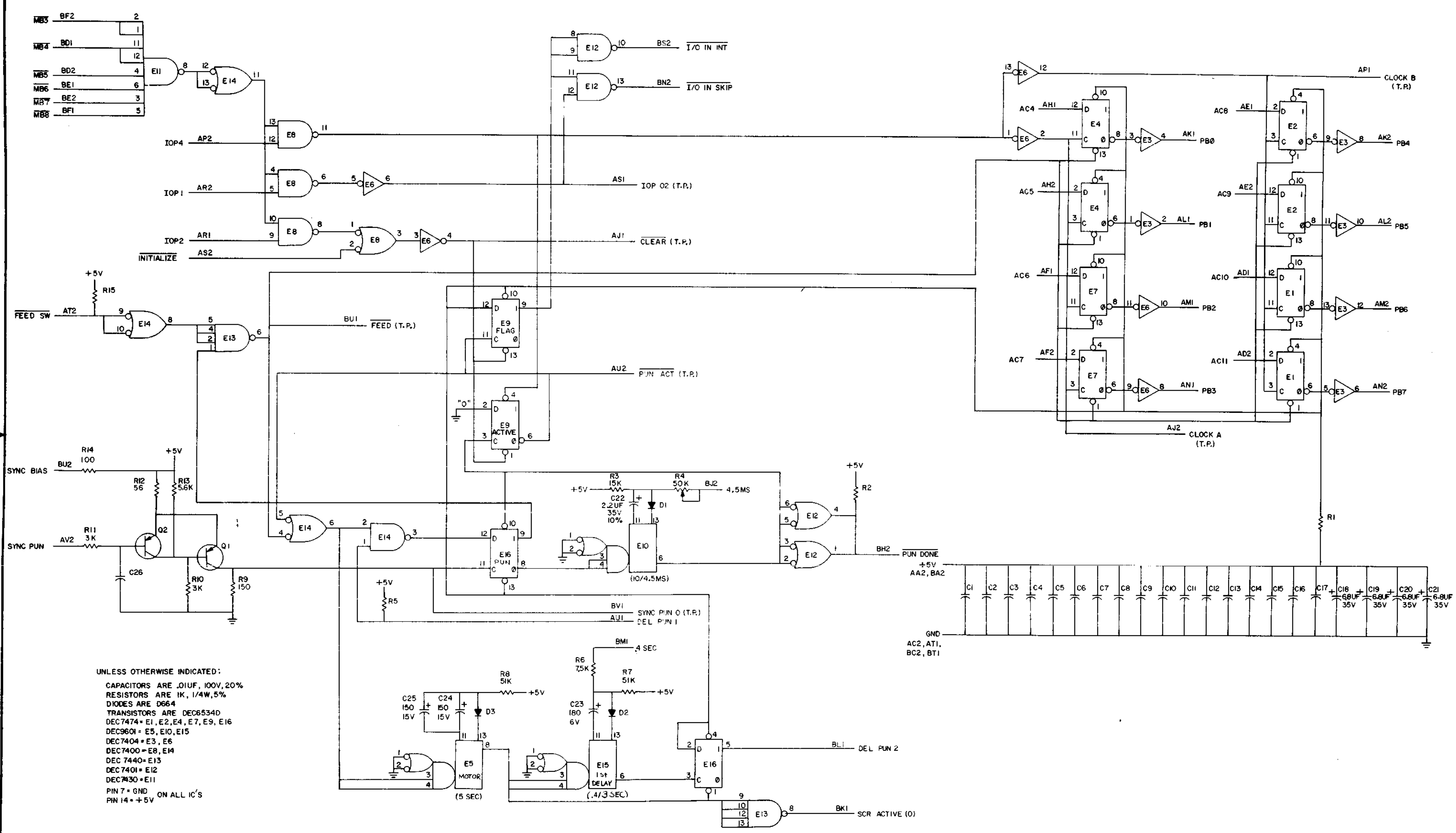
TITLE			
SOLENOID DRIVER M060			
SIZE B	CODE CS	NUMBER M060-0-1	REV.
PRINTED CIRCUIT REV. A			

DEC FORM NO.
DRB 102

5 DIST. 324, 434, 474 3 PINK



UNLESS OTHERWISE INDICATED:

CAPACITORS ARE .01UF, 100V, 20%
RESISTORS ARE 1K, 1/4W, 5%
DIODES ARE D664
TRANSISTORS ARE DEC6534D
DEC7474 = E1, E2, E4, E7, E9, E16
DEC9601 = E5, E10, E15
DEC7404 = E3, E6
DEC7400 = E8, E14
DEC 7440 = E13
DEC7401 = E12
DEC7430 = E11
PIN 7 = GND
PIN 14 = +5V ON ALL IC'S

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA
D664	1N3606		
DEC6534D	NONE		

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PUNCH CONTROL M710

SIZE: D CODE: CS NUMBER: M710-0-1 REV: K

DIST. 324, 434, 435 4 PINK

LEGEND

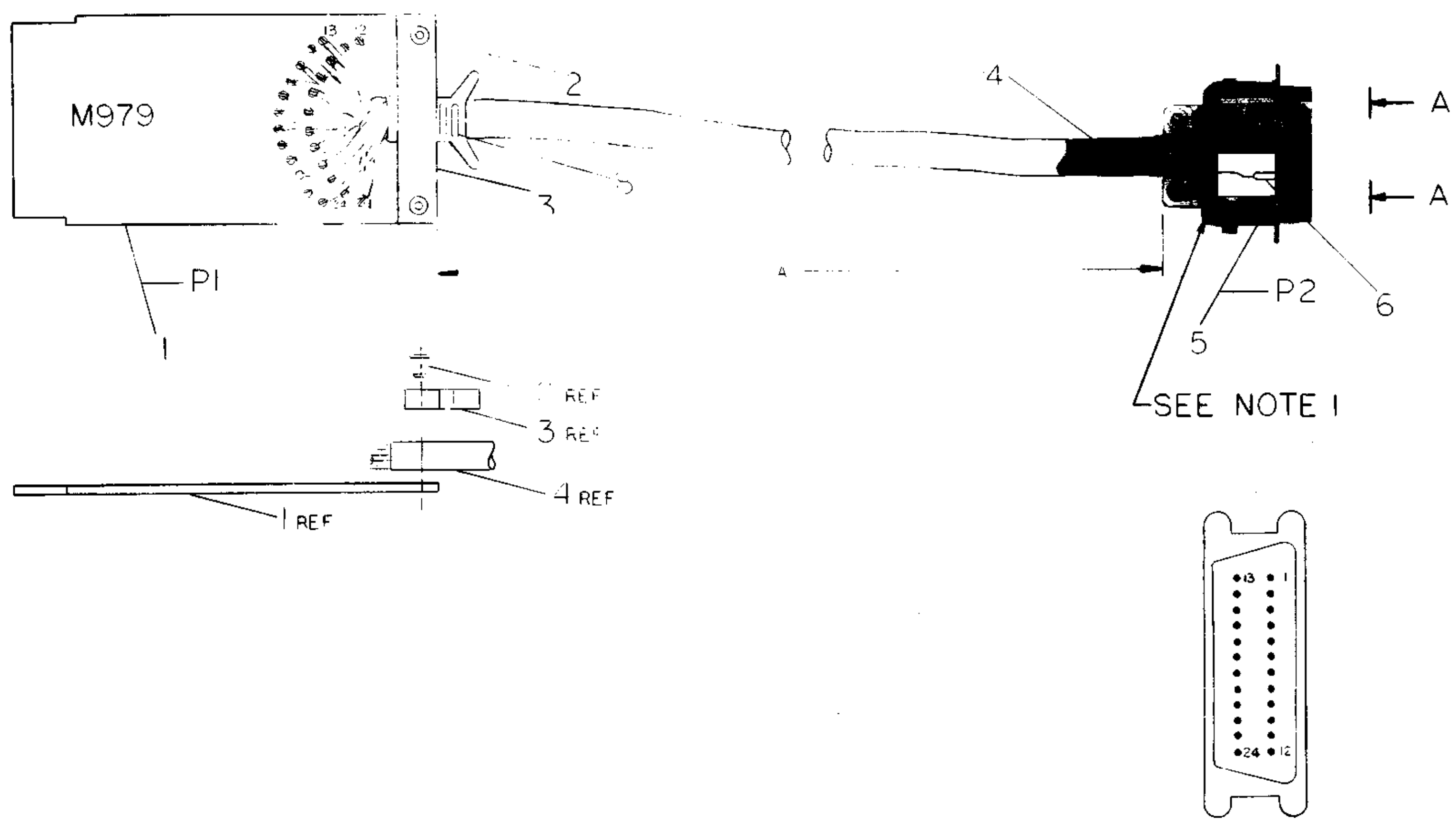
PART NUMBER	VARIATION DIM 'A'
BCØIF-25	25'
BCØIF-5Ø	50'
BCØIF-75	75'
BCØIF-AØ	100'
BCØIF-A2	120'
BCØIF-A5	150'
BCØIF-A7	170'
BCØIF-BØ	200'
BCØIF-B2	220'
BCØIF-B5	250'

WIRE TABLE

ITEM NO	AWG	COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
4	22	RED/BLK	P1-1	*	P2-23	* & #6
		GRY	2		-7	
		RED	-3		-5	
		BLK	-4		-2	
		WHT	-5		-8	
		YEL/BLK	-6		-12	
		VIO/BLK	-7		-13	
		BLK/WHT	-8		-17	
		BRN/WHT	-9		-24	
		LT BLU	-1Ø		-14	
		ORN/BLK	-11		-16	
4	22	WHT/BLK	P1-12	*	P2-19	* & #6
4	22	GRY/BLK	P1-13	*	P2-2Ø	* & #6
		TAN	-14		-18	
		PINK	-15		-15	
		LT GRN	-16		-1Ø	
		BLU/BLK	-17		-24	
		GRN/BLK	-18		-21	
		YEL	-19		-9	
		ORN	-2Ø		-1	
		D GRN	-21		-3	
		BRN	-22		-4	
		D BLU	-23		-6	
4	22	VIO	P1-24	*	P2-11	* & #6

* DENOTES WIRES TO BE SOLDERED

NOTES:
1. SPRAY BACK HALF OF CONNECTOR SHELL AND 2" OF CABLE WITH ITEM #9. DO NOT SPRAY PINS.



VIEW A-A

PARTS LIST

QTY.	DESCRIPTION	PART NO.	ITEM NO.
A/R	KRYLON #2401 ORN SPRAY PAINT	————	9
2	TIE-WRAP, 3 3/4 x 3/32	9007031	8
A/R	TAPE #4032 1/32 THK X 1/2 WIDE	9007834	7
A/R	HIGH SHK TUB WHT 1/8 INCH	9107255	6
1	AMPHENOL PLUG 57-30240	1203466	5
A/R	24 CONDUCTOR CABLE	9107684	4
1	CABLE CLAMP	1202790	3
2	EYELETS A94 STIMPSON	9006741	2
1	M979 CONNECTOR CARD	M979	1

FIRST USED ON OPTION/MODEL: PA63

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. H. Raimondi DATE 10-23-69
CHK'D DATE 2/1/70
ENG. DATE 2/2/70
PROJ. ENG. DATE 2/1/70
PROD. DATE 2/13/70
NEXT HIGHER ASSY D-UA-PA63-0 0

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: CONNECTOR CABLE (PP67-C TO PA63)

SIZE D CODE UA NUMBER BCØIF-Ø-Ø REV. D
SCALE NONE
SHEET 1 OF 1
DIST.

REVISIONS

REV.	CHANGE NO.	CHK
A	BCØIF-00001 12-10-70 DOUCETTE	
B	BCØIF-00002 9-7-71 JODICE	
C	BCØIF-00003 12-10-71 H. JODICE	
D	BCØIF-00004 2-15-72 ED. REED	

D UA BCØIF-Ø-Ø D

DEC FORM NO. DRC

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LEGEND

PART NO.	VARIATION DIM 'A'
BCØ1H-25	25'
BCØ1H-5Ø	50'
BCØ1H-75	75'
BCØ1H-AØ	100'
BCØ1H-A2	120'
BCØ1H-A5	150'
BCØ1H-A7	170'
BCØ1H-BØ	200'
BCØ1H-B2	220'
BCØ1H-B5	250'

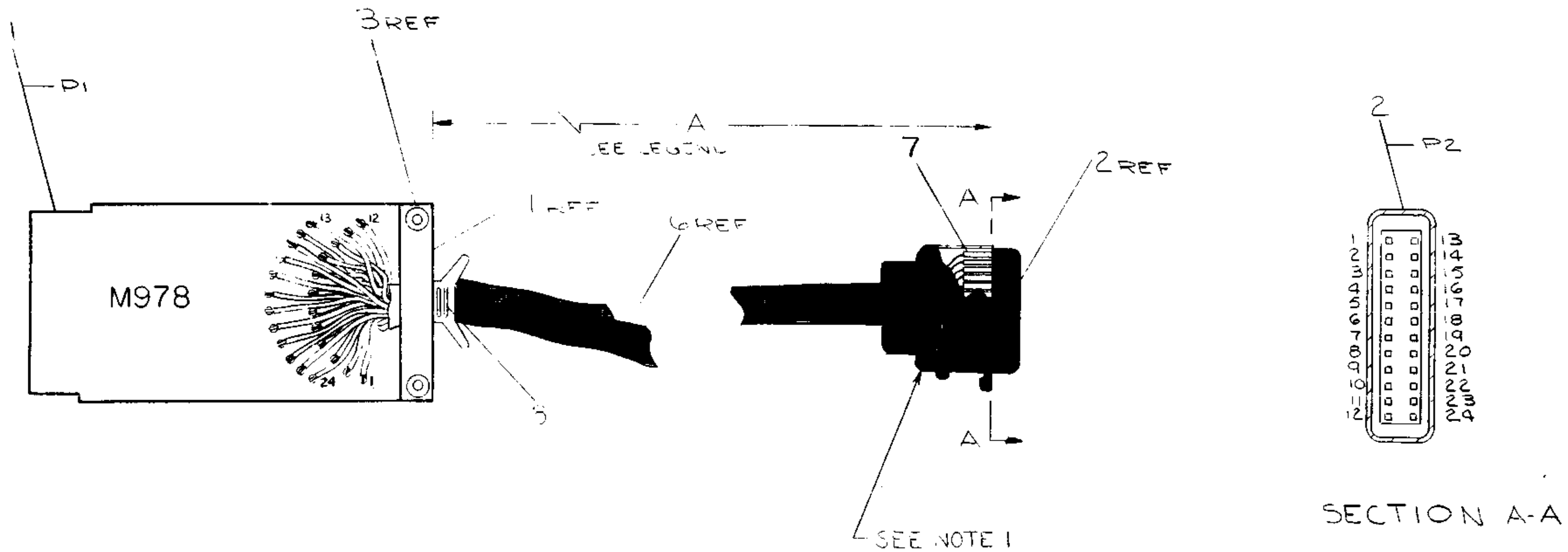
WIRE TABLE

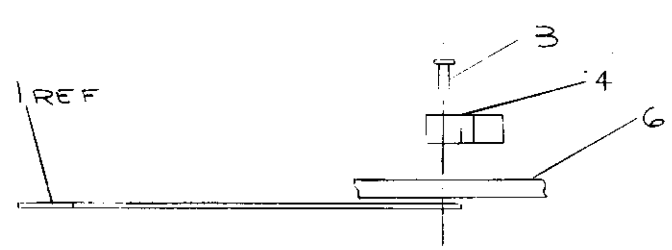
ITEM NO.	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH
6	22	BLK/WHT	P1 - 1	*	P2 - 1	* & #7
		WHT/BLK	- 2		- 2	
		YEL/BLK	- 3		- 4	
		BRN/WHT	- 4		- 6	
		LT. BLU	- 5		- 8	
		LT. GRN	- 6		- 1Ø	
		GRN/BLK	- 7		[illegible]	
		ORN	- 8		[illegible]	
		YEL	- 9?		- 13	
		TAN	- 1Ø		- 15	
		[illegible]	- 11		[illegible]	
6	22	GRY?	P1 - 12	*	P2 - [illegible]	* & #7
6	22	BRN	P1 - 13	*	P2 - 17	* & #7
		BLU/BLK	- 14		- 21	
		D. GRN	- 15		- 14	
		BLK	- 16		- 24	
		RED	- 17		- 18	
		ORN/BLK	- 18		- 11	
		RED/BLK	- 19		- 9	
		VIO	- 2Ø		- 7	
		VIO/BLK	- 21		- 5	
		PINK	- 22		- 22	
		WHT	- 23		- 19	
6	22	GRY/BLK	P1 - 24	*	P2 - 3	* & #7

* DENOTES WIRES TO BE SOLDERED

NOTES:

1. SPRAY BACK HALF OF CONNECTOR SHELL AND 2" OF CABLE WITH ITEM #9. DO NOT SPRAY PINS.





PARTS LIST

QTY.	DESCRIPTION	PART NO.	ITEM NO.
A/R	KRYLON #2101 RED SPRAY PAINT	————	9
2	TIE-WRAP 3 3/4 x 3/32	9007031	8
A/R	#14 AWG TEF THIN WALL TUBING	9107295-09	7
A/R	24 CONDUCTOR CABLE	9107684	6
~~A/R~~	~~TAPE #4032 .50 X 1.00~~	~~9007854~~	~~5~~
1	CABLE CLAMP	1202790	4
2	EYELET A94 STIMPSON	9006741	3
1	PLUG AMPHENOL #57-30240	203466	2
1	CONNECTOR MODULE M978	A-PL-M978-Ø-Ø	1

FIRST USED ON OPTION/MODEL: PA63

TOLERANCES

.XXX = ± .005
.XX = ± .02
.X = ± .

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL ————
FINISH ————

NEXT HIGHER ASSY: D-UA-PA63-Ø-Ø

digital EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

TITLE: CABLE, CONN. PR68-D TO PA63

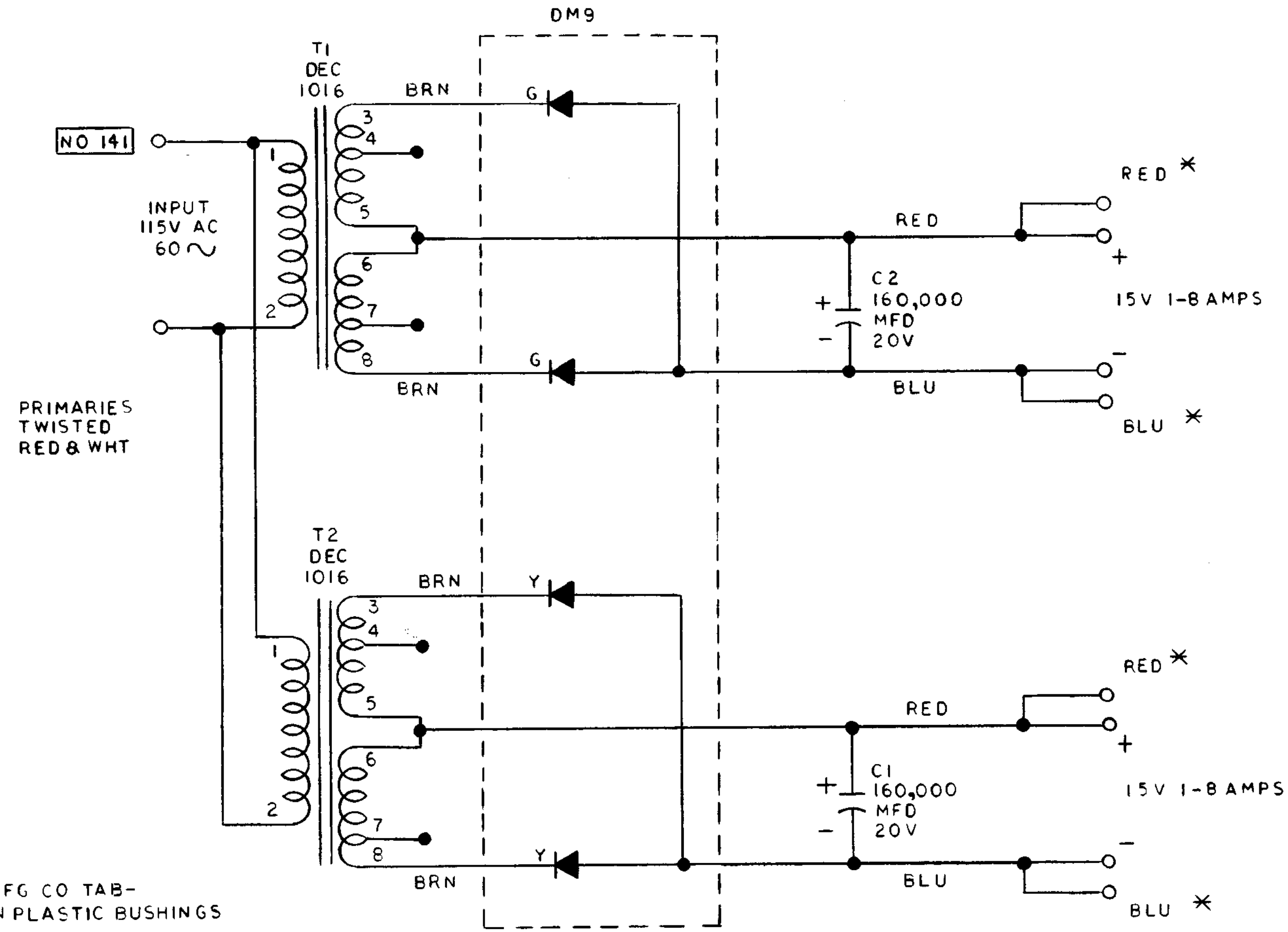
SIZE: D CODE: UA NUMBER: BCØ1H-Ø-Ø REV.: C

REVISIONS

REV.	CHANGE NO.	CHK	
A	BCØ1H-ØØØ1 4-6-71	JODICE	
B	BCØ1H-ØØØ2 12-13-71	H. JODICE	
C	BCØ1H-ØØØ3 12-17-71	ED REED	

DEC FORM NO. DRE

D UA BCØ1H-Ø-Ø REV. C



NOTE:
LETTERS INSIDE THE DASHES CORRESPONDS TO THE COLOR DOTS ON THE DM9

* HEYMAN MFG CO TAB-TERMINAL IN PLASTIC BUSHINGS
▭ CINCH JONES TERMINAL STRIP

REVISIONS		
REV.	CHG NO.	CHK
A	798-00001	[illegible]

DRN. P. [illegible]	DATE 10-1-68
CHK'D E. J. Milewski	DATE 10-16-68
ENG. [illegible]	DATE [illegible]
PROD. [illegible]	DATE [illegible]

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE DUAL 15 VOLT POWER SUPPLY 798

SIZE	CODE	NUMBER	REV.
B	CS	798-0-1	A

PRINTED CIRCUIT REV.

DEC FORM NO. DRB 102

PINK DIST. [illegible]

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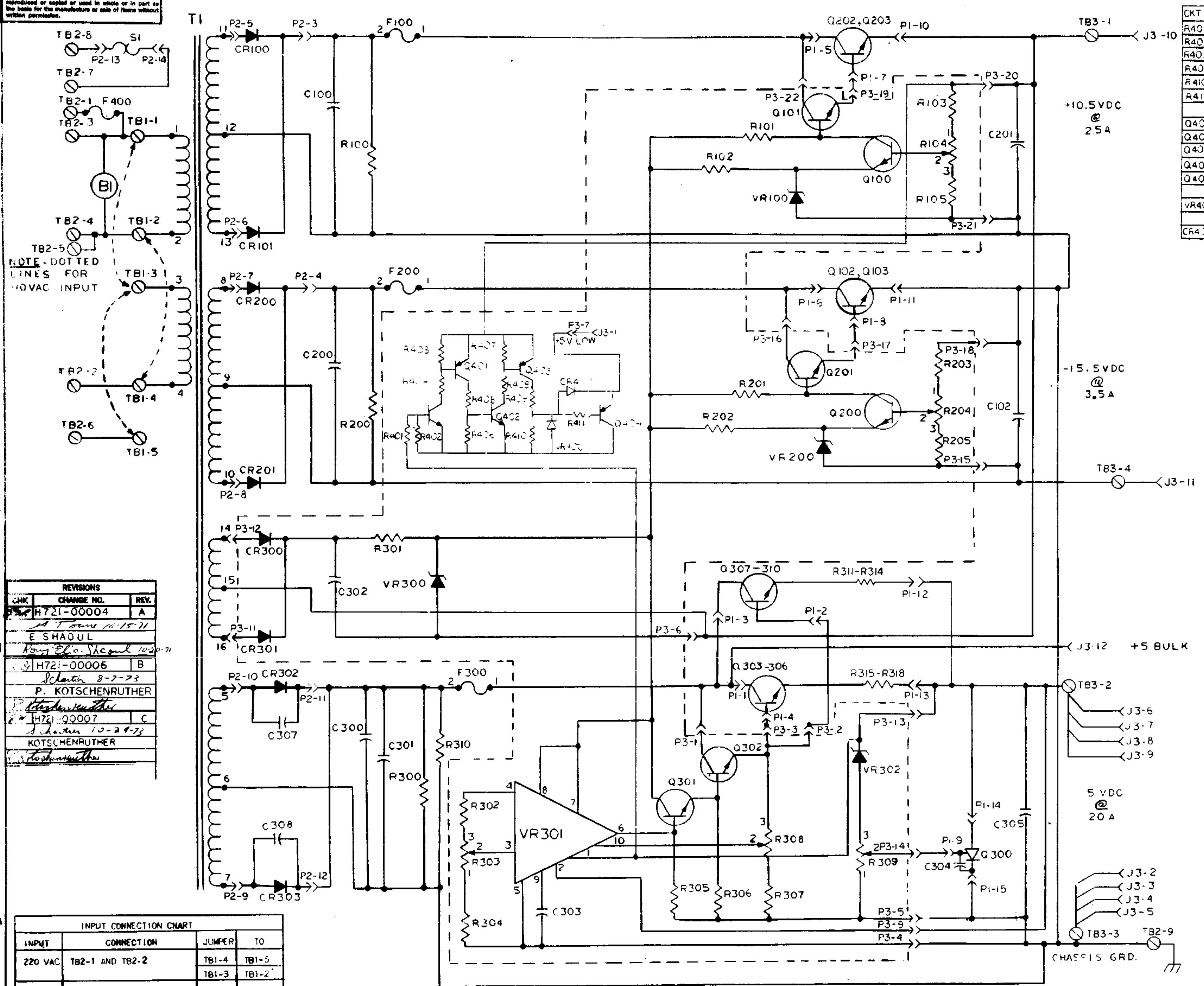


CKT REF	DESCRIPTION
R401	1.78K 1% 1/8 W
R402	287Ω 1% 1/8 W
R403-408	1K 5% 1/4 W
R409	82Ω 10% 2 W
R410	100Ω 5% 1 W
R411	10Ω 5% 1/4 W
Q400	DEC 6531B
Q402	DEC 6531B
Q401	DEC 6534B
Q403	DEC 6534B
Q404	DEC 6534B
VR400	1N751A
CR400	DEC664

COMPONENT CHART

CKT. REF	DESCRIPTION
A1	P. C. CARD ASSY.
B1	FAN
C100	CAPACITOR 12,000 MFD @ 30 VDC
C102, 201	CAPACITOR 100 MFD @ 25 VDC
C200	CAPACITOR 19,000 MFD @ 40 VDC
C307, 308	CAPACITOR 1.0 MFD @ 50 VDC
C300, 301	CAPACITOR 50,000 MFD @ 25 VDC
C302	CAPACITOR 500 MFD @ 25 VDC
C303	CAPACITOR 0.0022 MFD @ 100 VDC
C304	CAPACITOR 0.68 MFD @ 35 VDC
C305	CAPACITOR 270 MFD @ 15 V
T1	TRANSFORMER
CR100, 101	DIODE BRIDGE 1N1201A
CR200, 201	" "
CR300, 301	DIODE 1N645
CR302, 303	DIODE 1N1185A
F100	FUSE 3A AGC
F200	FUSE 5A AGC
F300	FUSE 25A AGC
F400	FUSE 12A ABC
Q302	TRANSISTOR 2N3055
Q100, 200	TRANSISTOR 2N1613
Q301	" "
Q101, 201	TRANSISTOR 2N3054
Q303-310	TRANSISTOR 2N3055
Q102, 103	" "
Q202, 203	" "
Q300	S. C. R. C30U
R100	RESISTOR 125 Ω 10 W 5%
R101	RESISTOR 560Ω 1 W. 5%
R102, 201	RESISTOR 1500Ω 1 W. 10%
R103	RESISTOR 681 Ω 1/2 W. 1%
R104, 204	POT. 500Ω 3/4 W. ±10%
R303, 308	" " " "
R105, 205	RESISTOR 909Ω 1/8 W. 1%
R200	RESISTOR 350Ω 25 W. 5%
R202	RESISTOR 2.7K 1 W. 5%
R203	RESISTOR 1.62 K 1/4 W. 1%
R300, 310	RESISTOR 100Ω 25 W. 5%
R301	RESISTOR 68 Ω 2 W. 5%
R302	RESISTOR 750Ω 1/2 W. 1%
R304	RESISTOR 2.2 K 1/2 W. 5%
R305	RESISTOR 2K 1/2 W. 5%
R306	RESISTOR 1K 1/2 W. 5%
R307	RESISTOR 680Ω 1/2 W. 5%
R309	POT. 50Ω 3/4 W. ±20%
R311-R318	RESISTOR 0.1 Ω 5 W. 5%
S1	THERMOSTAT
VR100, 200	ZENER 1N751A
VR300	" "
VR301	I.C. REG. UA723C
VR302	ZENER 1N750A

REVISIONS

CHK	CHANGE NO.	REV.
	H721-00004	A
	A Towne 10-15-71	
	E SHAOUL	
	Rony Elie Shaoul 10-20-71	
	H721-00006	B
	Schasten 8-7-73	
	P. KOTSCHENRUTHER	
	P. Kotschenruther	
	H721-00007	C
	S Chasten 10-29-73	
	KOTSCHENRUTHER	
	P. Kotschenruther	

INPUT CONNECTION CHART

INPUT	CONNECTION	JUMPER	TO
220 VAC	TB2-1 AND TB2-2	TB1-4	TB1-5
		TB1-3	TB1-2
110 VAC	TB2-1 AND TB2-2	TB1-1	TB1-3
		TB1-2	TB1-4
		TB1-3	TB1-5

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

FIRST USED ON OPTION/MOD: PDP-15

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 —//—

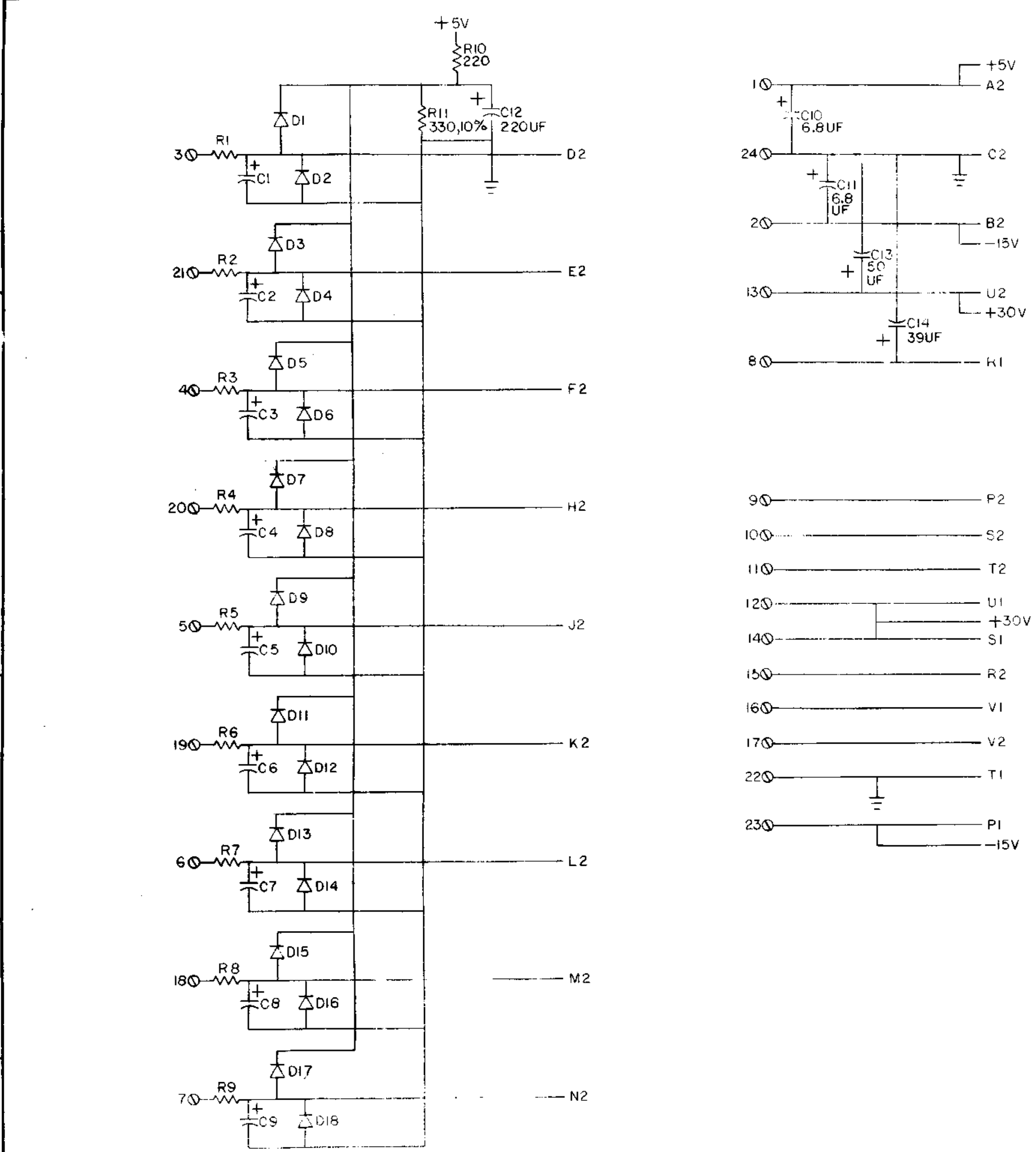
DRN [signature] DATE 1-30-70
CHK'D [signature] DATE 1/30/70
ENG. R. Elie Shaoul DATE 2/9/70
PROJ. ENG. R. Elie Shaoul DATE 2/9/70
PROD. [signature] DATE 2-10-70
NEXT HIGHER ASSY —//—
SCALE —//—
SHEET 1 OF 1

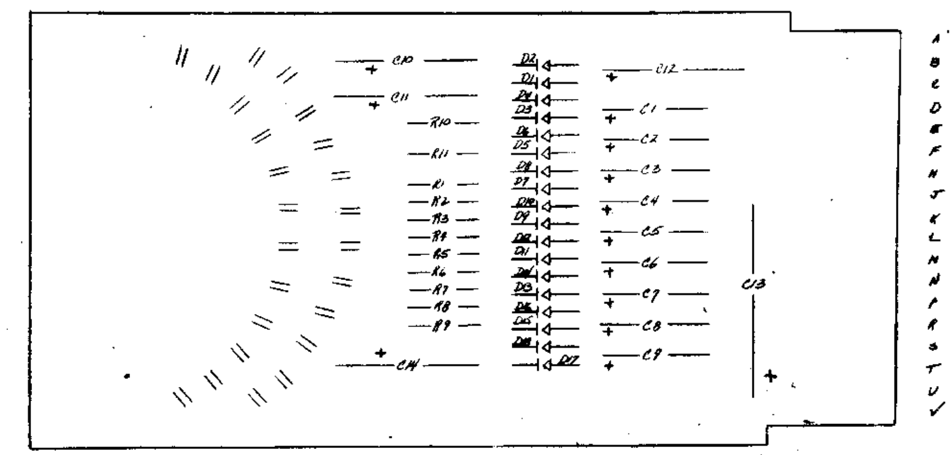
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
H721 CIRCUIT SCHEMATIC

SIZE D | CODE CS | NUMBER H721 - Ø - 1 | REV.

DIST.





QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
24		SPLIT LUGS	9006735	14
1	R11	RESISTOR 330 ¼W 10%	1300293	13
1	R10	RESISTOR 220 ¼W 5%	1300271	12
9	R1 thru R9	RESISTOR 47 ¼W 5%	1300202	11
18	D1 thru D18	DIODE D664	1100114	10
1	C12	CAP. 220UF 8V 10% TANT	1005626	9
9	C1 thru C9	CAP. .15UF 35V 20% TANT	1002180	8
1	C13	CAP. 50UF 50V -10+75% S.TANT	1000080	7
1	C14	CAP. 39UF 10V 10% S.TANT	1000076	6
2	C10, C11	CAP. 6.8UF 35V 20% S.TANT	1000067	5
1		ETCHED CIRCUIT BOARD	5009847	4
		MODULE ECO HISTORY	B-MH-M978-0-6	3
		ASSY/DRILLING HOLE LAYOUT	D-AH-M978-0-5	2
		X-Y COORDINATE HOLE LOCATION	K-CO-M978-0-4	1

PARTS LIST

ETCH BOARD REV B

SEMICONDUCTOR CONVERSION CHART

DEC NO	EIA NO.	DEC NO.	EIA NO.
D664	IN3606		

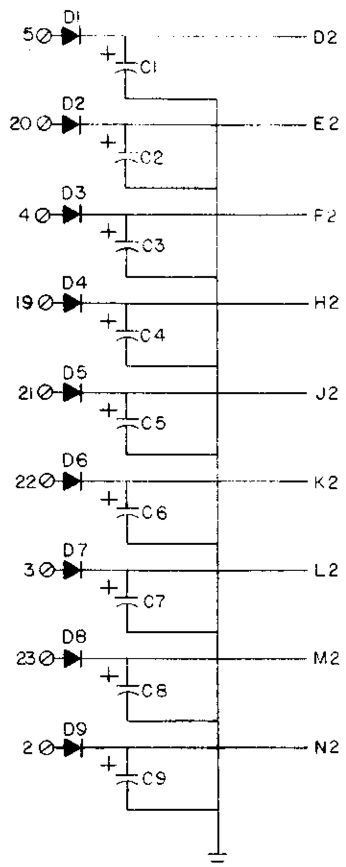
DRN. Roger J Doucette DATE 11-17-71
CHK'D. Nancy Moore DATE 11-24-71
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY

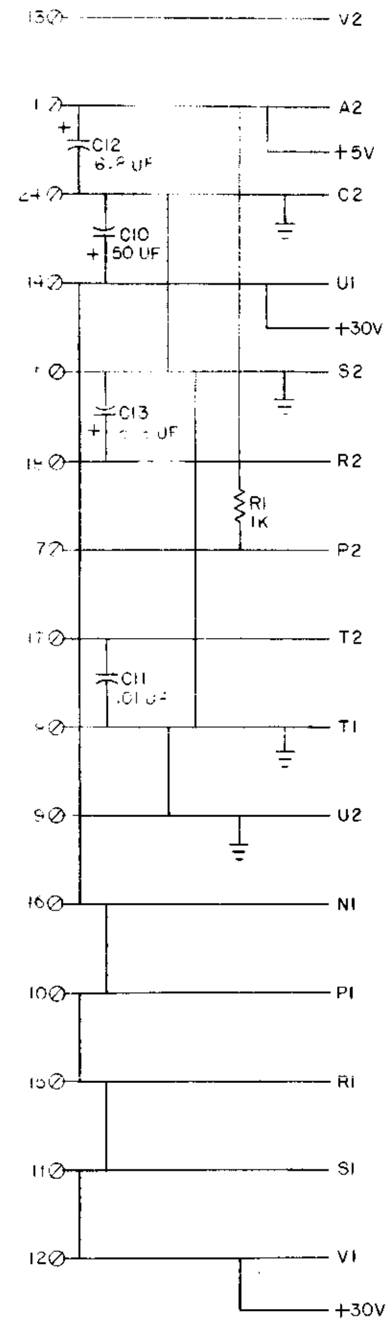
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE CONNECTOR MODULE

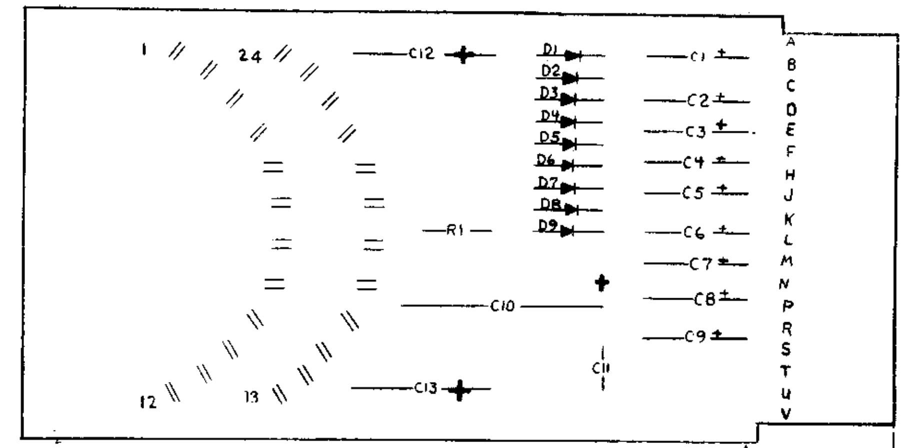
SIZE D CODE CS NUMBER M978-0-1 REV. A

SCALE
SHEET OF
DIST.





UNLESS OTHERWISE INDICATED:
CAPACITORS = .15 UF
DIODES = MR2066



QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
24		SPLIT LUG	9006735	11
1	R1	RES. 1K ¼W 5%	1300365	10
9	D1 - D9	DIODE MR2066	1103188	9
9	C1 - C9	CAP. .15UF 35V 10% TANT	1002180	8
1	C11	CAP. .01UF 100V 20% DISC	1001610	7
1	C10	CAP. 50UF 50V -10+75% TANT	1000080	6
2	C12, C13	CAP. 6.8UF 35V 20% TANT	1000067	5
1		ETCHED CIRCUIT BOARD	5009848	4
		MODULE ECO HISTORY	B-MH-M979-0-6	3
		ASSY/DRILLING HOLE LAYOUT	D-AH-M979-0-5	2
		X-Y COORDINATE HOLE LOCATION	K-CO-M979-0-4	1

PARTS LIST

ETCH BOARD REV C

DEC NO.	EIA NO.	DEC NO.	EIA NO.
MR2066	1N4C03		

SEMICONDUCTOR CONVERSION CHART

REV / CHANGE NO. / REVISIONS / CHK

DRN. Roger J. Doucette DATE 11-18-71
CHK'D. April I Moore DATE 12-3-71
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE CONNECTOR MODULE

SIZE D CODE CS NUMBER M979-0-1 REV. C

DIST.

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
D-UA-PA68-F-0	J	1	READER & PUNCH CONTROL
A-PL-PA68-F-0	J	1	READER & PUNCH CONTROL (PL)
D-DI-PA68-F-6	C	1	DRAWING INDEX LIST
A-AL-PA68-F-10	B	1	READER & PUNCH CONTROL, ACCESSORY LIST
D-BS-PA68-F-1	M	1	READER CONTROL
D-BS-PA68-F-2	L	1	PUNCH CONTROL
D-IC-PA68-F-3	B	1	I/O CONNECTORS POSITIVE BUS
K-WL-PA68-F-4	S	1	WIRE LIST
D-MU-PA68-F-5	P	1	MODULE UTILIZATION
A-PL-PA68-F-5	P	1	MODULE UTILIZATION (PL)
D-AD-7006226-0-0	F	1	WIRED ASSY
A-PL-7006226-0-0	F	1	WIRED ASSY (PL)
C-IC-PA68-F-7	E	1	POWER WIRING (PA68-F)
A-SP-PA68-F-9	C	6	PA68F ENGINEERING SPECS
A-SP-PA68 F-11		3	ACCEPTANCE CRITERIA — FIELD
IN HOUSE USE ONLY -			
A-SP-PA68-F-8	B	6	PA68F ACCEPTANCE CRITERIA

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	6/17/69	00001	B.D.
B	7/7/69	00002	B.D.
C	7/15/69	00003	H.G.
D	8/25/69	00004	B.D.
E	9/69	00005	B.D.
F	10/69	00006	B.D.
H	10/69	00007	B.D.
J	1/70	00008	B.D.
K	2/70	00009	B.D.
L	4/70	Misc. 64	M.A.
M	4/70	PA68F-10	B.D.
N	8/70	PA68F-11	H.J.
P	12/70	PA68F-12	H.J.
R	4/71	PA68F-13	H.J.
S	5/71	PA68F-14	H.J.

DRN. M.Venezia	DATE 3/7/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. R.Carvell	DATE 4/10/69	
ENG. G.Doucette	DATE 9/69	TITLE: READER & PUNCH CONTROL
PROJ. ENG.	DATE	
PROD. H.Godfrey	DATE 4/17/69	
FIRST USED ON		SIZE A · CODE ML · NUMBER PA68-F · REV. A, A
SCALE		DIST.
SHEET 1 OF 2		

DEC FORM NO. DRA 103

ADDITIONAL CUSTOMER PRINTS

Drawing Number	Rev. Let.	Title
D-CS-M710-0-1	#	PUNCH CONTROL M710
B-CS-M060-0-1	#	SOLENOID DRIVER
D-UA-BC01 H-0-0	#	READER CABLE
D-UA-BC01 F-0-0	#	PUNCH CABLE

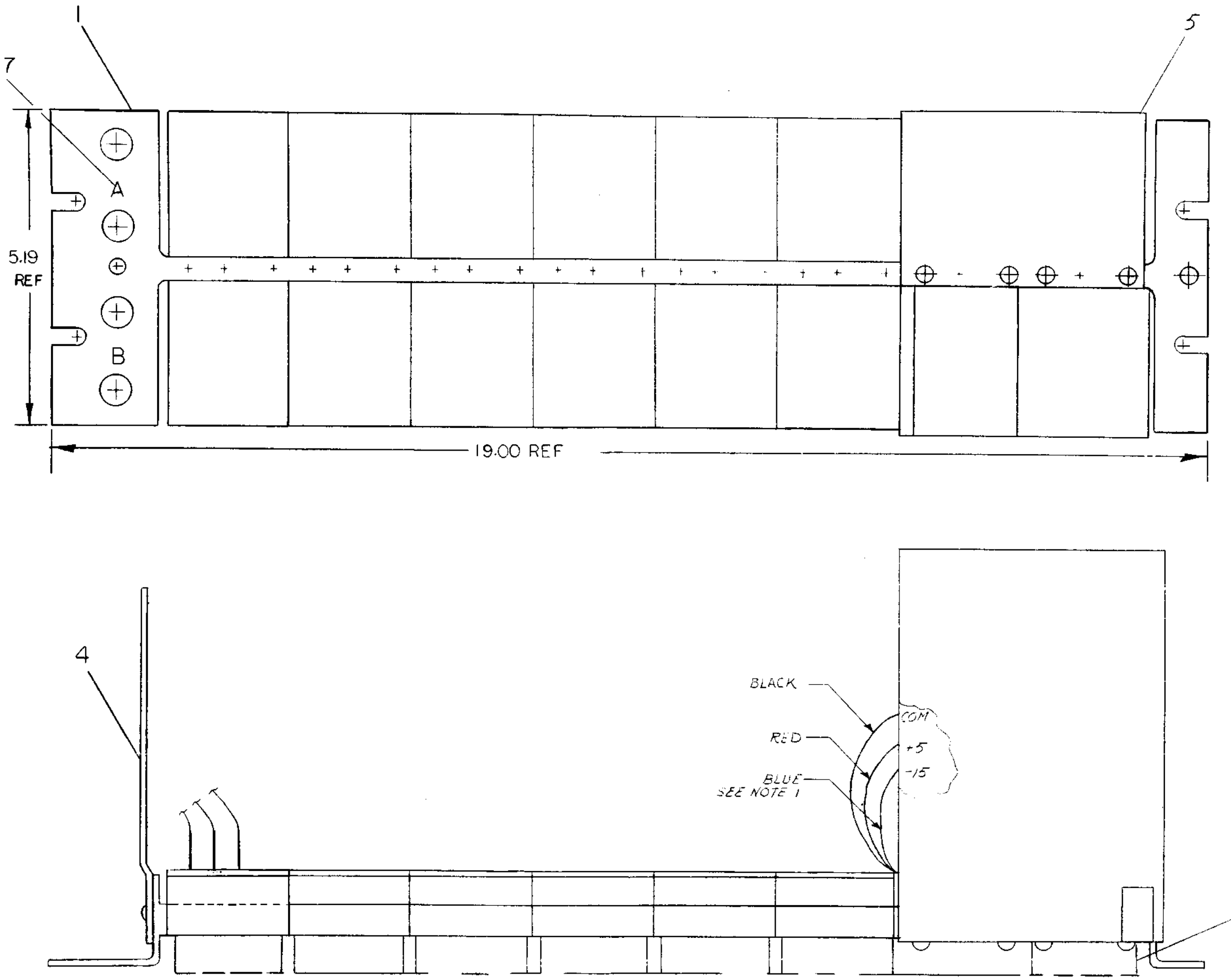
Rev.	Date	Change Number
T	11/71	PA68F-15
U	3/72	PA68F-16
V	8/72	PA68F-17
W	5/73	PA68F-18
Y	8/73	PA68F-19
Z	11/73	PA68F-20
AA	2/74	PA68F-21 E.R.

H. JODICE — Requested by — 3/22/71 Date

H. Jodice — Authorized by — 3/22/71 Date

NOTES

1 SEE PRINT PA68-F-7 FOR POWER WIRING
2 ITEM 18(.1MFD; 100V CAP) MUST BE COMPLETELY INSULATED WITH TUBING ON ITS LEADS & TERMI-POINT CONNECTORS.



EXTERNAL COMPONENTS TABLE						
ITEM NO	COMP	POL	FROM	TO	POL	REMARKS
10	CAP	+	A16U1	GND	-	
16	RES	X	A16F2	+5V	X	
18	CAP		B11S2	GND		SEE NOTE 2

REVISIONS			
CHK	CHANGE NO.		REV.
	PA68F-00003 T. Quillen 8-13-69 DOUCETTE 3/14/69		A
F.V.	PA68F-00009 B. DOUCETTE		B
F.V.	PA68F-00010 B. DOUCETTE 5/4/70		C
	PA68F-00013 E. Wilson 4/21/71 H-JODICE		D
	PA68F-00014 M. 6-1-71 JODICE		E
	PA68F-00019 5-27-73 ED REED		F
	PA68F-00020 11-2-73 ED. REED		H
	PA68F-00021 ED. REED 2-19-74		J

DEC FORM NO DRD 100

TOLERANCES
DECIMALS
.XXX = .005
.XX = .02
.X = .1

FIRST USED ON OPTION/MODEL: PA68-F

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —
FINISH —

DRN. M. VENEZIA DATE 3/5/69
CHK'D. R. Carvelli DATE 4/1/69
ENG. DATE
PROJ. ENG. DATE
PROD. DATE 4/1/69
NEXT HIGHER ASSEMBLY A-ML-PA68-F
SCALE 1/1
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
READER & PUNCH CONTROL PA68-F

SIZE	CODE	NUMBER	REV
D	UA	PA68-F-0	J

DIST. G

D UA P68-F-0 REV J

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

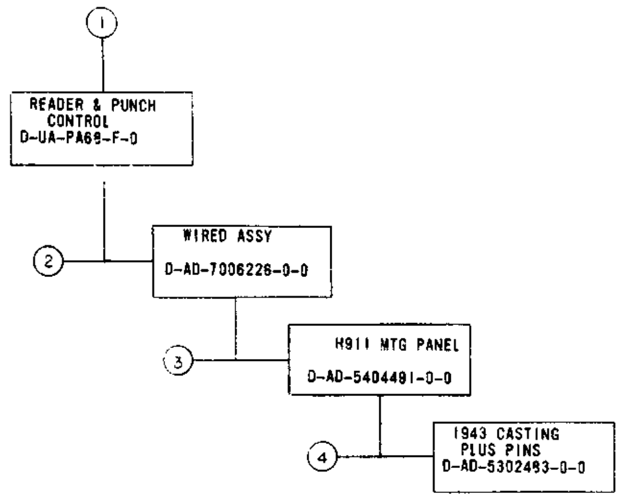
PARTS LIST

MADE BY M. VENEZIA	CHECKED P Carnelli	SECTION
DATE 3/5/69	DATE 4/1/69	1
ENG [illegible]	PROD [illegible]	ISSUED SECT.
DATE 4/1/69	DATE 4/1-/69	1

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
1	D-AD-7006226-0-0	WIRED ASSY	1
~~2~~	~~C-MD-5302486-0-0~~	~~RIGHT END PANEL~~	~~1~~
3	9006507	POP RIVET #AD 44 BS	8
4	C-MD-5302485-0-0	LEFT END PANEL	1
5	H716	H716 POWER SUPPLY	1
~~6~~	~~779PS~~	~~POWER SUPPLY~~	~~1~~
7	A-DC-7406371-0-0	LOGIC FRAME DECALS	A/R
~~8~~	~~BC08A-11~~	~~STD I/O CABLE M903-M903~~	~~5~~
~~9~~	~~1001886~~	~~CAPACITOR 270MFD 15V~~	~~1~~
10	1000080	CAPACITOR 50MFD 50V	1
11	9006035-1	SCR PHL PAN HD #8-32 x ½LG SST	4
12	9007903	WASH EXT. TOOTH #8 HOLE	4
~~13~~	~~1300508~~	~~RESISTOR 27K ½W 10%~~	~~1~~
~~14~~	~~1300503~~	~~RESISTOR 22K ½W 10%~~	~~1~~
~~15~~	~~1000084~~	~~CAPACITOR 150MFD 15V~~	~~1~~
16	1300365	RESISTOR 1K 1/4W 5% C.C.	1
~~17~~	~~7404657~~	~~CAPACITOR .01MFD 200V, 20%~~	~~1~~
18	10-00030	CAPACITOR .1MFD, 100V, 20%	1
~~19~~	~~9107470-33~~	~~#24 AWG SOLID TEFLON ORN~~	~~A/R~~
~~20~~	~~1300271~~	~~RESISTOR, 220 OHM, 1/4 W, 5%~~	~~1~~
~~21~~	~~1300295~~	~~RESISTOR, 330 OHM, 1/4 W, 5%~~	~~1~~

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
READER & PUNCH CONTROL	D-UA-PA68-F-0	A	PL	PA68-F-0	J	PA68 F-00021
	SHEET 1 OF 1	DIST.				

DEC FORM NO.
DRA 110



MECHANICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F C
1	READER & PUNCH CONTROL	D-UA-PA69-F-0			
	READER & PUNCH CONTROL (PL)	A-PL-PA69-F-0			
	RIGHT END PANEL	C-MD-5302496-0-0			
	LEFT END PANEL	C-MD-5302495-0-0			
2	WIRED ASSEMBLY	D-AD-7006226-0-0			
	WIRED ASSEMBLY (PL)	A-PL-7006226-0-0			
	LOGIC FRAME DECALS	A-DC-7406371-0-0			
3	H911 MTG PANEL	D-AD-5404491-0-0			
	H911 MTG PANEL (PL)	A-PL-5404491-0-0			
	288 PIN CONN BLOCK TYPE #H803	E-SC-1205348-0-0			
4	1943 CASTING PLUS PINS	D-AD-5302483-0-0			
	1943 CASTING PLUS PINS (PL)	A-PL-5302483-0-0			
	1943 FRAME CASTING	E-MD-1202985-0-0			

ELECTRICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F C
1	READER & PUNCH CONTROL	A-ML-PA69-F			
	READER CONTROL	D-BS-PA69-F-1			
	PUNCH CONTROL	D-BS-PA69-F-2			
	I/O CONNECTORS POSITIVE BUS	D-IC-PA69-F-3			
	WIRE LIST	K-WL-PA69-F-4			
	MODULE UTILIZATION	D-MU-PA69-F-5			
	MODULE UTILIZATION (PL)	A-PL-PA69-F-5			
	ACCEPTANCE CRITERIA	A-SP-PA68-F-8			
	ENG. SPEC	A-SP-PA68-F-9			
	POWER WIRING	C-IC-PA68-F-7			
	ACCESSORY LIST	A-AL-PA68-F-10			
	ACCEPTANCE CRITERIA-FIELD	A-SP-PA68-F-11			
2	WIRED ASSY PA68-F	D-AD-7006226-0-0			

REV.	CHANGE NO.	
A	PA68F-00006	B. DOUCETTE
B	MISC-00064	4-6-70 ARSENAULT
C	PA68F-00015	11-16-71 H. JODICE

FIRST USED ON OPTION/MODEL: PA68-F

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL
FINISH

DRN. DATE 3/6/69
CHK'D. DATE 4/3/69
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

NEXT HIGHER ASSEMBLY: A-ML- PA68-F

SCALE NONE
SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: DRAWING INDEX LIST

SIZE D | CODE DI | NUMBER PA68-F-6 | REV C

DIST.

DEC FORM NO DRD 102A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

MADE BY / DATE Dee Moran	CHECKED / DATE	SECTION
ENG / DATE	PROD / DATE 3-13-70	ISSUED SECT.

LEGEND

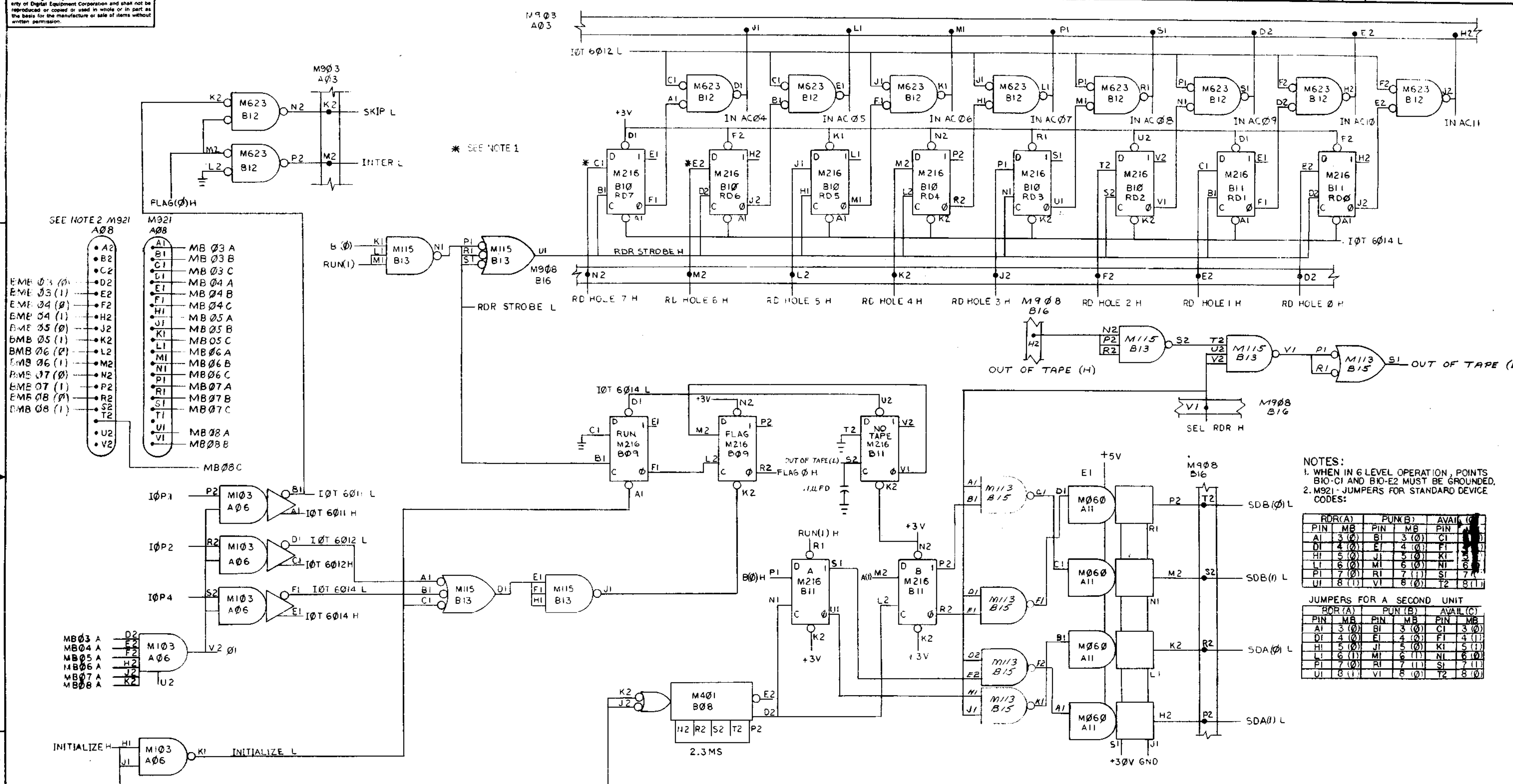
D DOCUMENT
DN DOCUMENT CHANGE NOTICE
PA PAPER TAPE ASCII
PB PAPER TAPE BINARY
PM PAPER TAPE READ-IN-MODE

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
1.	PA68-F	Print SET	1
2.	BC08A-11	STD I/O Cable M903-M903	3
3.	91-07673	AC Cable	1
4.	36-10730-1	2 ROLLS YELLOW OILED TAPE (6 LEVEL)	2
5.	36-10730-2	2 ROLLS YELLOW OILED TAPE (8 LEVEL)	2
6.	779	POWER SUPPLY	1

KIT CHECK BY _____ DATE _____
INSTALLATION CHECK BY _____ DATE _____

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV.	ECO NO
READER & PUNCH CONTROL	SHEET / OF	A	AL	PA68-F-10	B	PA68F-00021
		DIST.				

DEC FORM NO.
DRA 121



NOTES:
1. WHEN IN 6 LEVEL OPERATION, POINTS B10-C1 AND B10-E2 MUST BE GROUNDED.
2. M921 - JUMPERS FOR STANDARD DEVICE CODES:

RDR(A)		PUN(B)		AVAIL (C)	
PIN	MB	PIN	MB	PIN	MB
A1	3 (Ø)	B1	3 (Ø)	C1	[illegible]
D1	4 (Ø)	E1	4 (Ø)	F1	[illegible]
H1	5 (Ø)	J1	5 (Ø)	K1	5 [illegible]
L1	6 (Ø)	M1	6 (Ø)	N1	6 [illegible]
P1	7 (Ø)	R1	7 (1)	S1	7 [illegible]
U1	8 (1)	V1	8 (Ø)	T2	8 (1)

JUMPERS FOR A SECOND UNIT

RDR (A)		PUN (B)		AVAIL (C)	
PIN	MB	PIN	MB	PIN	MB
A1	3 (Ø)	B1	3 (Ø)	C1	3 (Ø)
D1	4 (Ø)	E1	4 (Ø)	F1	4 (1)
H1	5 (Ø)	J1	5 (Ø)	K1	5 (1)
L1	6 (1)	M1	6 (1)	N1	6 (Ø)
P1	7 (Ø)	R1	7 (1)	S1	7 (1)
U1	8 (1)	V1	8 (Ø)	T2	8 (Ø)

FIRST USED ON OPTION/MODEL: PA68 - F

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

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

DRN. DATE 4/1/69
CHK'D. DATE 4/8/69
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY A-ML-PA68-F
SCALE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
READER CONTROL (PA68-F)

SIZE D CODE BS NUMBER PA68-F-1 REV. M

REVISIONS

REV.	CHANGE NO.	CHK
A	PA68F-00001 DOUCETTE	
B	PA68F-00004 DOUCETTE	
C	PA68F-00006 B. DOUCETTE	
D	PA68F-00011 H. JODICE	
E	PA68F-00012 H. JODICE	
F	PA68F-00013	
H	PA68F-00014 H. JODICE	
J	PA68F-00015 H. JODICE	
K	PA68F-00016 H. JODICE	
L	PA68F-00017 H. JODICE	
M	PA68F-00021 E. REED	

DEC FORM NO DRD 102A

NOTE:
THERE MUST NEVER BE POWER APPLIED WHEN THE M710 MODULE IS ABSENT FROM PA68F.

REVISIONS

CHK	CHANGE NO	REV
	PA68F-00001 T. Quillin 7-2-69 DOUCETTE	A
	PA68F-00002 T. Quillin 7-29-69 DOUCETTE	B
	PA68F-00004 T. Quillin 8-22-69 DOUCETTE	C
FV	PA68F-00010 B. DOUCETTE	D
	PA68F-00013 4/29/71 H. JODICE	E
	PA68F-00014 6-1-71 JODICE	F
	PA68F-00017 JODICE	H
	PA68F-00019 8-27-73 ED REED	J
	PA68F-00020 11-3-73 ED. REED 11-30-73	K
	PA68F-00021 4-13-74 E. REED 2-19-74	L

DEC FORM NO.
DRD 102A

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PA68-F		PARTS LIST		

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

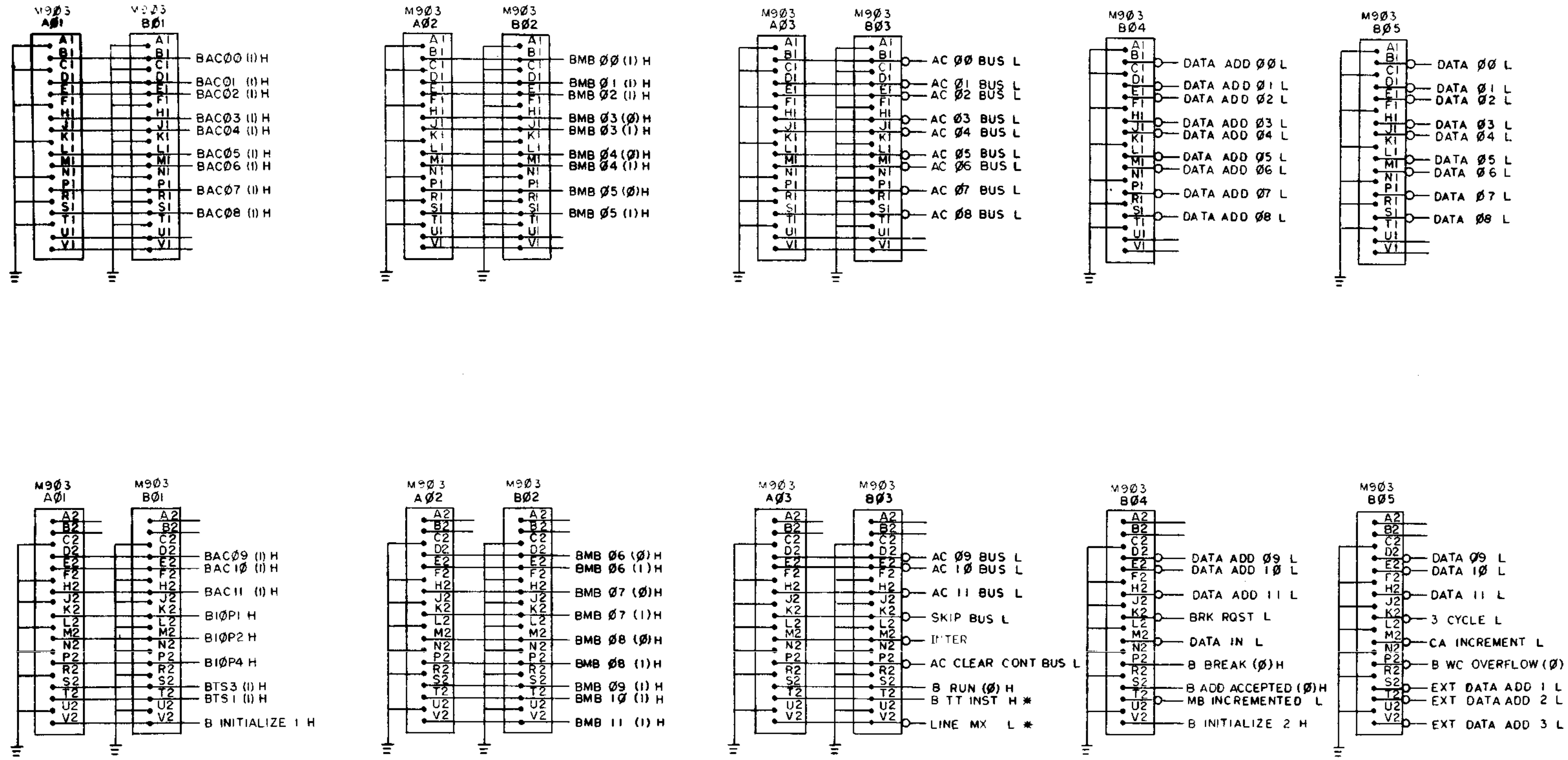
MATERIAL
FINISH

DRN. DATE 3/25/69
CHK'D. Carroll DATE 4/8/69
ENG. DATE
PROJ. ENG. DATE
PROD. DATE 4/17/69
NEXT HIGHER ASSY A-ML PA68-F
SCALE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
PUNCH CONTROL

SIZE D CODE BS NUMBER PA68-F-2 REV. L
DIST.



NOTES:

1. SIGNALS MARKED WITH AN ASTERISK ARE NOT USED IN PDP 8/L BUT RESERVED FOR SPECIFIC USE IN PDP 8/I
2. ALL DATA BREAK DEVICES MUST USE "B INITIALIZE 2 H"

REV.	CHANGE NO.		CHK
A	PA68F-00001	7-2-69 DOUCETTE	JNF
A	PA68F-00004	8-2-69 DOUCETTE	

FIRST USED ON OPTION/MODEL: PA68-F

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 —

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: I/O CONNECTORS POSITIVE BUS

NEXT HIGHER ASSY: A-ML-PA68-F

SIZE D CODE IC NUMBER PA68-F-3 REV. B

SCALE NONE SHEET 1 OF 1

G J H.

DRWG NO	REVLTR
K-WL-PA68-F-4	S

REVISIONS			
REV LTR	ECO NO	DATE	ENG
A	PA68F-00001	7-1-69	BA
B	PA68F-00002	7/29/69	BA
C	PA68F-00004	8-22-69	BA
D	PA68F-00005	9-18-69	BA
E	PA68F-00006	10-16-69	BA
F	PA68F-00010	5-1-70	RD
H	PA68F-00011	9-1-70	RD
J	PA68F-00012	12/[illegible]/70	RD
K	PA68F-00013	4/29/71	RD
L	PA68F-00014	6-1-71	RD
M	PA68F-00015	11-15-71	RD
N	PA68F-00016	3-6-72	RD
P	PA68F-00019	8-27-73	RD
R	PA68F-00020	11-9-73	RD
S	PA68F-00021	2-12-74	RD

DRAWN G Marino	DATE 4/2/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHECKED R Carnelli	DATE 4/4/69	
ENG	DATE 4/4/69	
PROJ ENG	DATE	
PROD	DATE	

TITLE WIRE LIST PA68-F

FOR TAPE* FILE*

ASSY NO A-ML-PA68-F

SIZE	CODE	DWG. NO.	REV LTR
K	WL	PA68-F-4	S

SCALE NONE SHEET 1 OF 1 DIST.

Row A (slots 1–22)

Slot	Module	Pin side 1	Pin side 2
1	M9Ø3	BAC ØØ TO BAC Ø8	BAC Ø9 TO BAC 11 BIØP1 BIØP2 BIØP4 BTS3 BTS1 B INIT.
2	M9Ø3	BMB ØØ TO BMB Ø5	BMB Ø6 TO BMB 11
3	M9Ø3	AC ØØ TO AC Ø8	AC Ø9 TO AC 11 SKP BUS L INTER AC CLEAR B RUN B TT INST* LINE MX*
4	M9Ø3	DATA ADD ØØ TO DATA ADD Ø8	DATA ADD Ø9 TO DATA ADD 11 BRK RQST. DATA IN. B BRK B ADD ACC. MB INCRE. B INIT.
5	M9Ø3	DATA ØØ TO DATA Ø6	DATA Ø9 TO DATA 11 3 CYCLE CA INCR. B WC OFLO. EDA 1 EDA 2 EDA 3
6	M103 **	IOT 6011 IOT 6012 IOT 6014 INITIALIZE L	IOT 6011
7	M710 *	6022 & INIT PUNCH HOLE 0 PUNCH HOLE 1 PUNCH HOLE 2	6024 PUNCH HOLE 4 PUNCH HOLE 5 PUNCH HOLE 6 PUNCH HOLE 7
8	M921	MB Ø3A TO MB Ø8B	MB Ø3 TO MB Ø5, MB Ø8C
9	M113 *	AC 11 AC 10 AC 09 AC 06 AC 04 AC CLEAR H	AC 09 AC 07 AC 05 OPTION SELECT ENB PUNCH DONE
10	M113 *	HOLE 0 L HOLE 1 L FEED HOLE HOLE 4 L HOLE 6 L	HOLE 2 L HOLE 3 L HOLE 5 L HOLE 7 L MOTOR START
11	M060 **		SDA 0 SDA 1 SDB 0 SDB 1
12	M060 *		PUNCH HOLE 3 PUNCH HOLE 2 PUNCH HOLE 1 PUNCH HOLE 0
13	M060 *		PUNCH HOLE 7 PUNCH HOLE 6 PUNCH HOLE 5 PUNCH HOLE 4
14	M060 *		PUNCH HOLE 8
15	M501	NOT AVAIL H	
16	M979 * CABLE	AVAIL L	PUNCH HOLE 0 TO PUNCH HOLE 8 MOTOR START L SYNC PUNCH H
17			
18			
19			
20	G777	+30V CONN CARD	
21			
22			

Row B (slots 1–22)

Slot	Module	Pin side 1	Pin side 2
1	M9Ø3	BAC ØØ TO BAC Ø8	BAC Ø9 TO BAC 11 BIOP1 BIOP2 BIOP4 BTS3 BTS1 B INIT
2	M9Ø3	BMB ØØ TO BMB Ø5	BMB Ø6 TO BMB 11
3	M9Ø3	AC ØØ TO AC Ø8	AC 09 TO AC 11 SKP BUS L INTER AC CLEAR B RUN B TT INST* LINE MX*
4	M9Ø3	DATA ADD ØØ TO DATA ADD Ø8	DATA ADD 09 TO DATA ADD 11 BRK RQST. DATA IN B BRK B ADD ACC. MB INCRE. B INIT.
5	M9Ø3	DATA ØØ TO DATA Ø8	DATA Ø9 TO DATA 11 3 CYCLE CA INCR. B WC OFLO. EDA 1 EDA 2 EDA 3
6	M101 *	AC 11	AC 10 AC 09 AC 08 AC 07 AC 06 AC 05 AC 04
7		PUNCH HOLE 3 6024 6012	1 & 5 SEC DLY PUNCH DONE H SKIP INT
8	** M401		A
9	M216 **	RUN	FLAG NO TAPE
10	M216 **	RD7 RD5 RD3	RD6 RD4 RD2
11	M216 **	RD1 A	RD0 B
12	M623	INAC 04 INAC 05 INAC 06 INAC 07 INAC 08 INAC 09	INAC 10 INAC 11 SKIP INT ENB PUNCH DONE L SKIP
13	M115 **	FLAG MOTOR START	RUN OUT OF TAPE FEED HOLE L
14	M119 *		OPTION SELECT NOT AVAIL SKIP
15	M113 **	OUT OF TAPE	AØ A1 BØ B1
16	M978 ** CABLE		RD HOLE Ø TO RD HOLE 2 OUT OF TAPE RD HOLE 3 TO HOLE 7 SDB(0) L SDB(1) L SDA(1) L SDA(0) L SEL RDR H
17			
18			
19			
20			
21			
22			

Slots 23–44 (both rows): blank.

NOTE:
* DENOTES MODULES USED WITH PA68H, OR PA68J
** DENOTES MODULES USED WITH PA68M
BLANKS ARE USED WITH BOTH.

REVISIONS

REV.	CHANGE NO.	
A	PA68F-00002	DOUCETTE 7-28-69
B	PA68F-00008	DOUCETTE 1-19-70
C	PA68F 00009	B. DOUCETTE 2-20-70
D	PA68F-00010	B. DOUCETTE
E	PA68F-00012	H. JODICE 12-11-70
F	PA68F-00013	H. JODICE 4-28-71
H	PA68F-00014	JODICE 6-1-71
J	PA68F-00015	H. JODICE 11-16-71
K	PA68F-00016	H. JODICE
L	PA68F-00017	JODICE
M	PA68F-00019	ED REED 8-27-73
N	PA68F-00020	ED. REED 11-20-73
P	PA68F-00021	ED. REED 2-19-74

FIRST USED ON OPTION/MODEL: PA68-F

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
CHK'D. | DATE 4/11/69
ENG. | DATE
PROJ. ENG. | DATE
PROD. | DATE
NEXT HIGHER ASSY: A-ML-PA68-F
SCALE —
SHEET 1 OF 1

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: MODULE UTILIZATION

SIZE D | CODE MU | NUMBER PA68-F-5 | REV. P

DIST.

DEC FORM NO. DRD 112

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY M. J. VENEZIA DATE 3/4/69	CHECKED [illegible] DATE 4-10-69	SECTION 1
ENG DATE	PROD [illegible] DATE [illegible]	ISSUED SECT. 1

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY VARIATION
1	MØ6Ø	SOLENOID DRIVER	4
2	M1Ø1	BUS DATA INTERFACE	1
3	M1Ø3	DEVICE SELECTOR	1
4	M113	TEN 2-INPUT NAND GATES	3
5	M115	EIGHT 3-INPUT NAND GATES	1
6	M119	THREE 8-INPUT NAND GATES	1
7	M216	SIX FLIP-FLOPS	3
8	~~K303~~	~~TIMER~~	1
9	M4Ø1	VARIABLE CLOCK	1
10	M623	BUS DRIVER	1
11	M71Ø	FUNCTION CONTROL ETCH REV F (OR LATER)	1
12	G773	CABLE CONNECTOR	1
13	M5Ø1	SCHMITT TRIGGER	1
14	M921	DEVICE CODE SELECT JUMPER BOARD	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO
MODULE UTILIZATION [illegible]	[illegible]-MU-PA68-F-5 SHEET 1 OF 1	A	PL	PA68-F-5 DIST	P	PA68F-00021

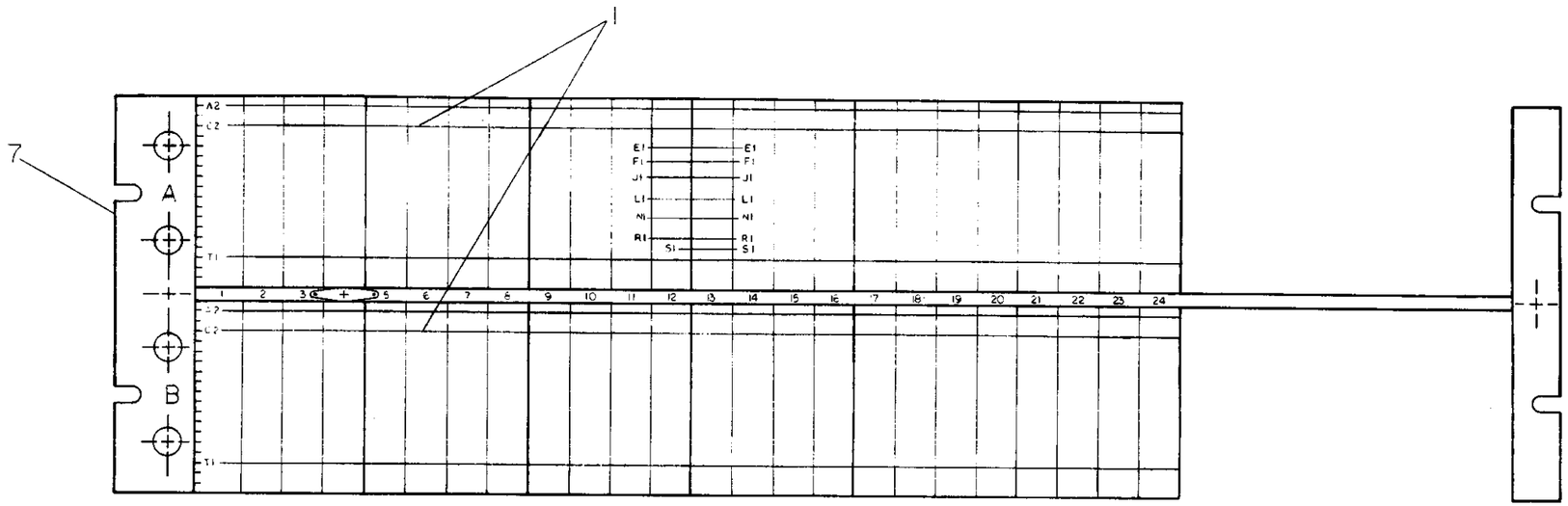
DEC FORM NO.
DRA 110

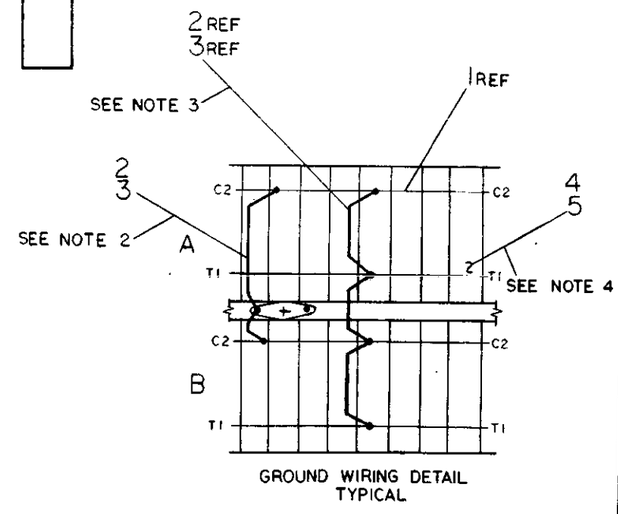
WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	FROM CONNECTION	TO CONNECTION	REMARKS
14	24	ORN	A14S1	A16U1	HAND WIRE
14	24	ORN	A20L2	A16V1	"
14	24	ORN	A16U1	A15V1	"
14	24	ORN	A20R2	B16U2	"

NOTES:

1. CONNECTIONS ON ITEM NUMBER 1 & 2 TO BE LOCATED AND SOLDERED AT MINIMUM PRACTICAL HEIGHT ABOVE BLOCKS.
2. ALL CONNECTOR BLOCKS TO BE GROUNDED TO GROUND LUGS AS SHOWN, 2 PLACES.
3. JUMPER GROUND BUSSING AS SHOWN, 8 PLACES.
4. USE YELLOW WIRE (ITEM #4) FOR MACHINE WRAPPED AND BLUE WIRE (ITEM #5) FOR HAND WRAPPED WIRING.





GROUND WIRING DETAIL
TYPICAL

REVISIONS			
CHK	CHANGE NO.		REV.
	PA68F-00001		A
	PA68F-00002		B
	PA68F-00003		C
	PA68F-00004		D
	PA68F-00005		E
	PA68F-00006		F

DEC FORM NO. DRD 116

TOLERANCES
DECIMALS
.XXX = .005
.XX = .02
.X = .1

FIRST USED ON OPTION/MODEL	PA68-F		
DO NOT SCALE DRAWING			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES ANGLES = 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS			
MATERIAL			
FINISH			

PARTS LIST

QTY.	DESCRIPTION	PART NO.	ITEM NO.

DRN. M VENEZIA	DATE 3/9/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE 4/2/69	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE 4/7/69	
NEXT HIGHER ASSY D-UA-PA68-F-0		
SCALE NONE		
SHEET / OF /		

TITLE
WIRED ASS'Y
PA68-F

SIZE	CODE	NUMBER	REV.
D	AD	7006226-0-0	F

DIST.

SIZE D NUMBER AD-7006226-0 REV. F

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. MARINI	CHECKED R Carnelli	SECTION
DATE 3/26/69	DATE 4/2/69	
ENG [illegible]	PROD H. Godfrey	ISSUED SECT.
DATE [illegible]	DATE 4/17/69	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION 7006226
1	1205541	BUS STRIP	A/R
2	9107560-1	22 AWG BUS WIRE	A/R
3	9107265	#22 TUBING, TEFLON, WHITE	A/R
4	9105740-44	30 AWG SOLID IPVC WIRE, YELLOW	A/R
5	9105740-66	30 AWG SOLID IPVC WIRE, BLUE	A/R
~~6~~	~~A-DC-7406371-0-0~~	~~LOGIC FRAME DECALS~~	A/R
7	D-AD-5404491-0-0	H911 MTG PANEL	1
~~8~~	~~1300503~~	~~RESISTOR, 22K 1/4W 10%~~	~~1~~
~~9~~	~~1300508~~	~~RESISTOR, 27K 1/4W 10%~~	~~1~~
~~10~~	~~1000084~~	~~CAPACITOR, 150 MFD 15V~~	~~1~~
~~11~~	~~1001886~~	~~CAPACITOR, 270 MFD 15V~~	~~1~~
~~12~~	~~1000080~~	~~CAPACITOR 50 MFD. 50V~~	~~1~~
REF	K-WL-PA68-F-4	WIRE LIST	
~~13~~	~~BC08A-11~~	~~STD I10 CABLES~~	~~5~~
14	9107688-33	*24 AWG SOLID IPVC ORN	A/R

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
WIRED ASSY PA68-F	D-AD-7006226-0-0	A	PL	7006226-0-0	F	PA68F-00021
	SHEET 1 OF 1	DIST. G				

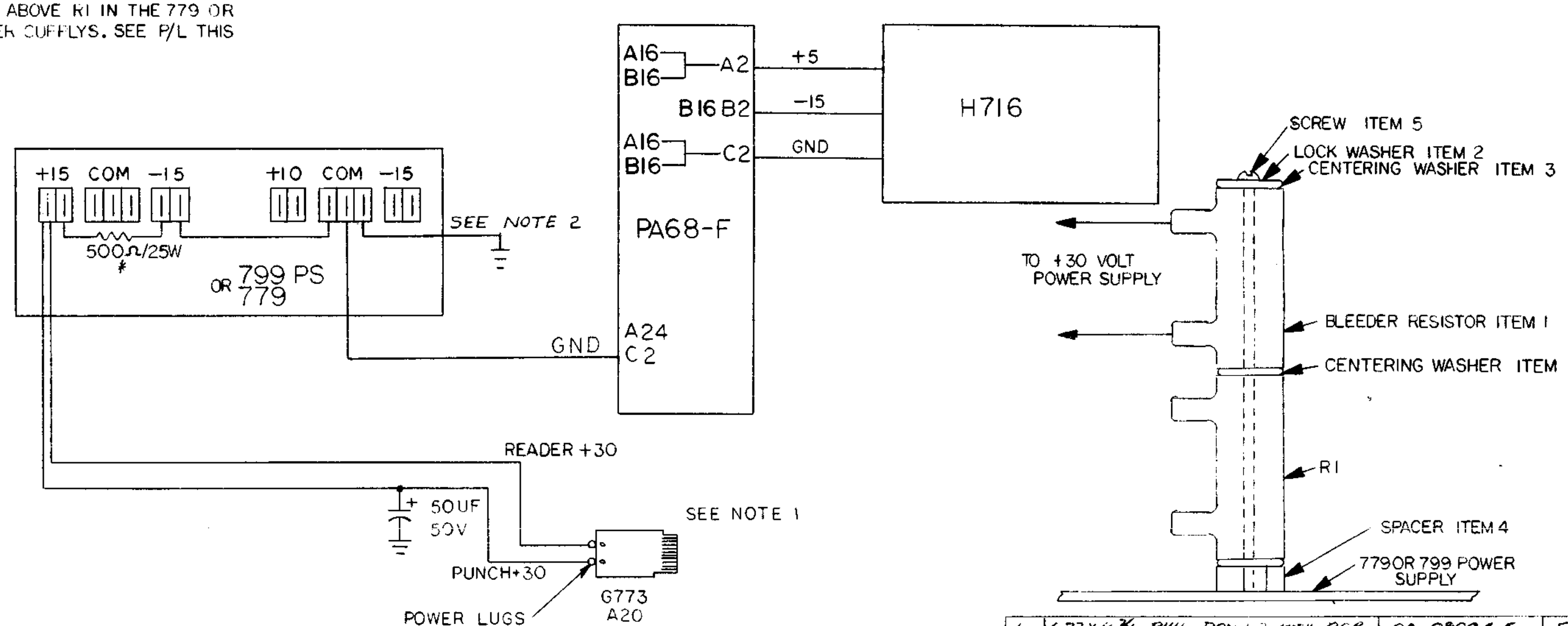
DEC FORM NO.
DRA 110

NOTE:

1. G773 CONNECTOR CARD GOES IN SLOT A20 IN PA68F LOGIC. JUMPER PINS L2 & R2 ON CONNECTOR CARD TO POWER LUGS. BEFORE POWER IS APPLIED TO LOGIC CHECK THAT THE FOLLOWING WIRES ARE CONNECTED ON THE LOGIC:
   A20L2 TO A16U1
   A20R2 TO B16U2
2. THE PA68F GROUND, H716 GROUND AND 779 GROUND SHOULD BE WIRED TO THE SAME GROUND; WHERE GROUND IS THE 'GREEN' CONDUCTOR (SAFETY GND) ON THE AC POWER LINE.

* 779 & 799 P.S. MODIFICATION

500 OHM BLEEDER RESISTOR TO BE SECURED ABOVE R1 IN THE 779 OR 799 POWER SUPPLYS. SEE P/L THIS DWG.



QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	6-32 X 4 3/16 PHIL-PAN-HD-MACH SCR.	90-08004-5	5
	1/2 AF X 1/4 X #10 HOLE SPACER	90-06827	4
2	CENTERING WASHER	90-06674	3
1	#6 INTERNAL LOCKWASHER	90-06633	2
1	500Ω, 25W RESISTOR	13-00333	1

PARTS LIST

REVISIONS

CHK	CHANGE NO.	REV.	
—	PA68F-00002	—	ORIGINATED
	PA68F-00007	A	T. Quellin 11-1-69 DOUCETTE
FV	PA68F-00010	B	5-1-70 B. DOUCETTE
	PA68F 00013	C	4/21/71 H. JODICE
	PA68F-00014	D	6-1-71 JODICE
	PA68F-00018	E	J. MILTON

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. T Quellin DATE 7/30/69
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
FIRST USED ON
SCALE —
SHEET 1 OF 1

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
POWER WIRING PA68-F

SIZE C CODE IC NUMBER PA68-F-7 REV. E
DIST. 0

SIZE C CODE IC NUMBER PA68-F-7 REV. E

DEC FORM NO. DRC 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 5-7-71

TITLE PA68F

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	PA68F-00013	JODICE	4-1-71	[illegible]	5/12/71
B	ECO CHANGE	PA68F-00017	HARTZ	8-11-72	[illegible]	[illegible]
C	ECO CHANGE	PA68F-00019	REED	8-73	[illegible]	3/31/73

ENG	APPD	CODE	SIZE	NUMBER	REV
BUZ DOUCETTE	W. KERCHNER	SP	A	PA68-F-9	C

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PA68F

I. Description

The PA68F is a controller for a PR68DA paper tape reader and PP67C or PP67D paper tape punch. It can interface to any one of the positive bus family of PDP-8 computers. The punch section controls the turning on and turning off of the punch motor; it also controls the solenoids which determine the bits to be punched. The reader section controls the stepping motor; it also buffers the data bits after it commands the reader to fetch a character.

II. General Specifications

A. Mechanical Packaging

The PA68F consists of an H911 mounting panel with six instead of eight H803 mounting blocks. An H716 power supply is mounted on the H911 in the slot where the two mounting blocks were removed.

B. Environmental Specifications

The PA68F will operate at a temperature range of 20°C to 50°C. The power required is supplied by an H716 power supply (+5v and -15v) and a DEC 799 power supply (+30v).

III. Programming Specs

Punch Programming Instructions

PSF	6021	Skip if punch flag = 1
PCF	6022	Clear flag and punch buffer
PPC	6024	Load buffer and punch
PLS	6026	Clear flag and buffer, load and punch
	6311	SKIP IF PUNCH NOT AVAILABLE

Reader Programming Instructions

RSF	6011	Skip if reader flag = 1
RRB	6012	Read reader buffer and clear flag
RFC	6014	Clear flag and buffer and fetch character.

SIZE	CODE	NUMBER	REV
A	SP	PA68-F-9	C

DEC FORM NO DRA 108

III. Programming Specs (Continued)

Programming Examples

Reader		7000/7300	CLA CLL
		6014	RFC
SR=7000		6011	RSF
L.A.		5202	JMP .-1
START		6012	RRB
		5200	JMP .-5

This program will command the reader to read the paper tape which is placed in its tape path guide.

PUNCH	7000/7300	CLA CLL		
	6311	CHK AVAIL	7040	CMA
	7410	SKP	6026	PLS
	7402	HLT	6021	PSF
			5206	JMP.-1
			5201	JMP.-7

This program will command the punch to punch a continuous pattern of one's and zero's.

IV. Systems Components

A. Modules - See Print UML-PA68F
B. Cables - 1) Standard applicable I/O cables
2) One BC01H-Ø-Ø (reader) cable
One BC01F-Ø-Ø (punch) cable
C. Power Supplies - DEC 799
H716

V. Interface Specifications

A. The I/O signals are detailed in the PDP-8 Small Computer Handbook.
B. Reader Signals

Pin	Signal	Description
P1,B2	-15v	Supplies current to reader amplifiers and bulbs.
R1,A2	+5v	Supplies current to all logic components

Reader Signals (Continued)

Pin	Signal	Description
S1,U1,U2	+30v	Supplies current to drive stepping motor
V1	Sel.Rdr H	When signal is asserted, WHEN reader is ENABLED BY ROCKER SWITCH.
C2,T1	GND	
D2	RD Hole Ø H	Signal is asserted when a hole is detected.
E2	RD Hole 1 H	Signal is asserted when a hole is detected.
F2	RD Hole 2 H	Signal is asserted when a hole is detected.
H2	OUT OF TAPE H	Signal is asserted when a hole is detected. Used to detect out of tape.
J2	RD Hole 3 H	Signal is asserted when a hole is detected.
K2	RD Hole 4 H	Signal is asserted when a hole is detected.
L2	RD Hole 5 H	Signal is asserted when a hole is detected.
M2	RD Hole 6 H	Signal is asserted when a hole is detected.
N2	RD Hole 7 H	Signal is asserted when a hole is detected.
T2	SDB (Ø) L	+30v to GND. Used to increment motor.
S2	SDB (1) L	+30v to GND. Used to increment motor.
R2	SDA (Ø) L	+30v to GND. Used to increment motor.
P2	SDA (1) L	+30v to GND. Used to increment motor.
V2	NTTA	Not Applicable

Punch Signals

Pin	Signal		Description
N1,P1,R1,S1,U1,V1	+30v		Supplies current to solenoids
T1,C2	GND		
A2,V2	+5v		Supplies voltage to control circuitry
D2	Hole Ø0	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
E2	Hole Ø1	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
F2	Hole Ø2	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
H2	Feed Hole	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state. This signal should be set to a 4.5ms positive width.
J2	Hole Ø3	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
K2	Hole Ø4	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
L2	Hole Ø5	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
M2	Hole Ø6	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
N2	Hole Ø7	L	When signal is at GND, the appropriate solenoid will be in a "Hole" state.
P2	MOTOR START	L	When signal is at GND the selected punch motor will start.
R2	NOT AVAIL	H	WHEN PUNCH IS OUTPUT
T2	SYNC H PUNCH	H	A signal supplied from the punch to sync the strobing (feed hole) pulse.

VI. Acceptance Procedures

See A-SP-PA68F-8

VII. Engineering Drawings

See A-ML-PA68F

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 11/5/71

TITLE PA68F ACCEPTANCE CRITERIA - FIELD

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
		A	SP	PA68 - F - 11	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION [redacted] CONTINUATION SHEET

TITLE PA68F ACCEPTANCE CRITERIA - FIELD

I SCOPE

A. To define the criteria necessary to field accept the positive bus PA68F, single channel reader/punch control.

II FIELD ACCEPTANCE

A. Shipping Software

1. Prints - all on A-ML-PA68F
2. Diagnostics

a. MAINDEC-08-D2HC (Family of 8 tests for type-setting)

b. System Exerciser (two copies of customized version)

B. Shipping Hardware

1. PA68F logic with all necessary modules and I/O cables
2. Reader/punch cables as per construction requisition (or key sheet)

C. Test Software

1. Shipping Software

A. Prints - all on A-ML-PA68F

B. Diagnostics

a. MAINDEC-08-D2HC (Family of 8 tests for typesetting)

b. System Exerciser (two copies of customized version)

D. Test Hardware

1. Complete system as per construction requisition (or key sheet)

E. Procedure

1. Insure system assembly is complete as per construction requisition (or key sheet); i.e., all necessary I/O cables, logics, power supplies, etc.

2. With an oscilloscope check that the reader clock

SIZE	CODE	NUMBER	REV
A	SP	PA68 - F - 11	

DEC FORM NO 15 1022

II E. 2. continued
is set to exactly 2.3 msec (M401 PA68F slot B08 Pin D2). No program is needed for this check, just turn power on.

3. With an oscilloscope check that the PUNCH DONE level is at +3 volts DC for exactly 4.5 msec (M710 in PA68F slot AB07 Pin BH2) by using the following program:

```
7000 / 7040
   1   6026
   2   6021
   3   5202
   4   5200
```

Starting Address = 7000

Make sure the reader and punch are aligned correctly. Refer to the alignment procedure for the PR68B/D/DA reader and PP07 C/D punches.

NOTE: Use the customer tape for the above tests if it fails within our specs.

4. Put a full roll of paper punch tape (use same type tape as customer uses in his perforators) in the punch.

5. Load the System Exerciser, Overlay 3, into memory. With all segments of overlay three running, put the ON/OFF switch on the reader to the OFF position (push to right). The program should immediately output the following error message:

EOV3SO READER ØØØØ NO RESPONSE

Put the switch back in the ON position and the program should run normally again. Continue running all segments until the entire roll of punch tape has been expended.

6. Acceptance condition: No errors except those caused by chad, excessive dirt or damaged tape.

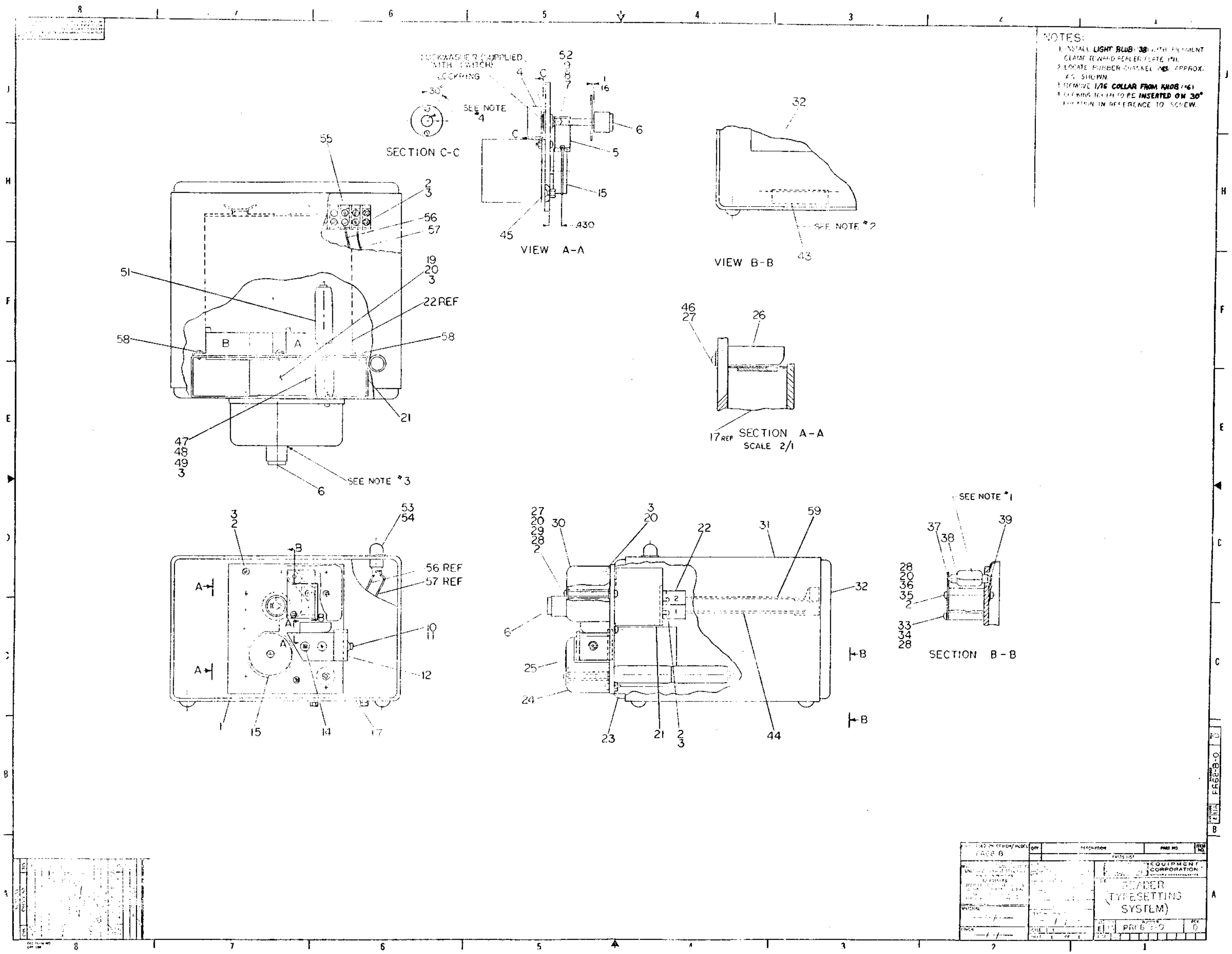
MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
E-UA-PR68-B-0	D	1	READER (TYPESETTING SYSTEM)
A-PL-PR68-B-0	D	3	READER (TYPESETTING SYSTEM)
C-BD-PR68-B-1	E	1	BLOCK WIRING DIAGRAM
D-IA-7005893-0-0	#	1	READER CABLE
C-UA-7009382-0-0	#	1	TAPE GUIDE ASSY.
A-SP-PR68-B-2		6	INSTALLATION/ADJUSTMENT PROCEDURE
A-AL-PR68A-0-5	#	1	ACCESSORY LIST
IN HOUSE USE ONLY			
A-SP-PR68A-0-6	#	4	SOLAR CELL ASSEMBLY PROCEDURE
A-SP-PR68A-0-4	#	3	SOLAR CELL TEST PROCEDURE

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	4/69	00001	B.D.
B	6/69	00002	B.D.
C	8/69	00003	B.D.
D	8/69	00004	B.D.
E	10/69	00005	B.D.
F	1/71	00006	B.D.
H	11/73	C0007	B.P.

DRN. C. DRUM	DATE 4 9/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE	
ENG.	DATE	TITLE READER (TYPESETTING SYSTEM)
PROJ. ENG.	DATE	
PROD	DATE	
FIRST USED ON		SIZE A · CODE ML · NUMBER TP68-H · REV. H
SCALE		
SHEET 1 OF 1		DIST.

DEC FORM NO. DRA 103


NOTES:
LIGHT BLUB 38
APPROX.
SHOWN.
REMOVE 1/16 COLLAR FROM KNOB (#6)
INSERTED ON 30°
IN REFERENCE TO SCREW.
SECTION C-C
SEE NOTE *4
VIEW A-A
VIEW B-B
SEE NOTE *2
SECTION A-A
SCALE 2/1
SEE NOTE *3
SEE NOTE *1
SECTION B-B
22 REF
56 REF
57 REF
17 REF
.430
EQUIPMENT CORPORATION
(TYPESETTING
SYSTEM)
PARTS LIST
QTY
DESCRIPTION
PART NO.
ITEM NO.
MATERIAL
FINISH
E
REV.
0

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY C. DRUM | CHECKED | SECTION
DATE 4/5/69 | DATE 4/10/69
ENG | PROD | ISSUED SECT.
DATE | DATE 7-15-69

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
1	7404983	READER PLATE (BOTTOM)	1
2	9006022-01	PHL PAN HD MACH, SCREW #6-32x3/8 LG SST	13
3	90-06560	KEPS HEX NUTS #6-32 SST	13
4	7404992	SWITCH (REWORK)	1
5	7404984	TAPE SPRING	1
6	1204747	INSTRUMENT KNOB #PS-70D-2 BUCKEYE	1
7	9006003-01	PHL PAN HD MACH SCREW #2-56-3/8 LG SST	2
8	9006555	HEX NUTS #2-56 SST	2
9		EXTERNAL TOOTH LOCK WASHER #2 HOLE	2
10	9006027-01	PHL PAN HD MACH SCREW #6-32x7/8 LG SST	1
11		BELVELL WASHER TYPE DIP SPRINT #6 HOLE SST	1
		(ALL METAL SCREW PRODUCTS)	
12	7404976	TAPE ADJUSTER	1
13	~~MD-E-PR68A-0-1-0=.8~~	~~BUSHING 7404991~~	~~2~~
14	9006046-02	PHL FLAT HD MACH SCREW #8-32 x 1½ LG SST	2
15	7404975	SPROCKET LOW INERTIA, TAPE	1
16	~~MD-E-PR68A-0-1-0=.1~~	~~FRONT GUIDE 7404982~~	~~1~~
17	7009382	TAPE GUIDE ASSY	1
18	~~MD-E-PR68A-0-1-0=.1~~	~~MIN READER HEAD 7404978~~	~~1~~
19	1203580	DRIVING MOTOR #SS25-1001 11.8V SLO-SYN	1
20	9006021-01	PHL PAN HD MACH SCREW #6-32x 1/2 LG SST	8
21	7404985	BRACKET, CONNECTOR MOUNTING	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
READER (TYPESETTING SYSTEM)	E-UA-PR68-B-0	A	PL	PR68-B-0	D	PR68B-00007
	SHEET 1 OF 3	DIST.				

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY | CHECKED | SECTION
DATE | DATE 4/7/69
ENG | PROD | ISSUED SECT
DATE | DATE 7/14/69

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION
22	1205123	CONNECTOR CARD 36 PIN	4
23	MD-C-PR68A-0-1-0-12	COVER PANEL (REWORK)	1
24	7404981	COVER BOX (BOTTOM)	1
25	7404974	CONTROL BOX LOGO	1
26	7404990	PRESSURE PAD	1
27	9006656	PLAIN WASHER (MEDIUM) 5/16 O.D.x5/32 I.D.	5
		x 1/16 THK. SST.	
28	9007649	EXTERNAL TOOTH LOCK WASHER, #6 HOLE SST.	10
29	9006865	THREADED STANDOFFS #6-32 x 1 3/8 LG	4
30	7404977	COVER BOX (TOP)	1
31	7404986	UTILITY CABINET (REWORK)	1
32	C-AD-7006337-0-0	REAR PANEL ASSY	1
33	9006020-01	PHL PAN HD MACH SCREW #6-32 x ¼ LG SST	1
34	7404989	PINS	1
35	9006761	TERMINAL #2106-06-00 SHAKEPROOF	2
36	7404987	STANDOFF	1
37	7404979	LENS, FRONT LIGHT	1
38	1204734	LIGHT BULB 12V-18W, #6475 OSRAM	1
39	7404980	LENS, REAR LIGHT	1
40		~~POWER GLASS #1 THK x 24 x 40~~	~~1~~
41		~~PHOTOSENSING CELL #HPC-1-01 HOFFMAN~~	~~1~~
42			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO
READER (TYPESETTING SYSTEM)	E-UA-PR68-B-0	A	PL	PR68-B-0	D	
	SHEET 2 OF 3	DIST.				

DEC FORM NO.
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

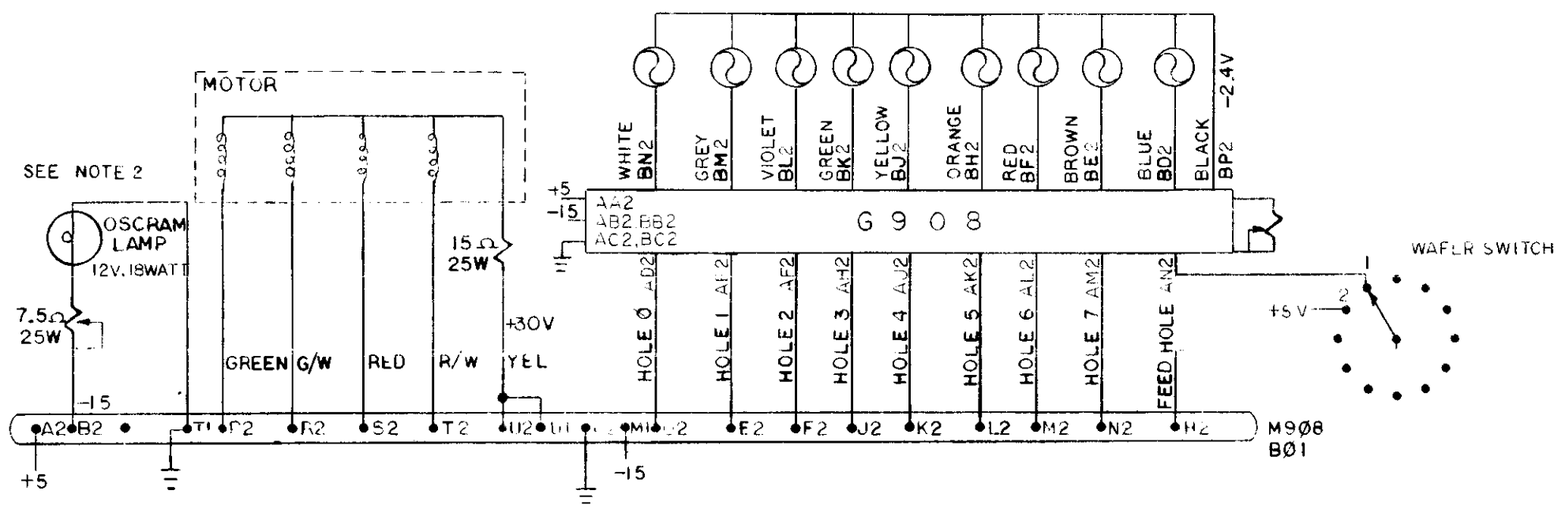
MADE BY C. DRUM	CHECKED	SECTION
DATE 4/5/69	DATE	
ENG	PROD	ISSUED SECT.
DATE	DATE	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
43		RUBBER EXTR. CHANNEL #X-172x2" LG	A/R
		ATLANTIC INDIA RUBBER WORKS	
44	M908	RIBBON CONNECTOR	1
45	9006022-02	PHL FLAT HD MACH SCREW #6-32x3/8 LG SST	1
46	9006026-01	PHL PAN HD MACH SCREW #6-32x3/4 LG SST	1
47	1300181	FIXED RESISTOR #0200R 25 WATT	1
		1.290 AMP, 15 OHMS OHMITE	
48	9008077	FIBER SHOULDER WASHER #2150 HH SMITH	4
49	9007195	THREADED ROD 6-32 x 4 7/8	1
50	~~MD-A-PR68A-0-1-0-20~~	~~SCHEM CORRUGATED 7405595~~	~~1~~
51	1305315	7.5 OHM 25W RESISTOR #062B	1
52	B-MD-7406675-0-0	SUPPORT SHIM	1
53	1202986	LIGHT BULB 330	1
54	1204628	DIALCO IOIR LIGHT	1
55	90-06901	JONES TERMINAL STRIP #4-140	1
56	91-07350-4	WIRE #22 STRD TEF (ORN)	A/R
57	91-07400-5	WIRE #22 STRD TRACER (YEL & WHT)	A/R
58	B-MD-7407338-0-0	ANGLE, REINFORCEMENT	2
59	G908	PHOTO AMP	1
~~60~~	~~D-IA-7005895-0-0~~	~~READER CABLE~~	~~1~~

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
READER (TYPESETTING SYSTEM)	E-UA-PR68-B-0	A	PL	PR68-B-0	D	
	SHEET 3 OF 3	DIST.				

DEC FORM NO.
DRA 110

NOTES:
1. PINS BØIC2 & T1 TO BE WIRED TOGETHER AND RUN TO CHASSIS GND, USING GND LUG ON WAFER SWITCH
2. LAMP VOLTAGE [illegible]



REVISIONS					
CHK	CHG NO.	REV			
	00002	A			
	[illegible]	B			
	[illegible]	C			
	[illegible]	D			
	[illegible]	E			

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA

DRAWN [illegible] DATE 6-27-
CHK [illegible] DATE
ENG [illegible] DATE
PROD [illegible] DATE

digital EQUIPMENT CORP[illegible]ON
MAYNARD MASSACHUSETTS

TITLE BLOCK WIRING DIAGRAM
SIZE C CODE [illegible] NUMBER PR68-B-1
PRINTED CIRCUIT REV.

SIZE C SCALE NONE NUMBER PR68-B-1

DEC FORM NO. DRC 102

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

WIRE TABLE (BOTH ENDS)							
ITEM	COLOR	PIN	POINT	ITEM	COLOR	PIN	POINT
2	BLU/BLK	P1	24	2	YEL	H2	12
	PINK	R1	23		DK GRN	J2	11
	ORN/BLK	S1	22		BRN	K2	10
	BLK/WHT	T1	21		RED	L2	9
	TAN	U1	20		DK BLU	M2	8
	WHT/BLK	V1	19		GRY	N2	7
	RED/BLK	A2	18		VIO/BLK	P2	6
	LT GRN	B2	17		GRN/BLK	R2	5
	VIO	C2	16		YEL/BLK	S2	4
	WHT	D2	15		LT BLU	T2	3
	ORN	E2	14		BRN/WHT	U2	2
2	BLK	F2	13	2	GRY/BLK	V2	1

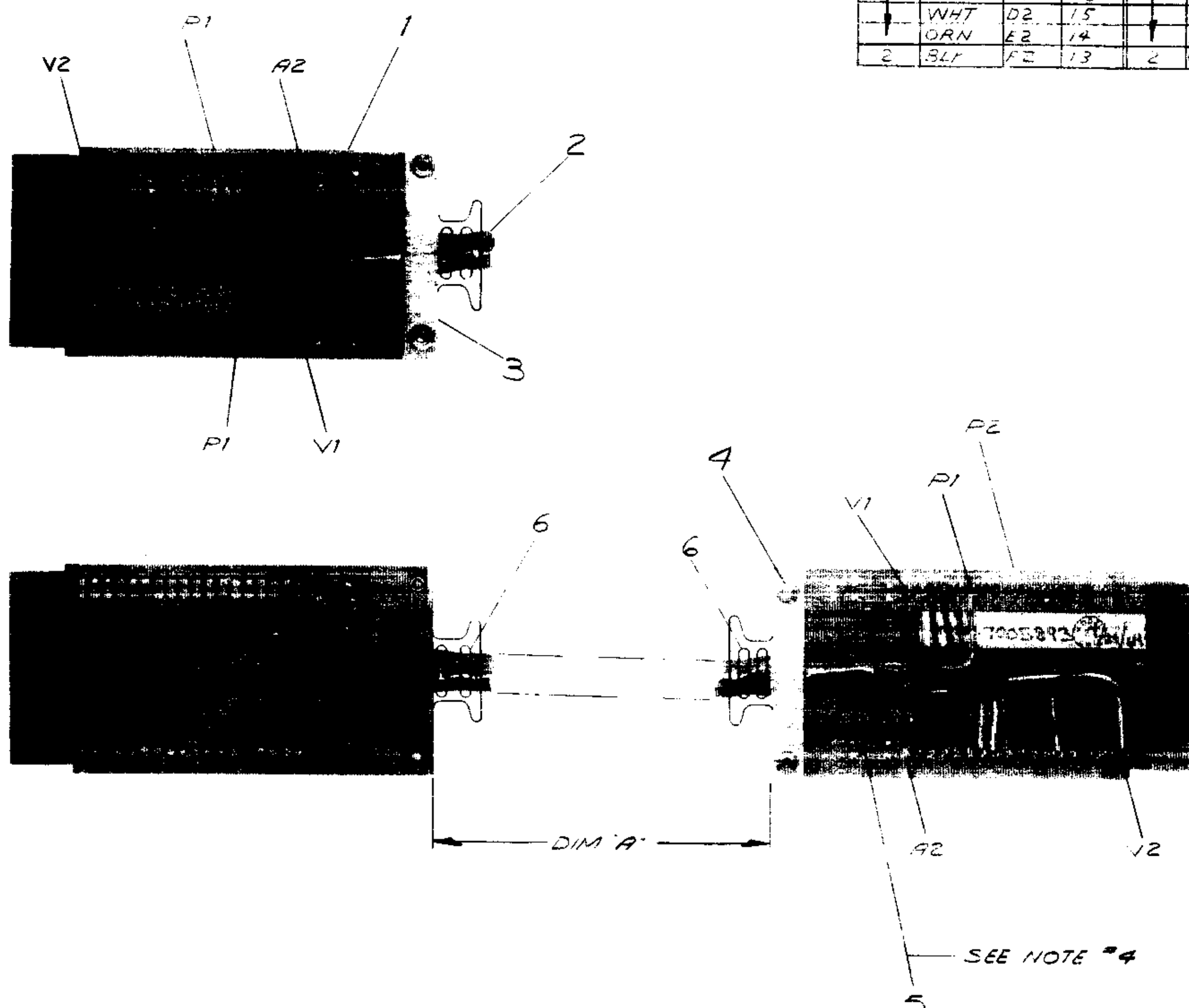
LEGEND	
NUMBER	VARIATION
	DIM "A"
7005893-25	25 ± 5"

NOTES:

1. MODULES P1 AND P2 TO BE WIRED POINT TO POINT, ACCORDING TO WIRE TABLE
2. ASSEMBLE CLAMPS (ITEM #3) WITH EYELETS (ITEM #4) TO BOARD AFTER SOLDERING CABLE IN PLACE.
3. VARIATIONS AND LENGTHS SHOWN IN LEGEND ARE STANDARD OTHER THAN STANDARD VARIATIONS WILL BE SPECIFIED BY ALPHANUMERIC DESIGNATION FOR LENGTHS OTHER THAN FOOT INCREMENTS FROM ONE (1) FOOT THRU NINE (9) FEET, ELEVEN (11) INCHES.

   A = 1" G = 7"
   B = 2" H = 8"
   C = 3" J = 9"
   D = 4" K = 10"
   E = 5" L = 11"
   F = 6"

   EXAMPLE BC02X-3D = 3'4"
   LENGTHS WILL BE IN FOOT INCREMENTS FROM TEN (10) FEET ON AND WILL BE SPECIFIED BY THE CORRESPONDING NUMERICAL DESIGNATION
   EXAMPLE
   BC02X-11 = 11 FEET
   THE TOLERANCE ON DIMENSION "A" WILL BE ± 2% OF THE FOOT INCREMENT.
4. REMOVE EXISTING RESISTORS & REPLACE WITH ITEM #5 BUS WIRE.



QTY	DESCRIPTION	PART NO.	ITEM NO.
4	TIE WRAP	9007031	6
A/R	BUS WIRE #20 AWG	9107560-02	5
4	EYELETS #A-2231 (STIMPSON)	9007659	4
2	CABLE CLAMP	1202790-00	3
A/R	24 CON BELDON CABLE	9107684	2
2	CABLE CONNECTOR	M908	1

PARTS LIST

REVISIONS			
REV.	CHANGE NO.		CHK
A	PR68D-00023	ED REED 8-13-74	

FIRST USED ON OPTION/MODEL: PR68-F

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 8-8-69
CHKD. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE 8-15-69
FIRST USED ON

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: READER CABLE

SIZE D CODE IA NUMBER 7005893-0-0 REV. A

SCALE NONE SHEET 1 OF 1

DIST.

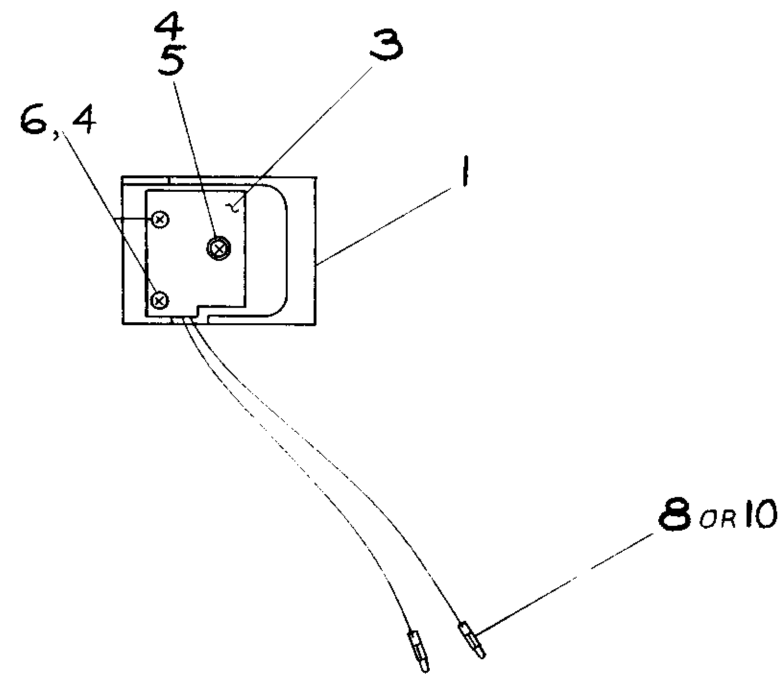
DEC FORM NO. DRC

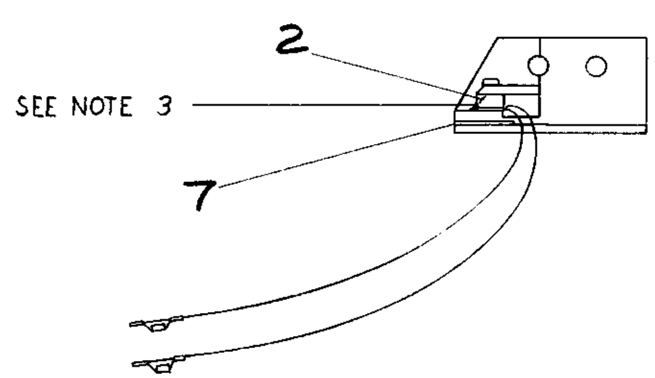
LEGEND

OPTION	VARIATION
PR68A	7009382-Ø
PR68B	7009382-1

NOTES:

1. WIRES ON ITEM #2 (SOLAR CELL) SHALL BE CUT TO [illegible] 5 IN
2. ATTACH ITEM #7 (GLASS) TO ITEM #1 (GUIDE) WITH A THIN FILM OF ELMERS GLUE, TO AN AREA 1/16 IN. AROUND THE OUTSIDE PERIMETER OF THE GLASS. ALLOW WEIGHT OF THE GLASS TO FORCE OUT MOST OF THE AIRPOCKETS. VERY CAREFULLY APPLY PRESSURE TO THE SURFACE OF THE GLASS TO SQUEEZE OUT REMAINING AIR BUBBLES, BEING CAREFUL NOT TO SQUEEZE GLUE OVER THE CELL HOLES.
3. APPLY THIN FILM OF ELMERS GLUE TO JUNCTION POINT OF SOLAR CELL AND TAPE PATH GUIDE.
4. APPLY GLUE TO ALL PLACES WITH A 23G1 2-1/2 CC DISPOSABLE PLASTIC SYRINGE.





PARTS LIST

QTY. 7009382-1	QTY. 7009382-Ø	DESCRIPTION	PART NO.	ITEM NO.
10	—	30 GAUGE TERMI POINT CONN	9007655	10
A/R	A/R	ELMERS GLUE		9
—	10	24 GAUGE TERMI POINT CONN	9107230	8
1	1	COVER, GLASS	1211388	7
2	2	SCR PHL HD PAN 2-56 X 3/16	9006000-1	6
1	1	SCR PHL HD PAN 2-56 X 3/8	9006003-1	5
3	3	WASHER, LOCK INT #2	9006631	4
1	1	SOLAR CELL MTG	7405945	3
1	1	SOLAR CELL	1204732	2
1	1	TAPE PATH GUIDE	[illegible]	1

FIRST USED ON OPTION/MODEL: PR68

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS / ANGLES
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL: SEE LEGEND

FINISH: —

DRN: D. Sullivan — DATE 3-15-73
CHK'D. — DATE
ENG. — DATE
PROJ. ENG. — DATE
PROD. — DATE
NEXT HIGHER ASSY.
SCALE 1/1
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: PR68 TAPE GUIDE ASSY

SIZE: C CODE: UA NUMBER: 7009382-0-0 REV. D

REVISIONS

CHK	CHANGE NO.	REV.
	7009382-00001A	A
	J. MILTON	
	PR63B-00007	B
	B. POOLER	
	7009382-000C2	C
	ED REED	
	7009382-00003	D
	5-21-74	
	ED REED	

DEC FORM NO DRC 100-8

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION DATE 8-16-73

TITLE PR68B INSTALLATION / ADJUSTMENT PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
		A	SP	PR68-B-2	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE PR68-B INSTALLATION/ADJUSTMENT PROCEDURE

PURPOSE:

The purpose of this specification is to document and standardize the installation / adjustment procedure for the new PR68-B photocell assembly. (70-09382-1)

A. INSTALLATION

I. Equipment Required

A. Field Service tool kit
B. Tektronix type 453 oscilloscope with two probes.
C. Paper glue
D. Ones and zeros test tape.
E. Field Service installation kit # 29-20672-1

II. INSTALLATION PROCEDURE

A. Removal of Previous Assembly

Remove the front faceplate which houses the amplifier logic and stepping motor from the enclosure. This is accomplished by removing the four screws around the outside perimeter of the faceplate. As the unit slides out of the enclosure, disconnect the reader cable. Next, disassemble the tape spring knob as well as the upper and lower cover boxes. Separate the amplifier logic block from the faceplate and remove the 10 solar cell wires from the pins.
Remove the old phenolic block solar assembly by removing the two #8-32 x 1½ screws securing the unit. These two machine screws are to be saved for installing the new assembly.
The tape guide shims, however, need not be saved. Disassemble the 6,8 level tape guide from the phenolic block and save both the guide and its attaching screw for future use. Check the light bulb to make sure it is rated at 12 volts, 18watts. The bulb is to be replaced if the filament shows any sign of sagging.

	SIZE	CODE	NUMBER	REV
	A	SP	PR68-B-2	

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

B. Insert each of the ten wires of the new assembly through the slot of the faceplate. The new unit attaches with the same machine screws used to mount the old assembly. Before securing the new unit in place, insure that the shrink tubing is fully forward in the slot, to prevent pinching. Connect each of the ten signal wires to the logic pins according to the table that follows. Avoid excessive flexing or tension on the wires, as they are extremely fragile and difficult at best to resolder should they break at the solar cell.

PR68B SIGNAL / WIRE TABLE

Wire Color	Reader Hole	AC Bit	Pin
* White	0	11	BN2
Grey	1	10	BM2
Violet	2	09	BL2
Blue	Feed	N/A	BD2
Green	3	08	BK2
Yellow	4	07	BJ2
Orange	5	06	BH2
Red	6	05	BF2
* Brown	7	04	BE2
Black	Ground	N/A	BC2

* Reader hole zero corresponds to the inside cell, and reader hole 7 to the outside.

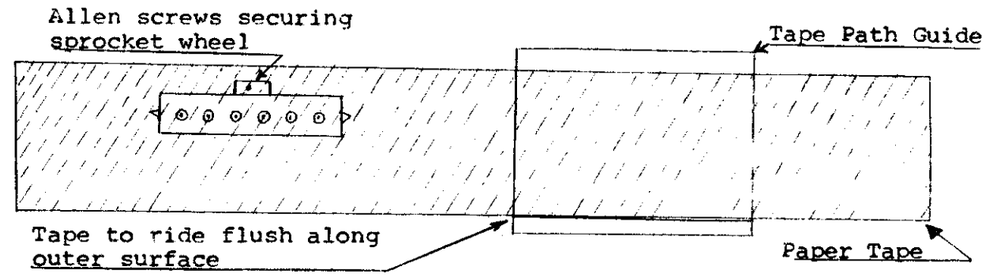
Place 3 thicknesses of tape on the tape bed and secure the tape hold down screw that connects to the backplate.

Mount the 6/8 level onto the rear of the new tape guide. Resecure the amplifier logic to the faceplate and insert the reader cable.

Apply power to the unit and attach a scope probe to the hot side of the reader light bulb. Adjust the lamp voltage to a value of 10.5 volts. In no case should a lamp voltage of less than 10.0 volts be used, as amplifier margins drop off sharply below this value. With the lamp intensity set, and with no tape in the reader, adjust the condenser lens such that the light beam falls directly on the cell. If cables are in excess of 150 feet, the -15V and ground lines must have dual wires to avoid excessive voltage drop.

Form an endless ones and zeros tape and place it into the reader. Check that the tape holes align directly over each of the solar cells.

TOP VIEW



Adjust sprocket wheel such that the tape rides smoothly along the outer surface without binding. This is accompolished by loosening the two allen screws towards the inside of the sprocket wheel. There should be no visible space between the tape and the outer ridge of the tape guide assembly.

Check to insure that there is no lateral play of the tape as it travels into the tape guide. If it is possible for the tape to be moved from the inside to the outside surface of the tape guide platform, the 6/8 level guide needs repositioning.

It is desirable that the inside fork of the 6/8 level guide keep the tape against the outside ridge of the tape guide platform. This will gaurantee smooth tracking of the tape over the solar cell holes.

Adjust the light beam such that it is projected directly over the solar cell holes. This is accompolished by first rotating the light bulb so that the glass seams do not interfere with the projected light beam.

Secondly, by rotation of the condenser lens itself care must be taken in the adjustment of the lens so as to avoid an uneven beam of light over the cells. (i.e. the beam may be narrower or wider on one end of the other.) The threaded end of the condenser lens may be filed so as to allow aligning of the lens parallel with the filament of the bulb. Once the light beam has been evenly placed over the cell holes no further adjustments of the bulb position or condenser lens is necessary.

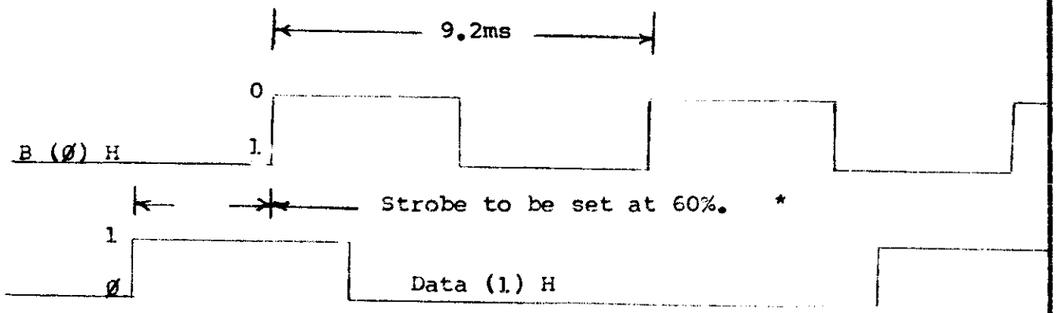
Check for the proper reader strobe by placing and endless loop tape

comprised of ones and zeros into the reader, and load the following program.

```
* 0/ 7604        Load AC from switches
* 1/ 6312        Select reader unit
  2/ 6014        Read
  3/ 6011        Skip on flag
  4/ 5003        Jmp .-1
  5/ 5002        Jmp .-2
```

* Select reader unit only applies to the PA63 controller. IOT 6312 is ignored by the PA68F.

Since step motor strobe is used in both the PA63 & PA68F, place channel 1 probe on the "B" flip flop. (B(0)H). Observe each of the data lines on channel 2 & note the one of shortest duration. (A "1" on the data lines corresponds to a +3v or high condition.) This shortest and therefore weakest of the data lines shall be used for the checking and / or setting of reader strobe. The "B" flop going to a Ø high condition, strobes the data on the lines into the reader buffer. Reading a ones and zeros tape at full speed shall yield the following scope display.



* NOTE: It is mandatory that an 8 level tape be used in the setting of reader strobe, as 6 level tapes utilize advance feed hole and 8 level tapes use center feed hole strobe.

** A detailed adjustment procedure may be found in the Typeset-8 Systems Positive Logic Maintenance Manual DEC-08-HMMPA-A-D with the exceptions noted per this specification.

III PAPER TAPE REQUIREMENTS

The characteristics of the tape used in the PR68B affect the data reliability of the unit. Avoid changes in tape color and extreme changes in translucency. Both properties affect the sensitivity adjustments of the G908 amplifier. A recommended table of paper tape specifications follows.

PAPER TAPE SPECIFICATIONS

PROPERTY	SPECIFICATION	CHARACTERISTIC
Oil Content	6% minimum 1.2% maximum	Uniformly impregnated with a lightly refined parafin base, light grade lubricating oil, light in color.
Translucence	32% to 38% maximum	Maximum transmission of incident light through the paper, limited by combined oil content & paper opacity.
General Quality	Standard grade containing less than 1% ash & grit.	

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

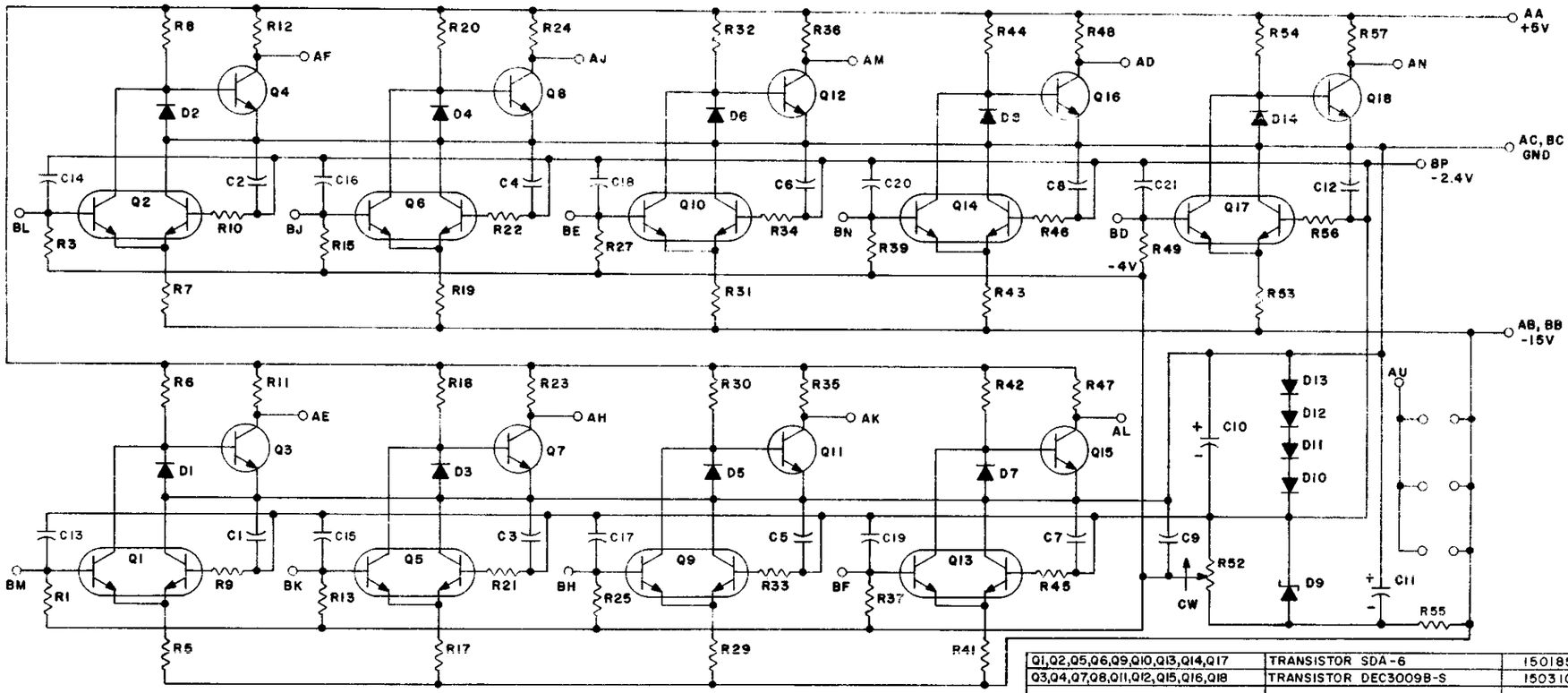
MADE BY S. Mankewicz DATE 11-27-73	CHECKED [illegible] DATE 11-30-73	SECTION
ENG B. POOLER DATE 11-30-73	PROD DATE	ISSUED SECT.

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	QUANTITY / VARIATION PR68A	PR68B	KIT CHECK BY ____ DATE ____	INSTALLATION CHECK BY ____ DATE ____
1	7005063	READER CABLE	1	-		
2	MAINDEC-08-DZHC-PB-D	TAPE & WRITE UP	1	1		
3	MDL-A-PR68A-0	CUSTOMER PRINT SET	1	-		
4	DEC-08-17TA-D	TYPESET 8 - NEG. LOGIC MAINT MANUAL	1	-		
5	DEC-PR68A/B-IPB	PR68A/B PAPER TAPE READER MANUAL	1	1		
6	7005893	READER CABLE	-	1		
7	MDL-A-PR68B-0	CUSTOMER PRINT SET	-	1		
8	DEC-08-HMMPA-A-D	TYPESET 8 POSITIVE LOGIC MAINT MANUAL	-	1		

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV	ECO NO
PR68A/B ACCESSORY LIST	E-MA-PR68A-0-1	A	AL	PR68A-0-5		ORIG. PR68A-0
	SHEET 1 OF 1	DIST.				

DEC 16-(325)-1075-N172 DRA 121



Q1,Q2,Q5,Q6,Q9,Q10,Q13,Q14,Q17	TRANSISTOR SDA-6	1501858
Q3,Q4,Q7,Q8,Q11,Q12,Q15,Q16,Q18	TRANSISTOR DEC3009B-S	1503100
R49,R53 R5,R7,R17,R19,R29,R31,R41,R43,	RES. 20K 1/4W 5% CC	1302391
R6,R8,R18,R20,R30,R32,R42,R44,R54	RES. 12K 1/4W 5% CC	1300488
R9,R10,R21,R22,R33,R34,R45,R46,R56	RES. 100 1/4W 10% CC	1300231
R48,R57 R11,R12,R23,R24,R35,R36,R47,	RES. 3K 1/4W 5% CC	1300432
R55	RES. 680 1/4W 5% CC	1301424
R1,R3,R13,R15,R25,R27,R37,R39	RES. 68K 1/4W 5% CC	1301327
R52	RES. 1K #275P POT	1305450
C13 - C21	CAP. 100MMF 100V 5% DM	1000016
D9	DIODE 1N753	1102451
D10 - D13	DIODE D662	1100113
D1 - D8, D14	DIODE D664	1100114
C10 - C11	CAP. 39MFD 10V 10% S.TANT	1000076
C1 - C9, C12	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-G908-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.

PARTS LIST

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA
DEC3009B	2N3009		
SDA-6	2N2060		
D662	1N645		
D664	1N3606		
1N753	SAME		

REVISIONS			
CHK	HG NO	REV.	
	5939	B	
	10001	C	

DRN M. Waller	DATE 10-9-67	
CHK'D	DATE	
ENG	DATE	
PROD	DATE	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: PHOTO AMP. G908

SIZE	CODE	NUMBER	REV.
C	CS	G908-0-1	C

PRINTED CIRCUIT REV. B

SIZE CODE C CS NUMBER G908-0-1 REV. C

DEC FORM NO. DRC 102

PINK

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
E-UA-PR68-D-Ø	K	1	READER ASSY
A-PL-PR68-D-Ø	K	2	READER ASSY (PL)
D-DI-PR68-D-1	D	2	DRAWING INDEX
D-BS-PR68-D-2	E	1	POWER & CONTROL SCHEMATIC DIAGRAM
B-MU-PR68-D-3	D	1	MODULE UTILIZATION
A-FL-PR68-D-3	D	1	MODULE COUNT
K-WL-PR68-D-4	C		WIRE LIST
A-SP-PR68-D-6	C	6	ENGINEERING SPECS.
B-AD-7006591-0-0	B	1	WIRED ASSY
A-PL-7006591-0-0	B	1	WIRED ASSY (PL)
A-SP-PR68-D-8	C	5	CHECKOUT PROCEDURE
A-SP-PR68-D-5	B	2	ACCEPTANCE CRITERIA
A-AL-PR68-D-7	B	1	ACCESSORY LIST

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	2/70	PR68D-1	B.D.
B	3/70	PR68D-2	B.D.
C	6/70	PR68D-7	BD
D	11/70	PR68D-11	G.M.
E	12/70	PR68D-12	H.J.
F	1/71	PR68D-13	H.J.
H	4/71	PR68D-15	H.J.
J	3/72	PR68D-17	
K	8 72	PR68D-18	
L	4 73	PR68D-19	
M	7-73	PR68D-20	E.R.
N	1-74	PR68D-21	
P	4-74	PR68D-22	

DRN. G. FLANDERS	DATE 11/10/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. K. RUSS	DATE 11/11/69	
ENG.	DATE	TITLE
PROJ. ENG.	DATE	PAPER TAPE READER (PR68-D)
PROD.	DATE	
FIRST USED ON PR68-D		SIZE A, CODE ML, NUMBER PR68-D, REV. R
SCALE #		
SHEET 1 OF 2		DIST.

DEC FORM NO. DRA 103

ADDITIONAL CUSTOMER PRINTS

Drawing Number	Rev. Let.	Title
C-CS-G918-Ø-1	#	Photoamplifier
C-CS-G930-Ø1	#	NTTA
D-UA-BC01H-Ø-Ø	#	CABLE CONNECTOR
D-CS-M978-Ø-1	#	CONNECT. CARD

Rev.	Date	Change	APP'D.
R	7-30-74	PR68D-23	E.R.

N Jodice — Requested by — 3/22/71 Date

Authorized by — 3/22/71 Date

REV. R

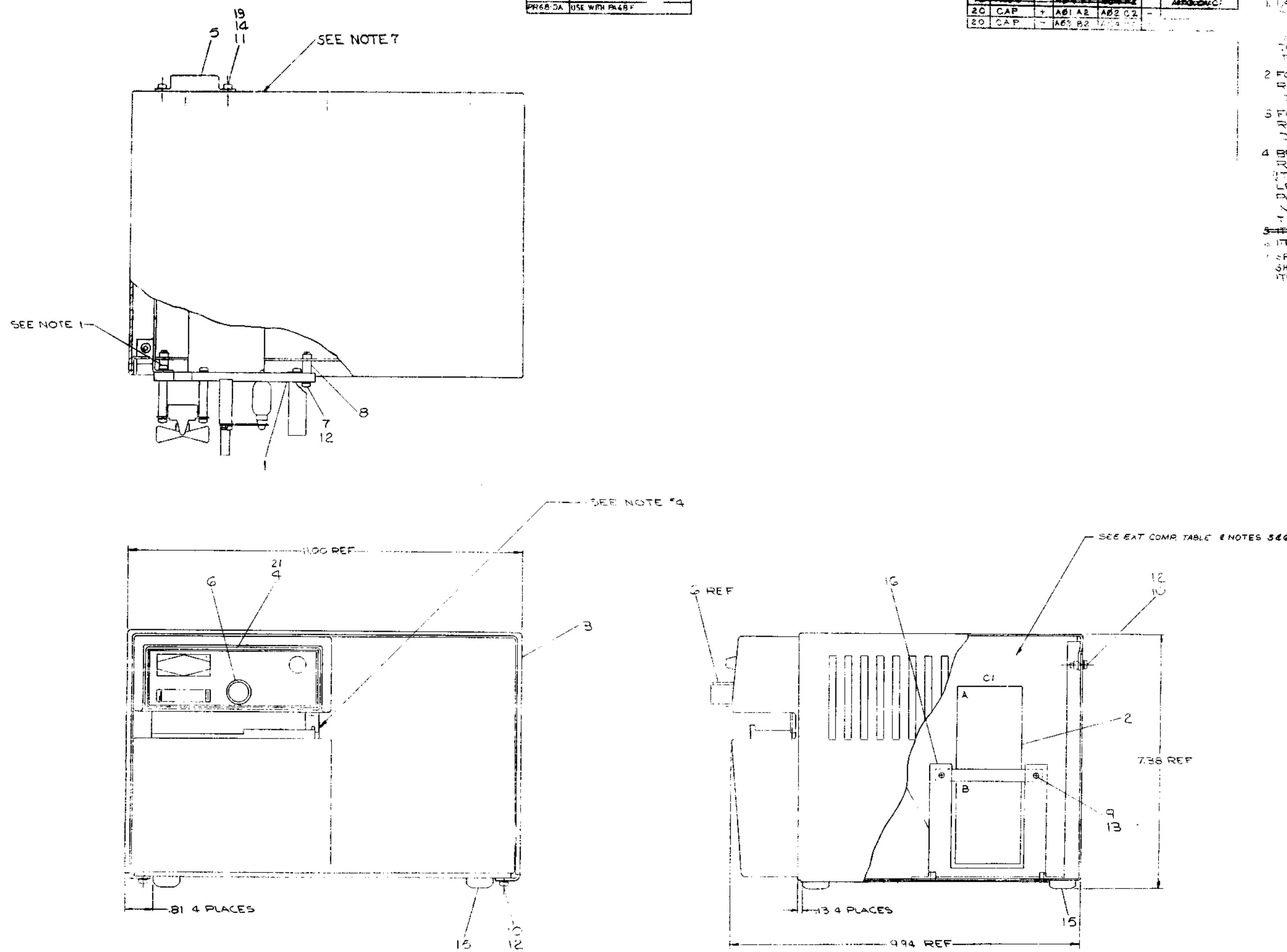
DRA 103

LEGEND	
NUMBER	VARIATION
PR68-D	USE WITH PA63
PR68-DA	USE WITH PA68F

EXTERNAL COMP. TABLE						
ITEM	COMP	POL	FROM	TO	POL	REMARKS
~~18~~	~~Tape~~		~~A04 V1~~	~~B04 R2~~		[illegible]
20	CAP	+	AØ1 A2	AØ2 C2	-	
20	CAP	-	A03 B2	[illegible]		

NOTES:

1. USE EXSISTING SCREW ON REAR OF READER PLATE AND [illegible] STANDOFF TO ASSEMBLE TOP OF READER PLATE TO CHASSIS.
2. FOR DRAWING INDEX LIST REFER TO DWG [illegible]-PR68-D-1.
3. FOR CIRCUIT SCHEMATIC REFER TO DWG D-BS-PR68-D-2.
4. BEFORE ASSEMBLING OR REMOVING COVER ASSY (ITEM #3), BACK OFF 8 LEVEL SLIDE SCREW. POSITION 8 LEVEL SLIDE IN UNUSED POSITION AND TIGHTEN DOWN SCREW.
5. ~~ITEM #18 FOR PR68-DA ONLY~~
6. ITEM #20 FOR BOTH PR68-D & DA
7. SPRAY IDENTIFYING COLOR CODE ON SHEET METAL NEAR ITEM #5 USING ITEM #23. DO NOT SPRAY PINS.



TOLERANCES DECIMALS		
.XXX =	±	.005
.XX =	±	.02
.X =	±	.1

FIRST USED ON OPTION/MODEL: PR68-D

PARTS LIST: QTY. | DESCRIPTION | PART NO. | ITEM NO.

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: PAPER TAPE READER (PR68-D)

A-ML-PR68-D

SCALE: NONE — SHEET 1 OF 1

E UA PR68-D-Ø

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 11/20/69	DATE 12/3/69	1
ENG Geo. Beckner 12-31-67	PROD Alan T. Hursch	ISSUED SECT.
DATE	DATE 12-31-69	1

ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR PR68-D	QTY/VAR PR68-DA	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
1	D-AD-7006573-1-0	READER, PLATE ASSY	1	-			
2	B-AD-7006591-0-0	WIRED ASSY	1	1			
3	D-AD-7006569-0-0	COVER ASSY	1	1			
4	C-IA-7407720-0-0	PLATE, FRONT COVER	1	1			
5	D-IA-7006557-0-0	CABLE INTERNAL (PR68-D)	1	1			
6	1204747	KNOB READER	1	1			
7	9006027-1	SCR PHL HD PAN #6-32 X 7/8 SST	2	2			
8	9006801	SPACER HEX 1/4 AF X 3/8 LG #6 HOLE	2	2			
9	9006037-1	SCR PHL HD PAN #8-32 X 3/8 SST	2	2			
10	9006022-1	SCR PHL HD PAN #6-32 X 3/8 SST	7	7			
11	9006002-1	SCR PHL HD PAN #2-56 X 5/16 SST	2	2			
12	9007649	WASH EXT TOOTH #6	9	9			
13	9007903	WASH EXT TOOTH #8	2	2			
14	9006555	NUT, HEX #2-56 SST	2	2			
15	1209750	RUBBER BUMPERS SELF STICKING	4	4			
16	E-IA-7407715-0-0	CHASSIS	1	1			
17	D-AD-7006573-2-0	READER PLATE ASSY	-	1			
18	9105740-66	#30 AWG SOLID, BLU	-	A/R			
19	9006631	WASH, LOCK INT TOOTH #2 SST	2	2			
REF	BC01H-0-0	CONNECTOR CABLE-PR68-D & DA TO PA63 or PA68-F	-	-			
20	7408268	CAPACITOR 6.8uf	2	2			

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO
PAPER TAPE READER (PR68-D)	E-UA-PR68-D-Ø	A	PL	PR68-D-Ø	K	PR68D-00022
	SHEET 1 OF 2	DIST.	G			

DEC FORM NO. 16-325

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 11/20/69	DATE 12/3/69	1
ENG G. BECKNER	PROD ALAN T. HURSCH	ISSUED SECT.
DATE 12-31-67	DATE 12-31-69	1

ITEM NO	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION PR68-D	QUANTITY/VARIATION PR68-DA
21	9008894-1	TAPE 1/8 W DOUBLE ADHESIVE	A/R	A/R
22	A-PI-3700113-0-0	PACKING INSTRUCTIONS	1	1
23	———	KRYLON #2101 RED	A/R	A/R

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO
PAPER TAPE READER (PR68-D)	E-UA-PR68-D-Ø	A	PL	PR68-D-Ø	K	
	SHEET 2 OF 2	DIST.				

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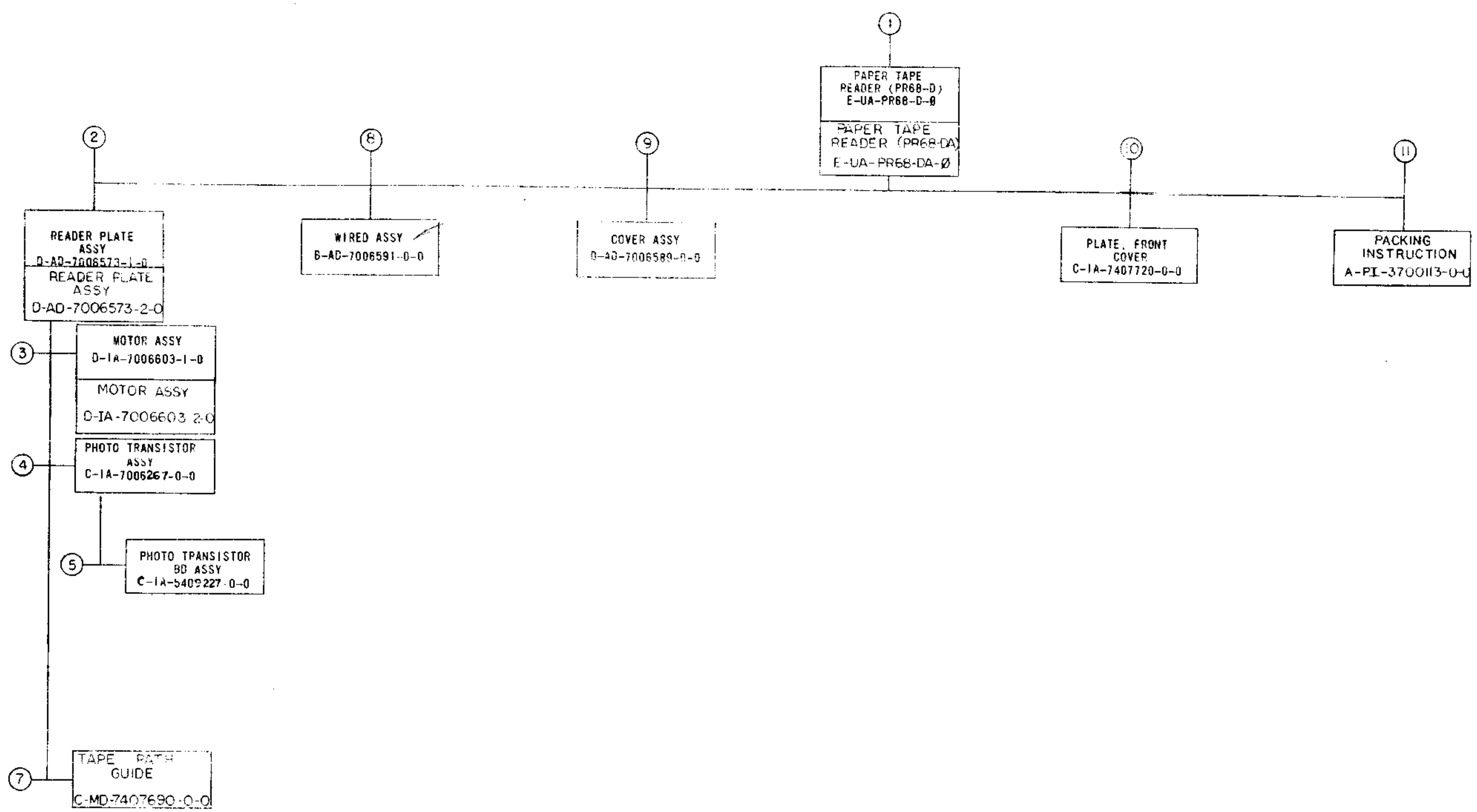


REVISIONS

REV	CHANGE NO.
A	PR68D-00002
B	PR68D-000011
C	PR68D-00013
D	PR68D-00015
E	PR68D-00021

B. DOUCETTE, JODICE, JODICE, JODICE, ED REED

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: PR68-D

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

NEXT HIGHER ASSY: A-ML-PR68-D

SCALE / SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DRAWING INDEX LIST (PR68-D)

SIZE	CODE	NUMBER	REV.
D	DI	PR68-D-1	E

DIST. G

MECHANICAL

FIND NO	DESCRIPTION	PART NO.	DEPT USAGE PROD	CUST	F/C
1.	PAPER TAPE READER (PR68-D)	E-UA-PR68-D-0			
	PAPER TAPE READER (PR68-D) (PL)	A-PL-PR68-D-0			
	PAPER TAPE READER (PR68-DA)	E-UA-PR68-DA-0			
	PAPER TAPE RDR (PR68-DA) (PL)	A-PL-PR68-DA-0			
	CHASSIS	E-IA-7407715-0-0			
	CABLE INTERNAL (PR68-D)	D-IA-7006557-0-0			
2.	READER ASSY	D-AD-7006573-1-0			
	READER ASSY (PL)	A-PL-7006573-1-0			
	READER ASSY	D-AD-7006573-2-0			
	READER ASSY (PL)	A-PL-7006573-2-0			
	READER PLATE	D-MD-7407711-0-0			
	BLOCK READER	B-MD-7407119-0-0			
	SHAFT READER PLATE	B-MD-7407120-0-0			
	ARM SPRING	A-MD-7407118-0-0			
	BRACKET TAPE HOLD DOWN	C-MD-7407144-0-0			
	DEPRESSOR, TAPE	C-MD-7407719-0-0			
	SLIDE, 8 LEVEL	C-MD-7407826-0-0			
	BULB SPRING	A-MD-7407116-0-0			
	LENS	B-MD-7404989-0-0			
3.	MOTOR ASSY	D-IA-7006603-1-0			
	MOTOR ASSY	D-IA-7006603-2-0			
	BUTTON, ROCKER SWITCH	D-SC-1205317-9-0			
4.	PHOTO-TRANSISTOR ASSY	C-IA-7006267-0-0			
5.	PHOTO-TRANSISTOR BD ASSY	D-IA-5409227-0-0			
7.	TAPE PATH GUIDE	C-MD-7407690-0-0			
8.	WIRED ASSY	B-AD-7006591-0-0			
	WIRED ASSY (PL)	A-PL-7006591-0-0			
	MTG BAR	C-IA-7407716-0-0			
	H8#3 CONN.	E-SC-1205348-0-0			
9.	COVER ASSY	D-AD-7006589-0-0			
	COVER ASSY (PL)	A-PL-7006589-0-0			
	COVER TOP	E-IA-7407736-0-0			
	FRONT COVER	D-SC-1209706-0-0			
10.	PLATE, FRONT COVER	C-IA-7407720-0-0			
	SILK SCREEN (FRONT) WHT	C-SS-7407720-0-1			
	SILK SCREEN (FRONT) ORN	C-SS-7407720-0-2			
	SILK SCREEN (FRONT) BLK	C-SS-7407720-0-3			
11	PACKING INSTRUCTIONS	A-PI-3700113-0-0			
	REGULAR SLOTTED CARTON	A-PS-9905387			
	SCORED SHEET	A-PS-9905388			
	LAMINATED PAD	A-PS-9905389			

MECHANICAL

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

ELECTRICAL

FIND NO	DESCRIPTION	PART NO	DEPT USAGE PROD	CUST	F/C
1.	PAPER TAPE READER (PR68-D)	A-ML-PR68-D			
	PAPER TAPE READER (PR68 DA)	A-ML-PR68-DA			
	PWR & CONT SCHEMATIC DIAGRAM	D-BS-PR68-D-2			
	PWR & CONT SCHEMATIC DIAGRAM	D-BS-PR68-DA-2			
	MODULE UTILIZATION	B-MU-PR68-D-3			
	MODULE COUNT	A-PL-PR68-D-3			
	MODULE UTILIZATION	B-MU-PR68-DA-3			
	MODULE COUNT	A-PL-PR68-DA-3			
	ACCEPTANCE CRITERIA	A-SP-PR68-D-5			
	ENG. SPECS	A-SP-PR68-D-6			
	ACCESSORY LIST	A-AL-PR68-D-7			
	CHECKOUT PROCEDURE	A-SP-PR68-D-8			
6.	PRINTED CIRCUIT	PC-5008655-0-0			
8.	WIRED ASSY	B-AD-7006591-0-0			
	WIRED ASSY (PL)	A-PL-7006591-0-0			
	WIRE LIST (PR68-D)	K-WL-PR68-D-4			

FLEX MECHAL

FIND NO	DESCRIPTION	ART NO.	DEPT USAGE CUST	F/C

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION / MODEL

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. [illegible] DATE 11-16
CHK'D. [illegible] DATE 12-2-69
ENG. [illegible] DATE 12-21-69
PROJ. ENG. DATE
PROD. [illegible] DATE 1/64-16

NEXT HIGHER ASSY

SCALE
SHEET OF

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
DRAWING INDEX
LIST (PR68-D)

SIZE D | CODE DI | NUMBER PR68-D-1 | REV. E

DIST. 16

REVISIONS

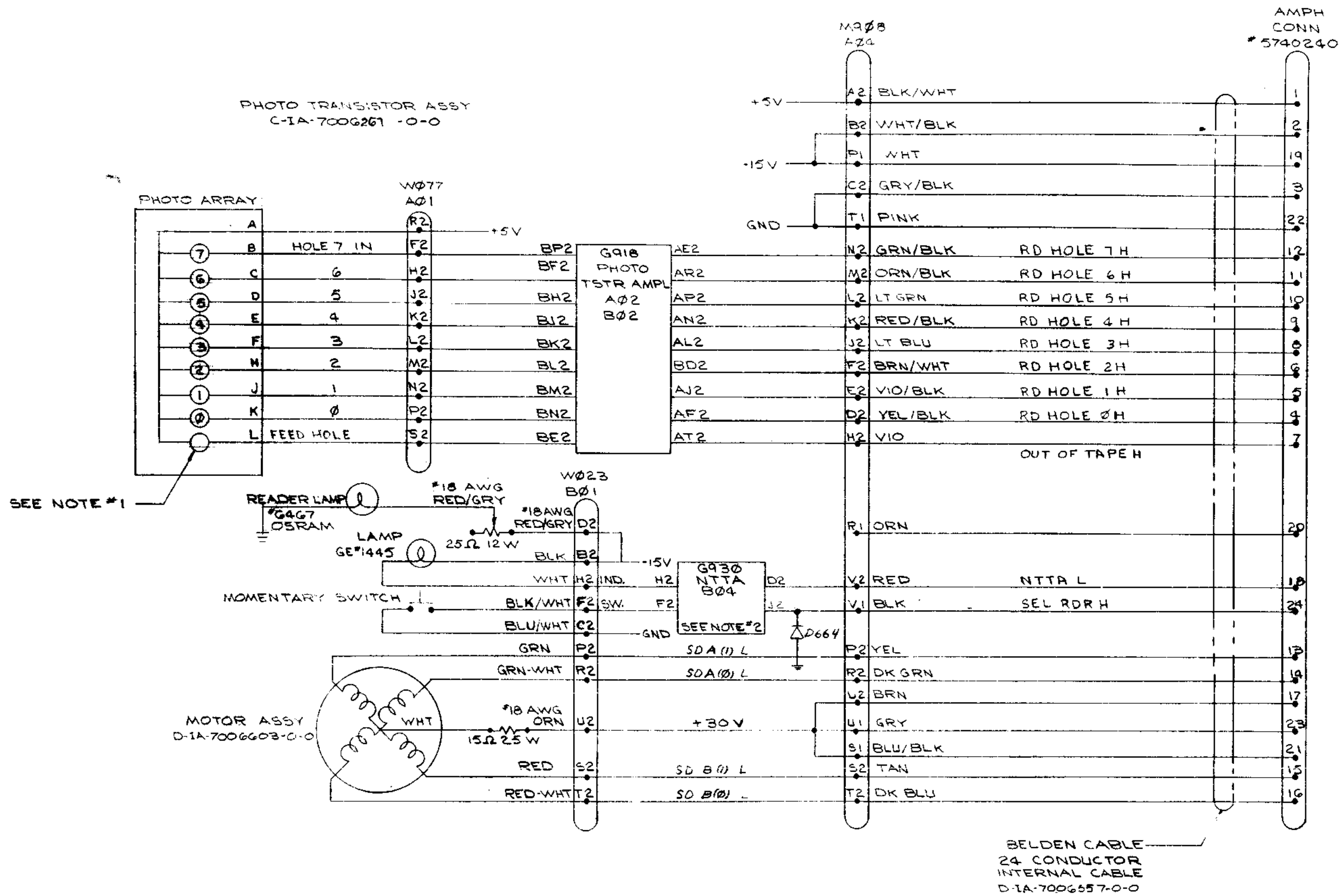
REV.	CHANGE NO.	CHK

DEC FORM NO DRD 100

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

NOTES:

1. THIS PHOTO TRANSISTOR USED TO DETECT OUT OF TAPE.
2. G930, NTTA, IS AN OPTION.
3. UNLESS SPECIFIED ALL WIRE TO BE #22 AWG STRD TEF INS.



REVISIONS			
CHK	CHANGE NO		REV
	PR68D-00011	JODICE 11-11-72	A
	PR68D-00015	5-3-71	B
	PR68D-00017	H. JODICE 3-20-72	C
	PR68D-00018	JODICE	D
	PR68D-00019	H. JODICE 4/2/73	E

FIRST USED ON OPTION / MODEL	QTY.	DESCRIPTION	PART NO	ITEM NO.
PR68-D		PARTS LIST		

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 11/1/67 · CHK'D DATE 11/13/67 · ENG. DATE 12-31-67 · PROJ. ENG. · PROD. DATE

NEXT HIGHER ASSY: A-ML-PR68-D

SCALE · SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: POWER & CONTROL SCHEMATIC DIAGRAM

SIZE D · CODE BS · NUMBER PR68-D-2 · REV. E

DEC FORM NO DPD 102A

	A	B
4	M9Ø8	✱ G93Ø
3		
2	(OUTPUT) G918	(INPUT)
1	WØ77	WØ23

✱ INDICATES NTTA OPTION

NOTES:

BØ1-MODULE FROM MOTOR ASSEMBLY
AØ2,BØ2-PHOTO TRANSISTOR AMPLIFIER
AØ4-CABLE ASSEMBLY MODULE
AØ1-PART OF PHOTO TRANSISTOR ASSY
BØ4-NTTA OPTION

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

REVISIONS	CHANGE NO.	REV.	CHK
	PR68D-00001	A	e.k.
B. DOUCETTE	PR68D-00002	B	ens
B. DOUCETTE	PR68D-00011	C	ens
JODICE	PR68D-00015	D	al

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. PAUL GARDNER	DATE 8/5/69	
CHK'D. Ken Rapp	DATE 11/12/69	
ENG. Geo. Kierstead	DATE 12-31-69	
PROJ. ENG.	DATE	
PROD. W. T. Clark	DATE 1-5-70	

DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
MODULE UTILIZATION LIST
PR68-D

A-ML-PR68-D

SIZE | CODE | NUMBER | REV.
D

SCALE NONE

SHEET 1 OF 1

DEC FORM NO.
DRB 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 11/10/69	DATE 11/11/69	1
ENG Geo. Beckman 12-31-67	PROD Alan T. Deroche	ISSUED SECT.
DATE	DATE 12-31-69	1

ITEM NO.	DWG NO./PART NO. CL BASIC VAR.	DESCRIPTION	QTY/VAR PR68-D	QTY/VAR PR68-DA	UNIT COST	UNIT QUANTITY	QUANTITY ISSUED
1	G918	PHOTO TRANSISTOR AMPLIFIER (ETCH REV (D))	1	1			
	*G93Ø	NTTA OPTION	1	—			
	**M060		1	—			
		ASTERISK (**) REFER TO PA63 MU FOR MODULE Location					
		ASTERISK (*) DESIGNATES OPTION					

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE COUNT (PR68-D)	P-MU-PR68-D-3	A	PL	PR68-D-3	D	PR68D-00015
	SHEET 1 OF 1	DIST.				

DEC FORM NO 16 1027
DRA 123

DRWG NO	REV LTR
K-WL-PR68-D-4	C

REVISIONS			
REV LTR	ECO NO	DATE	ENG
A	PR68D-00011	11-11-70	
B	PR68D-00015	5-3-71	
C	PR68D-00017	3-20-72	

DRAWN	DATE 11/4/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE WIRE LIST (PR68-D)
CHECKED K Reap	DATE 11/17/69		FOR TAPE# FILE#
ENG J Bertram	DATE 12-31-69		
PROJ ENG	DATE	ASSY NO A-ML-PR68-D	SIZE K / CODE WL / DWG.NO. PR68-D-4 / REV LTR C
PROD C.T. Hirsh	DATE 10/31/69	SCALE NONE / SHEET 1 OF 1	DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 3/2/72

TITLE PR68D and PR68DA Engineering Specifications

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
B	REDRAWN & REVISED	PR68D-00017	H.JODICE	3/72		3/23/72
C	REVISED PER ECO	PR68D-00018	J. GLEESON	8/72		

ENG	APPD	SIZE	CODE	NUMBER	REV
H. Jodice		A	SP	PR68-D-6	C

DEC 16-(327)-1071-N971
DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PR68D & PR68DA Engineering Specifications

SCOPE

The PR68D & DA are paper tape readers. They must be used with either a PA68F or PA63 controller. They interface to these controllers with a BCØ1H cable. They will read at a rate of 110 cps. They are designed to read both 6 & 8 level paper tape.

I. General Specifications

A. Mechanical: Dimensions: 7¼" X 11" X8½"
Weight: 4½ lb. (approx.)

B. Environmental: Maximum ambient temperature 50°C.

C. Electrical: +5v @ 300ma (approx.)
-15v @ 700-800ma
+30v @ amp running, 1 amp selected and idle.

D. Paper tape specifications

(Translucence 32-38%, Oil content 5-8%, Ash 100% max, Grit .04max, and color consistant).

II. Reader Signals

Pin	Signal	Description
P1,B2	-15v	Supplies current to reader amplifiers and bulbs.
R1		Must not be used.
A2	+5v	Supplies current to all logic components.
S1,U1,U2	+30v	Supplies current to drive stepping motor.
V1	Sel Rdr H	When signal is asserted, reader is enabled by rocker switch.
C2	GND	
T1	Return	Return path for current generated from -15v source.
D2	RD Hole Ø H	Signal is asserted when a hole is detected.
E2	RD Hole 1 H	Signal is asserted when a hole is detected.
F2	RD Hole 2 H	Signal is asserted when a hole is detected.
H2	Out of tape H	Signal is asserted when a hole is detected. Used to detect out of tape.

SIZE	CODE	NUMBER	REV
A	SP	PR68-D-6	C

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

II. Reader Signals Continued

J2	RD Hole 3 H	Signal is asserted when a hole is detected.
K2	RD Hole 4 H	Signal is asserted when a hole is detected.
L2	RD Hole 5 H	Signal is asserted when a hole is detected.
M2	RD Hole 6 H	Signal is asserted when a hole is detected.
N2	RD Hole 7 H	Signal is asserted when a hole is detected.
T2	SDB(Ø)L	+30v to GND. Used to increment motor.
S2	SDB(1)L	+30v to GND. Used to increment motor.
R2	SDA(Ø)L	+30v to GND. Used to increment motor.
P2	SDA(1)L	+30v to GND. Used to increment motor.
V2	NTTA	When signal is at GND, it places the readers in the non-torn tape allotment mode.

III. Alignment Procedure and Control Settings:

A. Tape Guide: The tape guide opening should be centered over the photo cells, making sure it does not block the light path. There should be a gap* between the tape guide and the paper tape.
*The gap should be approximately 3 thicknesses of the paper tape.

B. Light Bulb: Select bulbs with reasonably straight and uniform filaments. Position the bulb with the engraved end toward the Reader. There are two seams on the bulb which must be kept out of the light path.

C. Lamp Voltage: Set the adjustable power resistor in the lamp circuit for -5.8v. The bulbs' intensity and the output of the photocells may vary from one unit to the next, so that this resistor may have to be varied to compensate.

D. 6-8 Level Slide: This slide should be [illegible] reading 6 level paper tape and lowered for 8 level tape.

III. Continued

E. Sprocket Wheel: Lateral and rotational adjustment of the sprocket wheel provides clearance [illegible] paper tape and centers the data holes over the proper [illegible] cell apertures. Adjust the wheel in the following manner:

With the power on and the reader [illegible] place an 8 level, 1's & 0's tape [illegible] Loosen the two set screws and lower the [illegible] arm. Position the center of the data [illegible] to LEFT of that portion of the photo cell [illegible] by a glass dot.

Next, insert a 6 level 1's & 0's tape [illegible] reader. The center of the data holes should fall just to the RIGHT of the photo cell centers. (See Figure 1.).

Due to some misalignment in the photo cells themselves, the above alignment of the data holes to photo cells may have to be varied slightly. Retighten the set screws.

F. Lens and Light Arrangement:

With power on and the reader selected, pleace an 8 level tape into the reader with the data holes properly centered over the photo cells. Project the forward edge of the light band along the leading edge of the data holes by rotation of the bulb (or tilting of the lens if necessary). The lens should project a narrow light beam, but one that is wide enough to completely encompass the data holes. (See Figure 1). The bulb contains two seams which should be kept [illegible] light path.

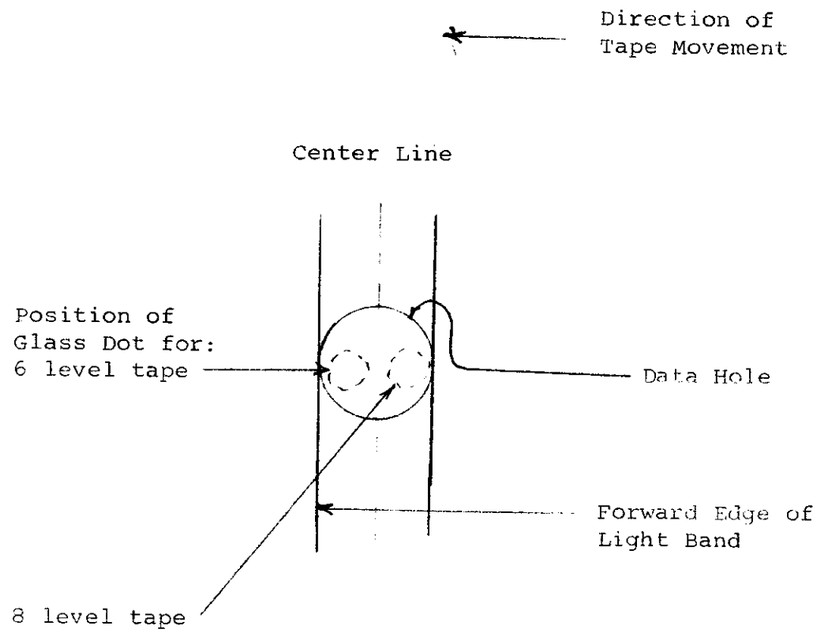


FIG 1

G. G918 Amplifier Adjust: Load [illegible]-Ø8-D2HC-PB into MEM (via TTY not reader), select program 1Ø using 1's & 0's loop. The object of this test is to select the margins between which the reader reads without error and then reset the pot to a point midway between the upper and lower margins. To do this, start the program and if the reader is running errorless, turn the pot until an error occurs: reverse direction of the pot until the next error occurs (keeping track of amount of turns between errors) and then reset the pot midway between these errors. (If at the start of the program the reader does not read, adjust the pot in one direction until an error occurs and use this point as one of the margins.) In either case a minimum of 10 turns is required. This is only a preliminary setting.

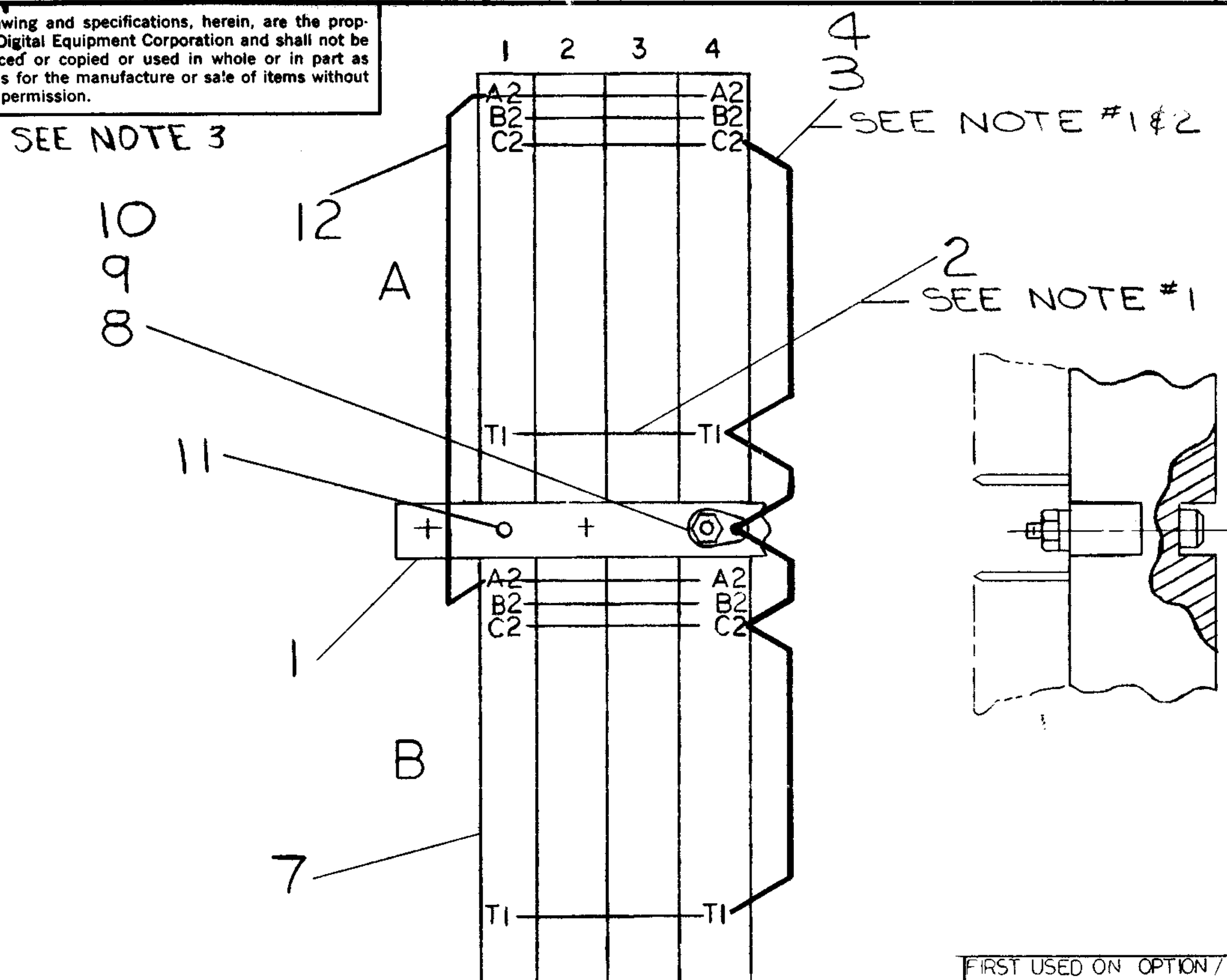
Repeat the above test for prog. Ø2 and then Ø7, using a binary count loop. In these tests keep SR's Ø3 and Ø6 = 1 while adjusting pot. Not less than 10 turns is accepted. After setting the adjustment pot to its direct center, turn it 1½ turns in the clockwise direction. (This is to allow for heating of the photo cell circuitry).

H. NTTA RDR Select Switch (PA63 only)

Put the following Rdr select and read program into loc. 7Ø2Ø.

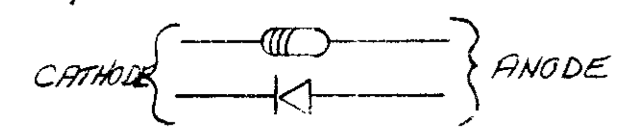
```
7Ø2Ø    76Ø4      START   SR Settings
        6312              NONE = Rdr ØØ
        73ØØ              SR11 = Rdr Ø1
        6Ø16              SR1Ø = Rdr Ø2
        6Ø11              SR1Ø,11 etc. = Rdr Ø3
        5224
        522Ø
```

With a tape loop in reader, put SRØ to 11 = Ø and start program. The NTTA lamp in reader ØØ should be lit and the reader should not be selected. Depress NTTA switch. The NTTA lamp should turn off and the reader should select. By putting any other SR to A 1, the lamp should turn on in reader ØØ and it should de-select.



NOTES:

1. CONNECTIONS ON ITEMS 2 & 3 TO BE SOLDERED & LOCATED AT MINMUM PRACTICAL HEIGHT ABOVE BLOCKS.
2. CONNECTOR BLOCK TO BE GROUNDED TO GROUND LUG AS SHOWN.
3. USE YELLOW WIRE (ITEM #5) FOR MACHINE WRAPPED & BLUE WIRE (ITEM #6) FOR ALL HAND WRAPPED WIRE EXCEPT WIRE FROM AØ1A2 TO BØ1A2. THIS SHOULD BE HAND WRAPPED WITH RED WIRE (ITEM 12)
4. D664 DIODE FROM BØ4J2 TO BØ4T1. CATHODE AT BØ4J2.



FIRST USED ON OPTION / MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PR68-D		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 —

		DATE
DRN.	PAUL GARDNER	8/6/69
CHK'D.	[illegible]	11/8/69
ENG.	[illegible]	12-31-69
PROJ. ENG.		
PROD.	[illegible]	

NEXT HIGHER ASSY: E-UA-PR68-D-0

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: WIRED ASSY (PR68-D)

SIZE | CODE | NUMBER: D [illegible] | REV. B

SCALE NONE

SHEET 1 OF 1

REVISIONS

CHK	CHANGE NO.	REV.
[illegible]	PR68D-00015 [illegible] 5-3-71	A
[illegible]	JODICE [illegible]	
[illegible]	PR68D-00019 [illegible] 4-24-73	B
	H. JODICE [illegible]	

DEC FORM NO. DRB 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. FLANDERS	CHECKED K. RUSS	SECTION
DATE 10/31/69	DATE 11/1/69	1
ENG DATE Geo. Barbour 12-31-69	PROD DATE 12-31-69	ISSUED SECT. 1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
1	C-IA-7407716-0-0	MTG BAR	1
2	1205541	BUS STRIP	A/R
3	9107560-01	#22 AWG BUS WIRE	A/R
4	9107265-09	#22 AWG TUBING TEFLON WHT	A/R
5	9105740-44	#30 AWG KYNAR (YEL)	A/R
6	9105740-66	#30 AWG KYNAR (BLU)	A/R
7	E-SC-1205348-0-0	CONN #7803	1
8	9007988	SCR SOC HD CAP #8-32 X 1 LG	1
9	9006766	TERM #2104-08-00	1
10	9006563	NUT KEPS #8-32	1
11	9006339	SCR SOC HD CAP #8-32 X 5/8 LG	1
12	9107586-22	24 AWG SOLID WIRE TEF INS RED	A/R
13	1100114	D664 DIODE	1

TITLE	ASSY NO	SIZE	CODE	NUMBER	REV	ECO NO.
WIRED ASSY (PRO8-D)	D-AD-7006591-0-0	A	PL	7006591-0-0	B	PR68D-00019
	SHEET 1 OF 1	DIST.	6			

DEC FORM NO.
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 3-4-72

TITLE PR68D & PR68DA MANUFACTURING TEST PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
B	REDRAWN & REVISED	PR68D-00017	H. JODICE	3/72	[illegible]	3/23/72
C	ECO CHANGE	PR68D-00018	J. GLEESON	8/72	[illegible]	8/13/72

ENG	APPD	SIZE	CODE	NUMBER	REV
H. Jodice	[signature]	A	SP	PR68-D-8	C

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PR68D & PR68DA MANUFACTURING TEST PROCEDURE

1.Ø EQUIPMENT

1.1 PDP8L, PDP8E, PDP8I (positive bus)
1.2 Teletype
1.3 453 scope and voltage probes
1.4 PA63 of PA68F reader, punch control
1.5 PP67-D BRPE punch
1.6 Reader cable BC01H-Ø-Ø
1.7 Punch cable BC01F-Ø-Ø
1.8 External power supplies (798) (H7xx)

2.Ø TEST STATION SET UP

2.1 Set up PA63 or PA68F to computer as shown in respective test station set up procedure.
2.2 Connect reader to reader-punch control. For PA63 plug cable into slot D36. For PA68F plug reader cable into slot B16.
2.3 Turn power on.

3.Ø ALIGNMENT PROCEDURE AND CONTROL SETTINGS

3.1 Tape hold down bracket: the tape hold down bracket opening should be centered over the photocells, making sure it does not block the light path. There should be a minimum gap between the tape hold down bracket and the paper tape, approximately 3 thicknesses of paper tape.
3.2 Light bulb: select bulbs with reasonably straight and uniform filaments. Position the bulb with the engraved end toward the reader. There are two seams on the bulb which must be kept out of the light path.
3.3 Lamp Voltage: set the adjustable power resistor in the lamp circuit for -5.8v. The bulbs intensity and the output of the photocells may vary [illegible] next, so that this resistor may have to be varied to compensate.
3.4 6-8 level slide: this slide should be raised when reading 5 level paper tape and lowered for 8 level tape.

SIZE	CODE	NUMBER	REV
A	SP	PR68-D-8	C

3.5 Sprocket Wheel: this adjustment can be made with or without the use of a scope.

3.5.1 Without scope: Lateral and rotational adjustment of the sprocket wheel provides clearance for the paper tape and centers the data holes over the proper photocell apertures. Adjust the wheel in the following manner:

With power on and the reader selected, place 8 level 1's and 0's tape in the reader.

Loosen the two set screws in the sprocket wheel and lower the tape holding arm. Position the center of the data holes just to the left of that portion of the photocell indicated by a glass dot. This can be set by moving the sprocket either backwards or forwards on the motor shaft. Next, insert a 6 level 1's and 0's tape in the reader. The center of the data holes should fall just to the right of the photocell centers. (See figure number 1).

Due to some misalignment in the photocells themselves, the above alignment of the data holes to photocells may have to be varied slightly.

Retighten the set screws on the sprocket wheel and recheck alignment conditions.

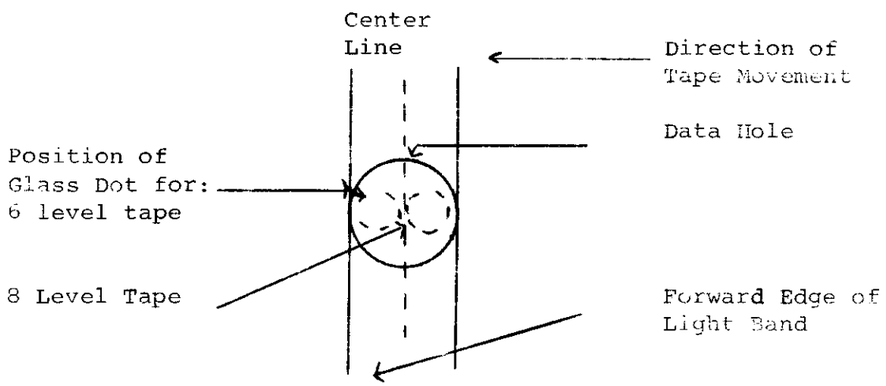


FIG. 1

3. .2

3.5.2 With scope: with the use of a model 453 scope and voltage probes, set the scope as follows:

a. set channel 1 to 1.0 volts per CM
b. set channel 2 to .2 volts per CM
c. set time to .2 ms per CM
d. put channel 1 probe on AØ4T2 (+30 strobe) of the reader logic.
e. put channel 2 probe on AØ4D2 (reader hole 0) of the reader logic.

Put 1's and 0's paper tape loop in reader and put the following reader read program into location 7000 of the computer.

```
7000/7300
    /6016
    /6011
    /5202
    /5200
```

Load and start 7000. If there is no data signal when the program is started, turn pot on G918 until a data pulse should coincide with strobe such that the positive portion of the data pulse should be centered on the negative portion of the strobe. (See figure 2). If waveform is not correct, sprocket wheel is not aligned. Stop machine, loosen sprocket wheel and move until proper position is found. Reference 3.5.1. Align sprocket wheel until this condition is obtained.

3.6 G918 Amplifier Adjust: Load MAINDEC* into memory (via TTY---not reader). Select program**, using 1's and 0's loop. The object of this test is to select the margins between which the reader reads without error and then reset the pot to a point midway between the upper and lower margins. To do this, start the program and if the reader is running errorless, turn the pot until an error occurs. Reverse direction of the pot until the next error occurs (keeping track of amount of turns between errors) and then reset the pot midway between these errors. If at the start of the program the reader does not read, adjust the pot in one direction until an error occurs and use this point as one of the margins. In either case a minimum 10 turns is required. This is only a preliminary setting.

* MAINDEC-Ø8-D2HC-PB ** PGM 10

Repeat the above test for program 02 and then 07, using a binary count loop. In these tests keep SR's 02 and 06 - 1 while adjusting pot. Not less than 10 turns is acceptable. After setting the adjustment pot to its direct center, turn it 1½ turns in the clockwise direction. This is to allow for heating of the photocell circuitry.

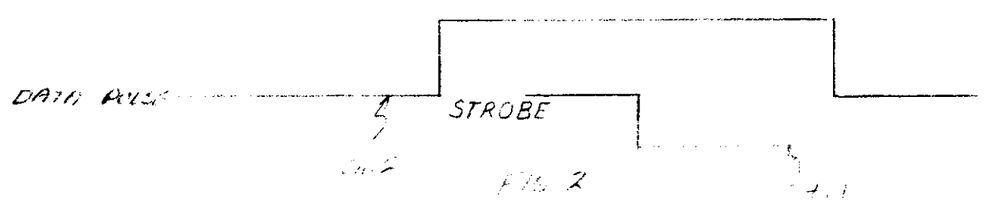
3.7 On line heat test: 50°C/120°F for 30 minutes. Run MAINDEC-08-D2HC-PB tests 2, 7 and 10.

4.Ø NTTA READER SELECT SWITCH (PA63 only)

4.1 Put the following reader select and read program into location 7020.

```
7020/7604       START            SR Settings
     6312            NONE = Rdr ØØ
     7300            SR11 = Rdr Ø1
     6016            SR1Ø = Rdr Ø2
     6011          SR1Ø,11 = Rdr Ø3 etc.
     5224
     5220
```

With a tape loop in reader, pur SRØ to SR11 = Ø load add and start at 7020. The NTTA lamp in reader ØØ should be lit and the reader should not be selected, depress NTTA switch. The NTTA lamp should turn off and the reader should select. By putting any other SR to A 1, the lamp should turn on in reader ØØ and it should de-select.



DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10/20/70

TITLE PR68-D ACCEPTANCE CRITERIA

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO PR68D-00015	00015	JODICE	5-3-71		
B	ECO PR68D-00018	00018	J. GLEESON	8-72		

ENG	APPD	SIZE	CODE	NUMBER	REV
George Miller		A	SP	PR68-D-5	B

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PR68-D ACCEPTANCE CRITERIA

SCOPE

To define the criteria necessary to accept for shipment the positive bus PR68D typesetting 6 or 8 level paper tape reader.

TEST SOFTWARE

Program - MAINDEC-Ø8-D2HC-PB
Prints - See master list PR68D
Paper tape - Yellow oiled Part # 36-10730-1 (6 level)
36-10730-2 (8 level)

TEST HARDWARE

Computer - Positive bus PDP-8/L or PDP-8/I
Controller - PA63
Punch - PP67D

PROCEDURE

1. Complete standard option check list.
2. Run MAINDEC-Ø8-D2HC-PB. Using 6 level tape, as follows-
   Test 5 - full speed (SR6=1) 5 minutes
   Test 6 - full speed (SR6=1) 10 minutes
   Test 7 - full speed (SR6=1) 20 minutes
3. Repeat using 8 level tape

NOTE - No errors allowed except those caused by dirt, chad, or knotted tape.

SHIPPING SOFTWARE

MAINDEC-Ø8-D2HC-PB
Prints - All prints listed on PR68D master list.
Also see accessory list.

SHIPPING HARDWARE

1. BCØ1H-Ø-Ø cable per reader.

	SIZE	CODE	NUMBER	REV
	A	SP	PR68-D-5	B

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

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

MADE BY	George Miller	CHECKED	SECTION	
DATE	10-30-70	DATE		
ENG	George Miller	PROD	ISSUED SECT.	
DATE	10-30-70	DATE 11-13-70		

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	QUANTITY/VARIATION
1	A-ML-PR68-DA	PRINTS	1
2	D-UA-BC01H-0-0	READER CABLE - TO PA63 OR PA68F	(1) *

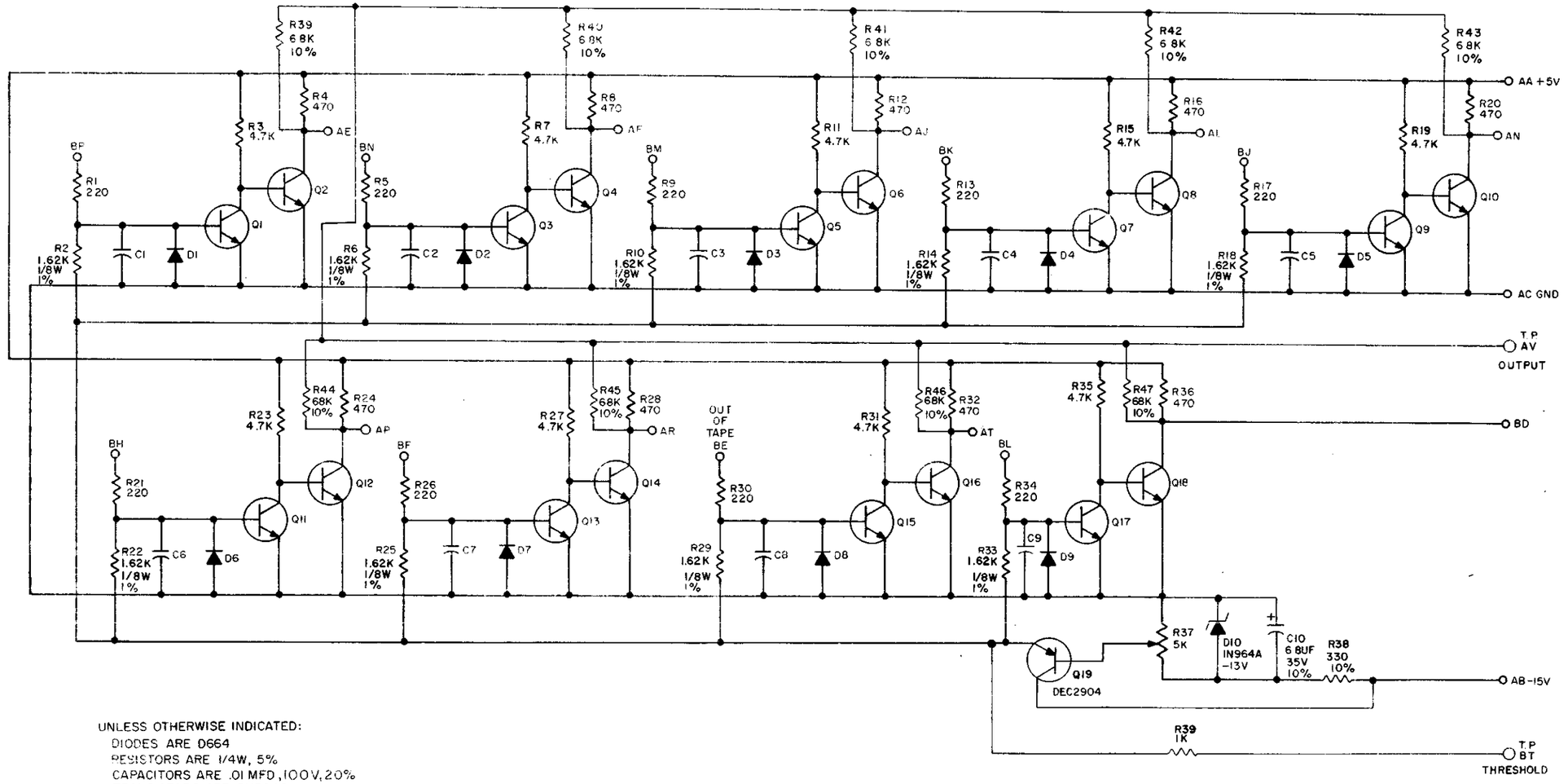
* ORDER SEPARATELY SEE CONSTRUCTION REQUISITION

KIT CHECK BY ____ DATE ____

INSTALLATION CHECK BY ____ DATE ____

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV	ECO NO.
PAPER TAPE READER	SHEET 1 OF 1	A	AL	PR68-D-7	B	PR68-0-0029
		DIST				

DEC FORM NO.
DRA 120



UNLESS OTHERWISE INDICATED:
DIODES ARE D664
RESISTORS ARE 1/4W, 5%
CAPACITORS ARE .01 MFD, 100V, 20%
TRANSISTORS ARE 2N3646

○ INDICATES TEST POINT

REVISIONS			
CHK	CHG NO.	REV.	
	C0001	A	
	C0002		
	C0003	B	

DRN R BUTLER DATE 4/1/69
CHK'D DATE 4/1/69
ENG DATE 6/17/69
PROD. DATE

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA
2N3646	2N3009	IN964A -13V	SAME
D664	IN3606	DEC2904	2N1132

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

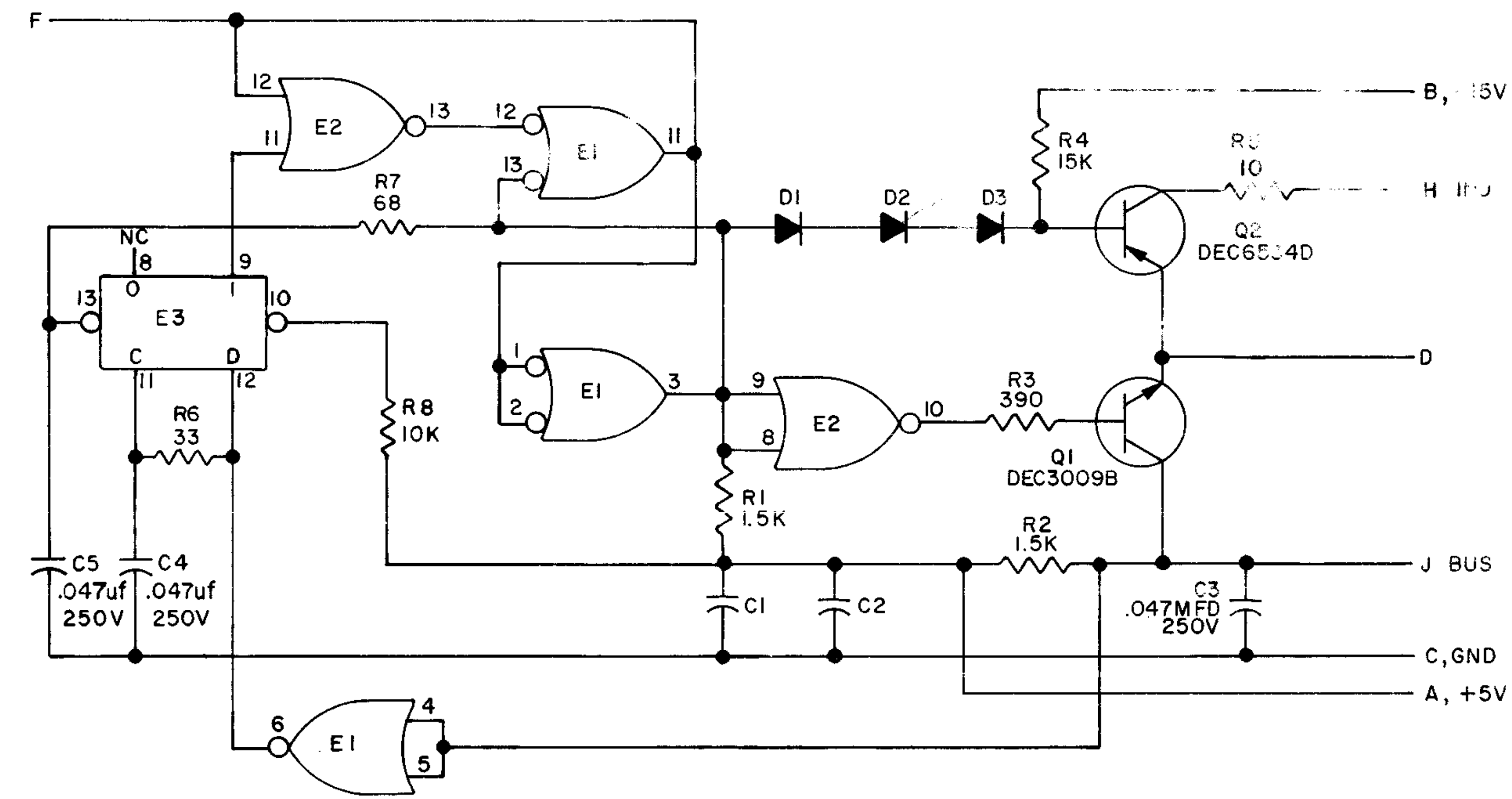
TITLE PHOTO TRANSISTOR AMPLIFIER G918

SIZE	CODE	NUMBER	REV.
C	CS	G918-0-1	B

PRINTED CIRCUIT REV D

SIZE C | CODE CS | NUMBER G918-0-1 | REV. B

DEC FORM NO. DRC 102



UNLESS OTHERWISE INDICATED:
CAPACITORS ARE .01MFD, 100V, 20%
RESISTORS ARE 1/4W, 5%
DIODES ARE D664

E1 IS DEC7400
E2 IS DEC7402
E3 IS DEC7474
PIN 14 ON EACH IC = +5V
PIN 7 ON EACH IC = GND

REVISIONS		
REV.	A	B
CHG NO.	00001	00002
CHK		

DRN. BUTLER DATE 11-4-69
CHK'D DATE 11/5/69
ENG. DATE
PROD. DATE

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA
D664	IN3606
DEC3009B	2N3009B
DEC6534D	MPS6534

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE NON-TORN TAPE

SIZE | CODE | NUMBER | REV B

PRINTED CIRCUIT REV. B

DEC FORM NO. DRB 102

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
E-UA-PR68-D-Ø	K	1	READER ASSY
A-PL-PR68-D-Ø	K	2	READER ASSY(PL)
D-DI-PR68-D-1	D	2	DRAWING INDEX
D-BS-PR68-DA-1	C	1	POWER & CONTROL SCHEMATIC DIAGRAM
B-MU-PR68-D-3	D	1	MODULE UTILIZATION
A-PL-PR68-D-3	D	1	MODULE COUNT
K-WL-PR68-D-4	C		WIRE LIST
A-SP-PR68-D-6	C	6	ENGINEERING SPECS
B-AD-7006591-0-0	B	1	WIRED ASSY
A-PL-7006591-0-0	B	1	WIRED ASSY (PL)
A-SP-PR68-D-8	C	5	CHECKOUT PROCEDURE
NOTE: FOR IN HOUSE USE ONLY -			
A-SP-PR68-DA-2	A	2	ACCEPTANCE CRITERIA
A-AL-PR68-D-7	B	1	ACCESSORY LIST

REVISIONS

REV.	DATE	CHG. NO.	APP'D.
A	3/70	PR68D-2	B.D.
B	6/70	PR68D-7	B.D.
C	11/70	PR68D-11	G.M.
D	12/70	PR68D-12	H.J.
E	1/71	PR68D-13	H.J.
F	4/71	PR68D-15	H.J.
H	3/72	PR68D-17	
J	3/72	PR68D-18	
K	4/74	PR68D-20	
L	7/73	PR68D-21	E.K.
M	1/74	PR68D-21	
N	2/74	PR68D-22	
P	8/74	PR68D-23	

DRN. G. FLANDERS	DATE	11/10/
CHK'D. B. Russ	DATE	2/26/70
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE	
FIRST USED ON	PR68-DA	
SCALE		
SHEET 1 OF 2		

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE

PAPER TAPE READER
(PR68-DA)

SIZE	CODE	NUMBER	REV.
A	M1	PR68-DA	P

DIST.

DEC FORM NO.16-1033
DRA 103

ADDITIONAL CUSTOMER PRINTS

Drawing Number	Rev Let	Title
C-CS-G918-Ø-1	#	Photo amplifier
D-UA-BCØ1H-Ø-Ø	#	CABLE CONNECTOR
D-CS-M978-Ø-1	#	CONNECTOR CORD

Rev.	Date	Change Number

H Jorie 3/22/71
Requested By Date

3/22/71
Authorized Date

REV.

2 of 2 A-ML-PR68-DA

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NOTES:

1. THIS PHOTO TRANSISTOR USED TO DETECT OUT OF TAPE.
2. UNLESS SPECIFIED ALL WIRE TO BE #22 AWG STRD TEF INS.
3. ADD #30 AWG WIRE FROM BØ4 F2 TO AØ4 V1 FOR PR68DA ONLY

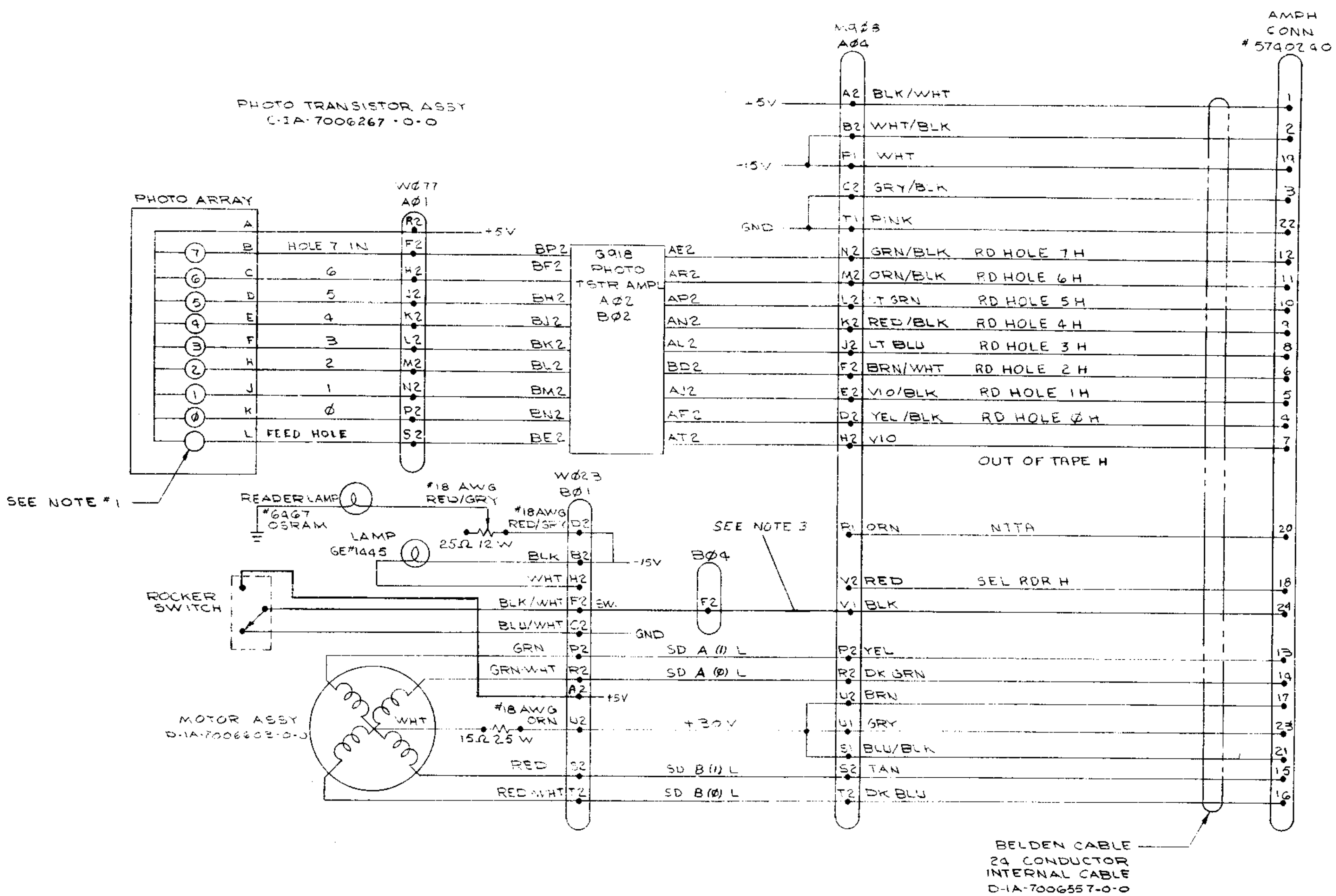


PHOTO TRANSISTOR ASSY
D-IA-7006267-0-0
PHOTO ARRAY
HOLE 7 IN
FEED HOLE
SEE NOTE #1
WØ77
AØ1
G918
PHOTO
TSTR AMPL
AØ2
BØ2
M908
AØ4
AMPH
CONN
#5740240
BLK/WHT
WHT/BLK
WHT
GRY/BLK
PINK
GRN/BLK
ORN/BLK
LT GRN
RED/BLK
LT BLU
BRN/WHT
VIO/BLK
YEL/BLK
VIO
RD HOLE 7 H
RD HOLE 6 H
RD HOLE 5 H
RD HOLE 4 H
RD HOLE 3 H
RD HOLE 2 H
RD HOLE 1 H
RD HOLE Ø H
OUT OF TAPE H
READER LAMP
#6467
OSRAM
#18 AWG
RED/GRY
LAMP
GE#1445
25Ω 12 W
WØ23
BØ1
ROCKER
SWITCH
SEE NOTE 3
BØ4
ORN
NTTA
RED
SEL RDR H
BLK
YEL
DK GRN
BRN
GRY
BLU/BLK
TAN
DK BLU
SD A (1) L
SD A (Ø) L
SD B (1) L
SD B (Ø) L
+30 V
MOTOR ASSY
D-IA-7006603-0-0
15Ω 25 W
BELDEN CABLE
24 CONDUCTOR
INTERNAL CABLE
D-IA-7006557-0-0

REV.	CHANGE NO	CHK
A	PR68D-00007	FV
B	PR68D-00011	
C	PR68D-00015	
D	PR68D-00017	
E	PR68D-00018	

FIRST USED ON OPTION/MODEL: PR68-DA

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.

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: POWER & CONTROL SCHEMATIC DIAGRAM

NEXT HIGHER ASSY: A-ML-PR68-D

SIZE: D CODE: BS NUMBER: PR68-DA-1 REV: E

DEC FORM NO. DRD 100

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
D-DI-PP67-C-2	C	1	DRAWING INDEX LIST PP67-C
D-UA-PP67-C-0	E	2	PAPER TAPE PUNCH PP67-C
A-PL-PP67-C-0	E	1	PAPER TAPE PUNCH PP67-C (PL)
D-CS-PP67-C-1	C	1	PUNCH CONTROL
D-AD-7006385-0-0	D	2	PUNCH CONTROL PP67-C
A-PL-7006385-0-0	D	3	PUNCH CONTROL PP67-C (PL)
A-SP-PP67-C-4			ADJUSTMENT PROCEDURE PP67-C/D
A-SP-PP67-C-6		5	ADJ. PROC FOR USE ON PA611-P
A-AL-PP67-C-3	A	1	ACCESSORY LIST
A-SP-PP67-C-5	B	4	ACCEPTANCE CRITERIA PP67-C/D

REVISIONS

REV.	DATE	CHG. NO.	APP'D.
A	7/69	00003	B.D.
B	7/69	00005	B.D.
C	11/70	00007	H.J.
D	4/71	00008	H.J.
E	2/72	00009	E.T.
F	8/72	[illegible]	H.J.
H	2/74	00012	[illegible]

DRN. G. MARINI DATE 6/11/69
CHK'D. J. MADDEN DATE 6/16/69
ENG. [illegible] DATE
PROJ. ENG. [illegible] DATE
PROD. DATE
FIRST USED ON —
SCALE —
SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE PAPER TAPE PUNCH PP67-C

SIZE A CODE ML NUMBER [illegible] REV H

DIST.

DEC FORM NO

ADDITIONAL CUSTOMER PRINTS

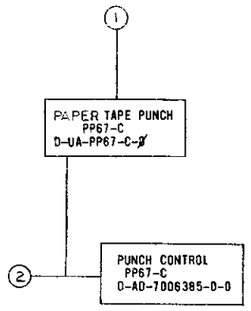
Drawing Number	Rev Let.	Title
B-CS-G915-C-1	#	PUNCH Control G915
D-UA-BC01F-0-0	#	CABLE
B-CS-M979-0-0	#	CABLE CONNECTOR

Rev.	Date	Change Number

Requested by [signature] Date 2/22/7_

Authorized by [illegible] Date [illegible]

REV. H



MECHANICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F/C
1	PAPER TAPE PUNCH PP67-C	D-UA-PP67-C-Ø			
	PAPER TAPE PUNCH PP67-C (PL)	A-PL-PP67-C-Ø			
	COVER REWORK	C-MD-7405200-0-0			
	SWITCH LABEL	A-SS-7405272-0-0			
	CABLE PUNCH PP67-C	D-IA-7006345-0-0			
2	PUNCH CONTROL PP67-C	D-AD-7006385-0-0			
	PUNCH CONTROL PP67-C (PL)	A-PL-7006385-0-0			
	BRACKET MTG PUNCH CONTROL	D-MD-7407348-0-0			
	BRACKET MTG 18 PIN BLOCK	B-MD-7407364-0-0			
	SHIELD PUNCH CONTROL	C-MD-7407366-0-0			

ELECTRICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F/C
1	PAPER TAPE PUNCH PP67-C	A-ML-PP67-C			
	PUNCH CONTROL	D-CS-PP67-C-1			
	[illegible] LIST	A-ML-PP67-C-3			
	ADJUSTMENT PROCEDURE	A-SP-PP67-C-4			
	ACCEPTANCE PROCEDURE	A-SP-PP67-C-5			
	ADJ PROC FOR USE ON PA611-P	A-SP-PP67-C-6			
2	PUNCH CONTROL PP67-C	D-AD-7006385-0-0			
	PUNCH CONTROL PP67-C	A-PL-7006385-0-0			

ASSY. DWG. NO. D-UA-PP67-C-Ø

QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST			

REVISIONS			
CHK	CHANGE NO		REV
[illegible]	51671	[illegible]	A
[illegible]	PP67C-00008	[illegible]	B
HJODICE	PP67C-000009	[illegible]	C
JODICE		[illegible]	

FIRST USED ON OPTION/MODEL: PP67-C

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: [illegible]
FINISH: [illegible]

DRN	[illegible]	DATE 6/1/67
CHK'D	[illegible]	DATE 6/1/67
ENG.	[illegible]	DATE [illegible]
PROJ. ENG.	[illegible]	DATE [illegible]
PROD.	[illegible]	DATE [illegible]

NEXT HIGHER ASSY: [illegible]
SCALE: [illegible]
SHEET 1 OF 1

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

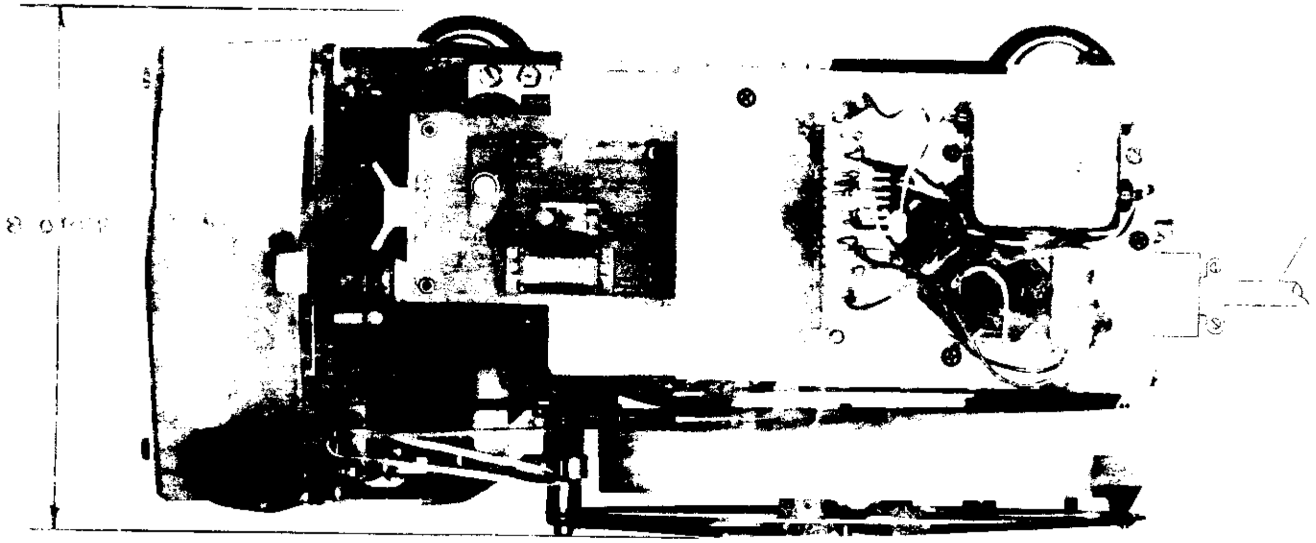
TITLE: DRAWING INDEX LIS PP67-C

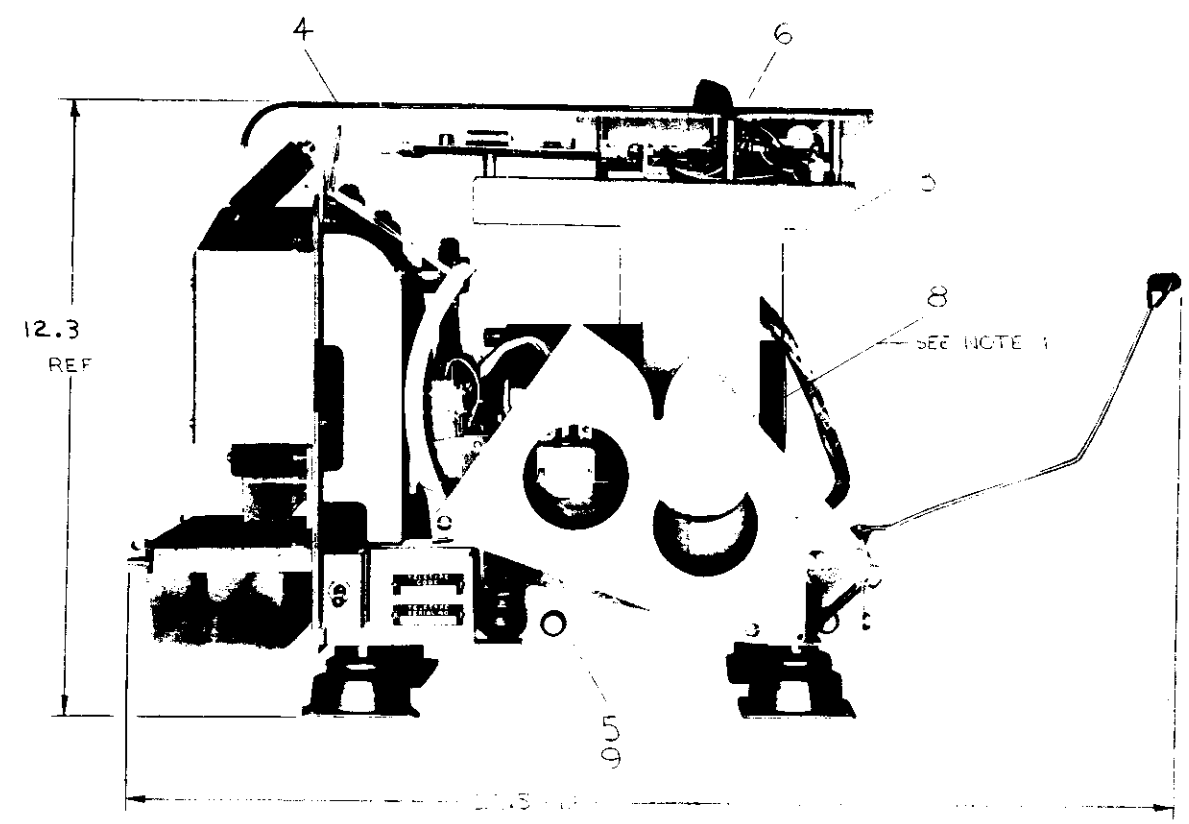
SIZE D | CODE DI | NUMBER PP67-C-2 | REV. C
DIST. G

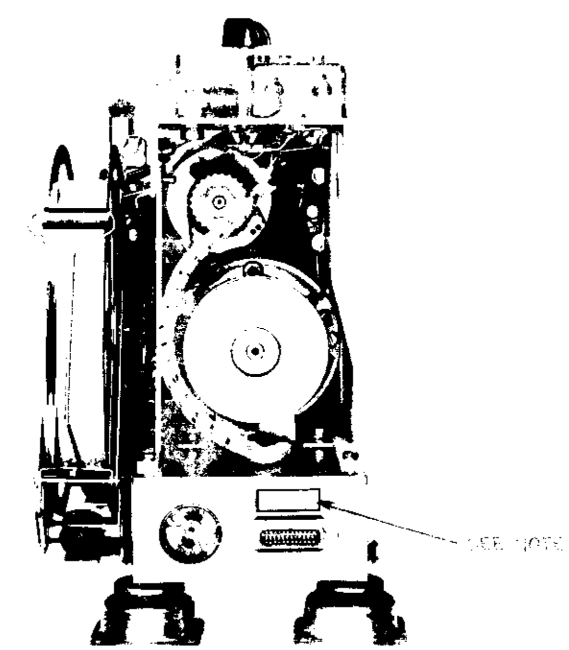
DEC FORM NO DRD 100

LEGEND	
NUMBER	VARIATION
PP67-C	60HZ - 6 LEVEL - POS PUNCH
PP67-CA	50HZ - 6 LEVEL - POS PUNCH
PP67-D	60HZ - 8 LEVEL - POS PUNCH
PP67-DA	50HZ - 8 LEVEL - POS PUNCH

NOTES:
1. MOTOR ON BRPE PUNCH SHOULD BE ... VARIATIONS ON PARTS LIST FOR ANY 50HZ OPERATION ... PART NO. ONLY FOR 50HZ OPERATION.
2. ... COLOR CODE ON SHEET METAL ... DO NOT SPREAD PINS.







TOLERANCES
DECIMALS

REVISIONS		
CHANGE NO.	REV.	
PP67C-00003	A	DOUCETTE
PP67C-00004	B	B. DOUCETTE
PP67C-00006	D	B. DOUCETTE / H. JODICE
PP67C-00012	E	ED. REED

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

QTY | DESCRIPTION | PART NO.

digital EQUIPMENT CORPORATION

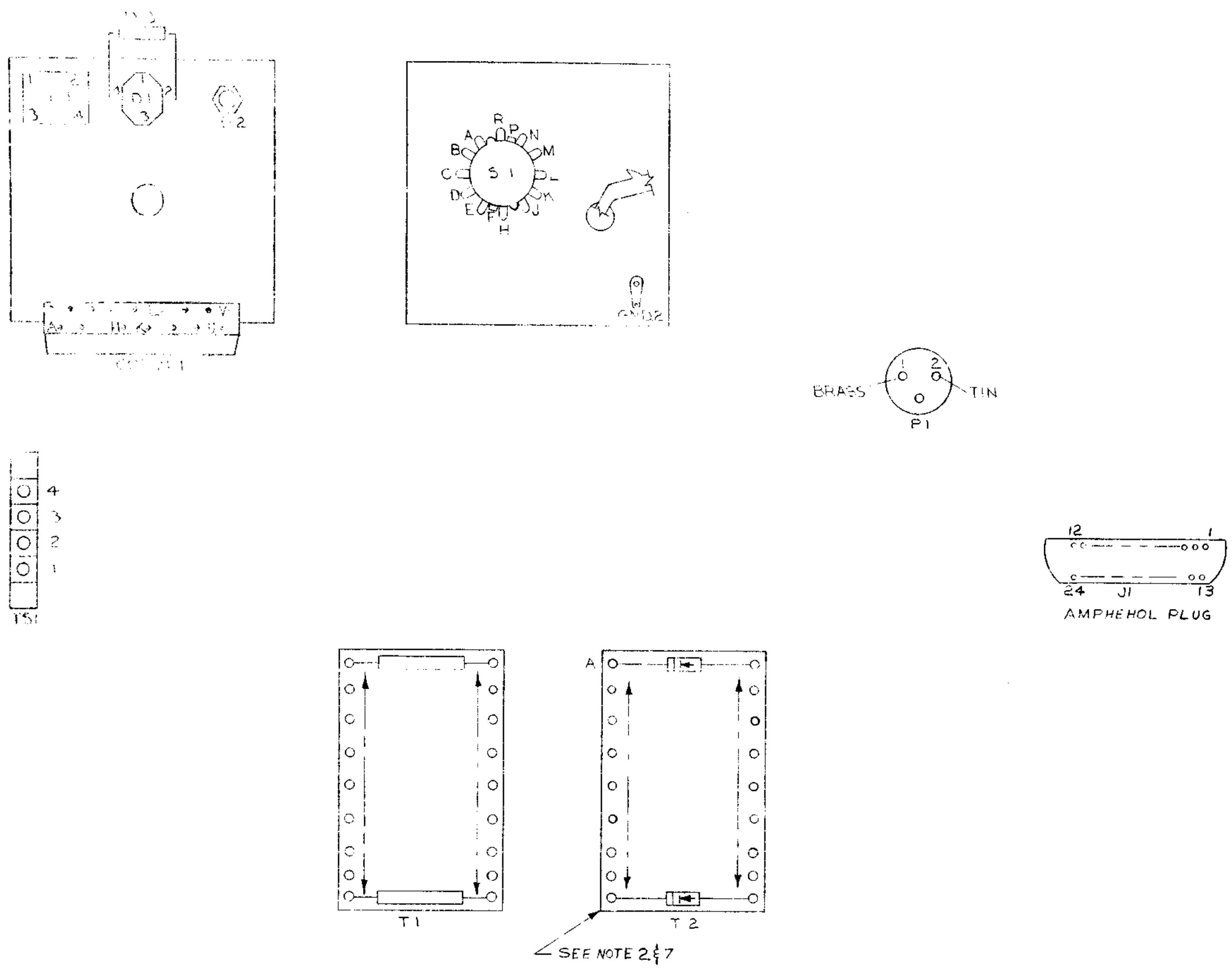
TITLE

SIZE CODE D | NUMBER UA PP67-C-Ø | REV. E

SHEET 1 OF 2

DIST. G

DEC FORM NO.



WIRE TABLE

ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	CONNECTIONS FROM	CONNECTIONS TO	EQUIP FROM WITH ITEMS	EQUIP TO WITH ITEMS	LENGTH
**	18	RED	FL1-4	TS1-2	—	2	
**	18	RED	D1-4	TS1-3	—	2	
**	18	WHT	FL1-1	P1-1(BRASS)	—	2	
**	18	BLK	FL1-2	P1-2(TIN)	—	2	
**	22	RED	S1-A-B	J1-13	—	*A,1	
**	22	ORN	S1-L	J1-23	—	*A,1	
**	22	BLU	CONN1-U-V	J1-18	—	*A,1	
**	22	YEL	S1-P	J1-21	—	*A,1	
**	22	BLK	GND 2	J1-11	—	*A,1	
**	18	BRN	CONN1-K-L	T2-A	—	*A	
**	22	WHT	S1-J	LOW-TAPE SWITCH	—	*A	

* LETTER DESIGNATION "A" INDICATES WIRE IS TO BE SOLDERED.

** ALL ITEMS IN THE "FROM" COLUMN HAVE BEEN PRE ASSEMBLED (SOLDERED) ON ASSY # D-AD-7006385-0-0 SH #2. THE ONLY CONNECTIONS THAT HAVE TO BE MADE ARE LISTED IN "TO" COLUMN AND "EQUIP TO WITH ITEM" COLUMN.

1. NOTE: REMOVE WHT WIRE FROM T2-A TO J1-18 ON PURCHASED PUNCH BRPE-18.
2. NOTE POLARITY OF DIODE ON T2.
3. NOTE: CONNECTOR J1, PINS 10, 14, 15, 16, 18 & 19 ARE BUSSED TOGETHER USING AWG #22 WIRE.
4. NOTE: REMOVE YELLOW WIRE FROM J1-21 TO CENTER ARM OF OUT-OF-TAPE SWITCH OF PURCHASED PUNCH, AND RERUN THIS WIRE FROM CENTER ARM OF OUT-OF-TAPE SWITCH TO S1-J.
5. NOTE: J1, P1, T1, T2, TS1 COMPONENTS ARE LOCATED ON PUNCH ASS'Y (BRPE)
6. NOTE: ALL WIRES GOING TO J1 AMPHENOL PLUG SHOULD HAVE INSULATORS WHEREVER POSSIBLE.
7. NOTE: REPLACE NINE (9) DIODES ON BOTTOM OF ALL BRPE PUNCHES USED FOR POSITIVE LOGIC (PP67C & D) WITH IN91 DIODES. PART # 1101515. THE IN91'S ARE MOUNTED IN THE REVERSE POLARITY OF ORIGINAL PURCHASED ARRANGMENT.

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

FIRST USED ON OPTION/MODEL: PP67-C

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 5/6/61
CHK'D. DATE 5-12-61
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

NEXT HIGHER ASSY: D-UA-PP67-C
SCALE —
SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PAPER TAPE PUNCH PP67-

SIZE D CODE UA NUM PP67-C 0 REV. E
DIST. G

REVISIONS: REV | CHANGE NO. | CHK

DEC FORM NO DRD 102A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

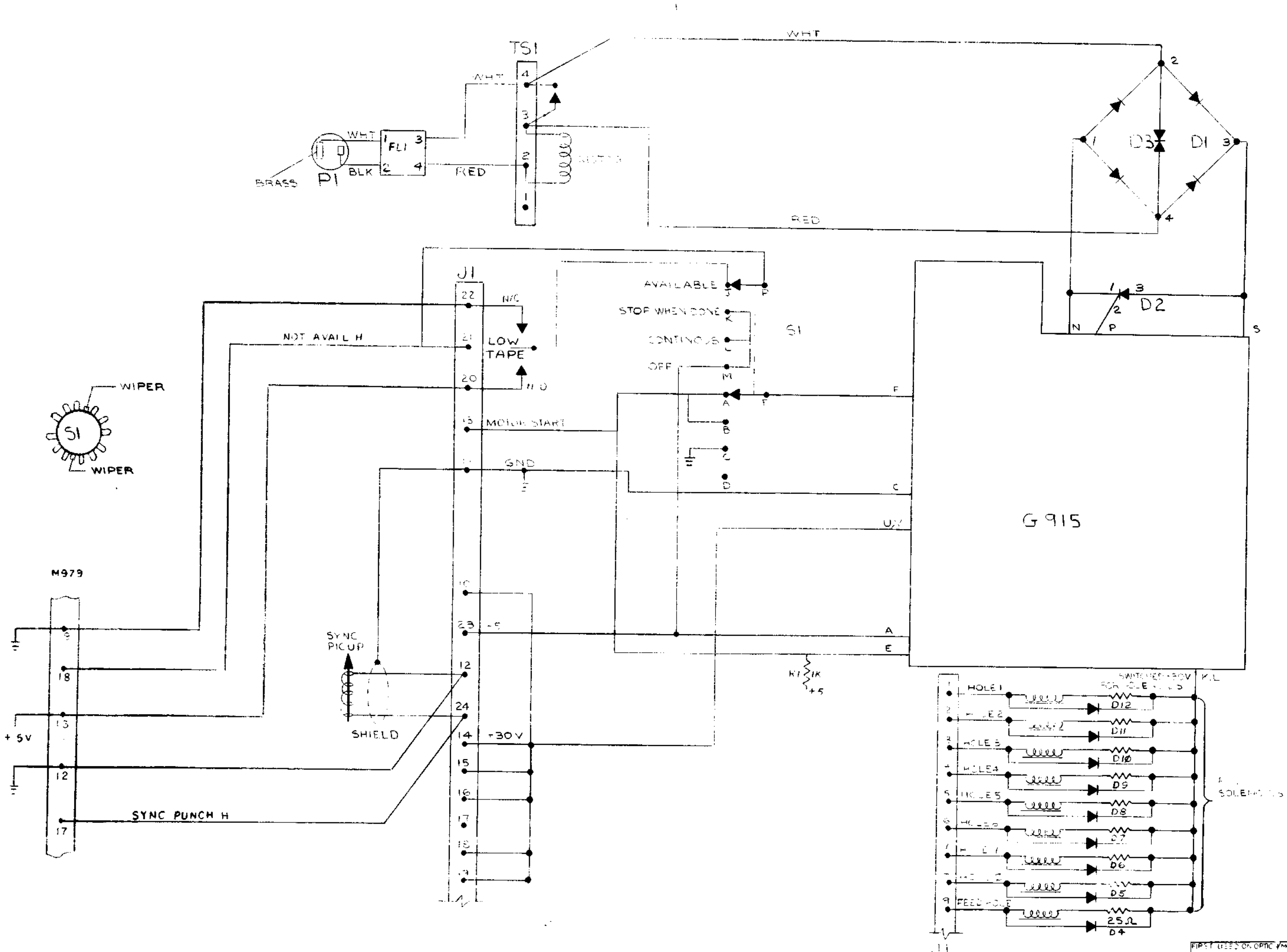
PARTS LIST

MADE BY G. MARINI DATE 5/6/69	CHECKED D. HEALY DATE 5/8/69	SECTION 1
ENG DATE 6/ /69	PROD DATE 6/11/69	ISSUED SECT. 1

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION PP67-C	PP67-CA	PP67-D	PP67-DA
~~1~~	~~9107255~~	~~TUBING SHRINKABLE, WHITE 1/8~~	~~A/R~~			
~~2~~	~~9006780~~	~~CONN #34144 AMP INC~~	~~5~~			
3	D-AD-7006385-0-0	PUNCH CONTROL PP67-C	1	1	1	1
4	C-MD-7405200-0-0	COVER, REWORK	1	1	1	1
5	3004774	PUNCH BRPE18 PURCHASE #51193	1	1	-	-
6	A-SS-7405272-0-0	SWITCH LABEL	1	1	1	1
7	D-IA-7005240-0-0	6' Power Cable	1	1	1	1
8	1204851	MOTOR-LMU6	-	1	-	1
9	3004773	PUNCH BRPE 11	-	-	1	1
10	D-IA-BC01F-0-0	CONNECTOR CABLE (PP67-C to PA63 or PA68-F)	1	1	1	1
11	———	KRYLON #2401 ORANGE	A/R	A/R	A/R	A/R

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO
PAPER TAPE PUNCH PP67-C	D-UA-[illegible]-C-Ø	A	PL	PP67-C-Ø	E	PP67-C-00012
	SHEET 1 OF 1	DIST				

DEC FORM NO.
DRA 110



R1	RESISTOR 1K, 1/4W, 5%	13 00365
D4 THRU D12	RECTIFIER 1N91	1101515
	PARTS LIST	A-PL-7006385-0-0
FL1	LINE FILTER #NF 1080 LD.	1201212
	TERM STRIP (4 TERM)	(ON PUNCH)
	AC PLUG	(ON PUNCH)
J1	24 PIN AMPH BLU RIBBON	(ON PUNCH)
S1	SWITCH T206 CTS CORP	1203374
D3	THYRECTOR 6RS-20S P4-B4	1100106
D2	RECTIFIER #C20-B-SCR	1101820
D1	DIODE PACK MDA952-5 MOTOROLA	1105280
	DESCRIPTION	PART NO

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: PUNCH CONTROL

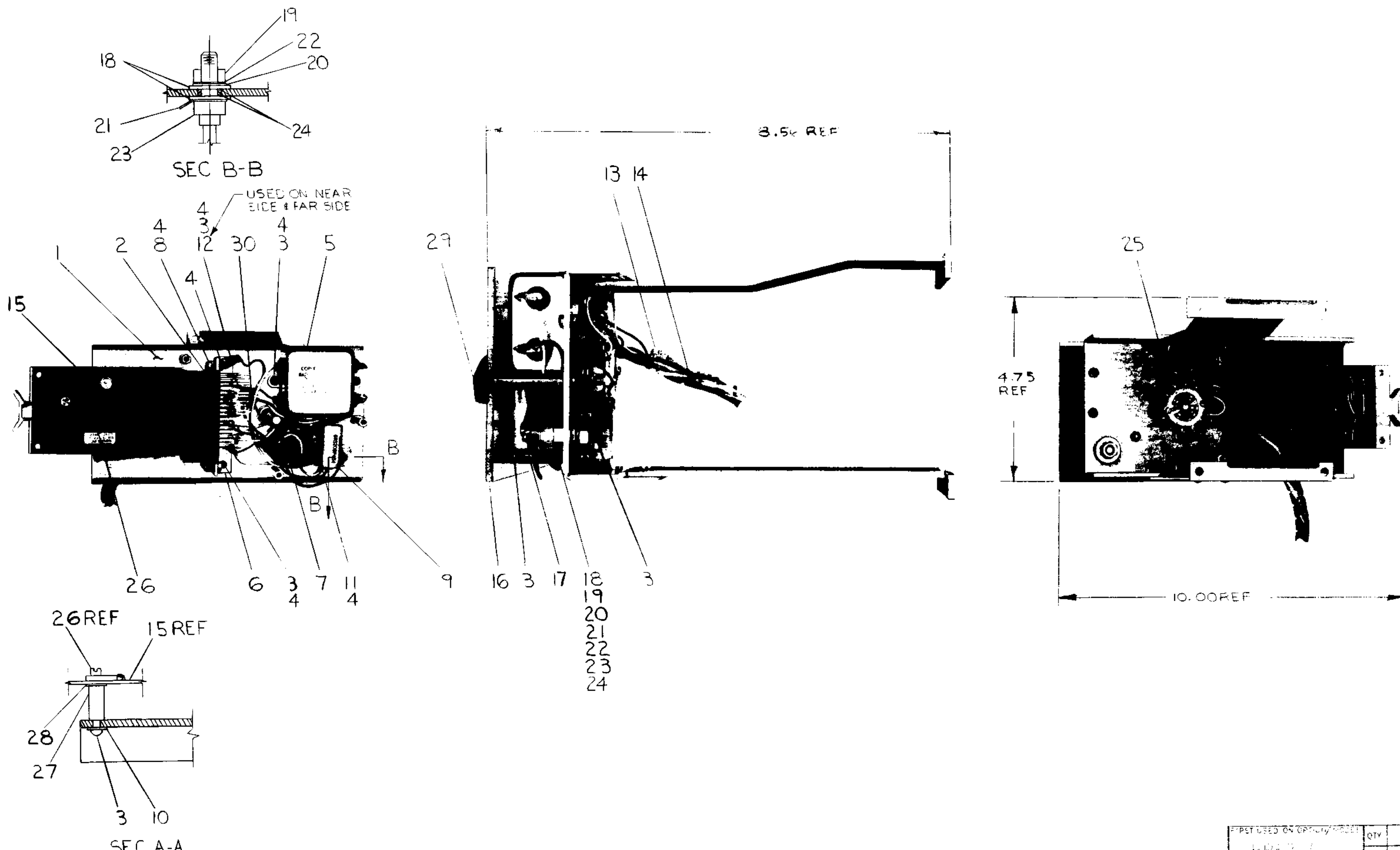
SIZE: D CODE: CS NUMBER: PP67-C-1

PRINTED CIRCUIT REV.

PINK

NOTE

1. SCR, D2, SHOULD BE MOUNTED SUCH THAT THE ANODE, PIN 3, IS POSITIONED ... OF THE ASSEMBLY.



REV.	CHANGE NO.	
A	PP67C-00001	B. DOUCETTE
B	PP67C-00005	B. DOUCETTE
C	PP67C-00008	H-JODICE
D	PP67C-00009	JODICE

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

FINAL SURFACE QUALITY

REMOVE BURRS AND BREAK CORNERS

MATERIAL

FINISH

QTY | DESCRIPTION | PART NO. | ITEM NO.

PARTS LIST

digital EQUIPMENT CORPORATION

TITLE ... PP67 ...

SCALE

SHEET 2

SIZE CODE D UA NUMBER 7006385-0-0 REV. D

DEC FORM NO. DRC

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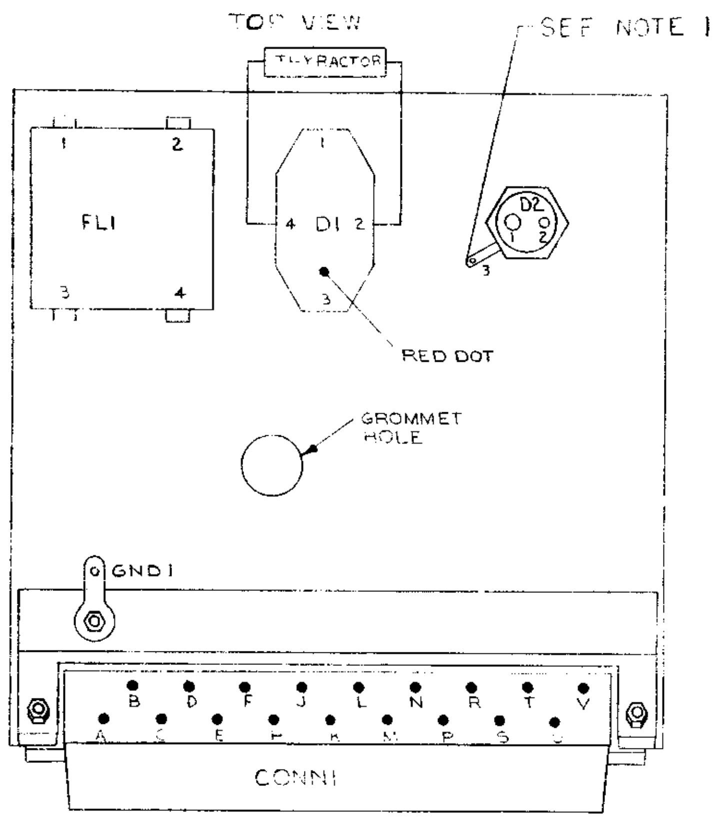
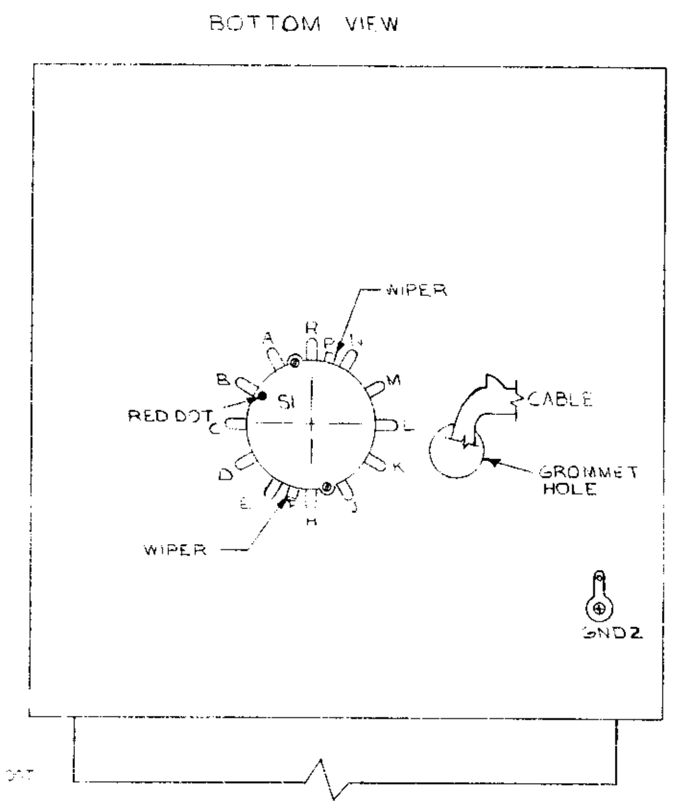
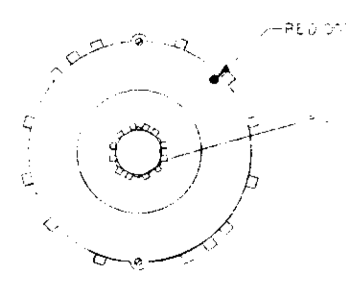






NOTE:
1. SWITCH SETTING INSTRUCTIONS:
HOLD SWITCH SHANK UP WITH RED DOT TO THE RIGHT. TURN SHANK FULLY COUNTERCLOCKWISE. INSERT STOP PINS INTO SLOT #4.

WIRE TABLE

	ITEM NO.	DESCRIPTION AWG	COLOR	CONNECTIONS FROM	CONNECTIONS TO	EQUIP FROM WITH TERMS	EQUIP TO WITH TERMS	LENGTH
* TWPR	38	18	WHT	FL1-1	——	A	——	31"
* TWPR	38	18	BLK	FL1-2	——	A	——	31"
	42	18	WHT	FL1-3	D1-2	A	A	5"
** TWPR	43	18	WHT	D1-2	TS1-4	A	——	31"
** TWPR	43	18	RED	FL1-4	——	A	——	31"
	40	18	GRN	D1-1	D2-1	A	A	2"
	40	18	GRN	D1-1	CONN1-N	A	TERM1	4
*	33	18	BLK	GND2	——	A	——	38
	41	18	YEL	D1-3	CONN 1-S	A	TERM1	3"
	39	18	RED	D1-4	——	A	——	31"
*	34	22	YEL	S1-P	——	A	——	31"
	40	18	GRN	D2-2	CONN1-P	A	TERM1	5"
	41	18	YEL	D1-3	D2-3	A	A	4"
	35	22	ORN	S1-M	CONN1-A	A	TERM1	4"
	9	THYRACTOR		D1-4	D1-2	A	A	
	~~9~~	~~—~~		~~D1-2~~	~~D3-2~~	~~A~~	~~A, 4 3~~	
	33	22	BLK	CONN1-C	GND1	TERM1	A	2¼"
*	35	22	ORN	S1-L	——	A	——	31"
	37	22	WHT	CONN1-F	S1-F	B	A	2"
	37	22	WHT	S1-J	——	A	——	31"
	32	18	BRN	CONN1-K	CONN1-L	A	A	2" JUMPER
	36	22	BLU	CONN1-U	CONN1-V	B	B	2"
	31	22	BUSS	S1-A	S1-B	A	A	1"
	33	22	BLK	S1-C	GND-2	A	A	3½
*	32	18	BRN	CONN1-K	——	——	A	31"
	37	22	WHT	CONN1-E	S1-B	TERM1	A	5"
*	36	22	BLUE	CONN1 U	——			31"
	33	22	BUSS	S1-K	S1-L			1"
	33	22	BUSS	S1-L	S1-M			1"
*	31	22	RED	S1-A		A	——	31"

LETTER DESIGNATION 'A' INDICATES WIRE IS TO BE SOLDERED PER ABOVE TABLE
* CUT WIRE 31 IN LONG FROM SOLDERED CONNECTION.
** CUT WIRE 40 IN LONG FROM SOLDERED CONNECTION
LETTER 'B' INDICATES WIRE TO BE WIRE-WRAPPED.

FIRST USED ON OPTION/MODE	QTY.	DESCRIPTION	PART NO	ITEM NO.
PF67-C		PARTS LIST		

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
CHK'D. DATE 5-6-69
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY D-UA-PF67-C-0
SCALE NONE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE PUNCH CONTROL PF67-C

SIZE	CODE	NUMBER	REV.
D	AD	7006385-0-0	D

DIST. G

DEC FORM NO DRD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. MARINI	CHECKED D. HEALY	SECTION
DATE 4/28/69	DATE 4/29/69	1
ENG [illegible]	PROD R.D. for H. Healy	ISSUED SECT.
DATE 5/1/69	DATE 6/17/69	1

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION 7006385-0
1	D-MD-7407346	BRACKET MTG PUNCH CONTROL	1
2	1202625	18 PIN CONN BLOCK #1712-18PCC SYLVANIA	1
3	9006022-1	SCR PHL HD PAN 6-32 x 3/8 SST	9
4	9006560	KEPS HEX NUT 6-32	10
5	1201212	LINE FILTER, #NF10280-1 CORNELL DUB	1
6	B-MD-7407364-0-0	BRKT, MTG 18 PIN BLOCK	1
7	1105280	DIODE PACK #MDA952-5 MOTOROLA	1
8	9006024-1	SCR PH HD PAN 6-32 x ½ SST	2
9	1100106	THYRECTOR #6RS20SP4B4, G.E.	1
10	9007649	WASH INT TOOTH LOCK #6	1
11	9006029-1	SCR, PH HD PAN 6-32 x 1"SST	2
12	9006781	TERMINAL #2104-06-00 SHAKEPROOF	2
13	9007031	TIEWRAP #SST-18 PANDUIT	A/R
14	9107240	SPIRAL WRAP ¼ ID	A/R
15	G-15	PUNCH CONTROL G915	1
16	C-MD-7407[illegible]-0-0	SHIELD, PUNCH CONTROL	1
17	9006864	SPACER, #6THD ¼ HEX x 1¼ LG	3
18	1101839	MICA WASHER (SUPPLIED WITH ITEM 23)	2
19	1101838	NUT, HEX ¼-28 (SUPPLIED WITH ITEM 23)	1
20	9006776	WASHER 13/16 O.D. x ¼ I.D. x 1/32 THK	1
21		SOLDER TERM HWB 03166-1	1
22	1101829	INT TOOTH WASH ¼ (SUPPLIED WITH ITEM 23)	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
PUNCH CONTROL PP67-C	D-AD-7006385-0-0	A	PL	7006385-0-0	D	PP67C-00009
	SHEET 1 OF 3	DIST.	G			

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. MARINI	CHECKED D. HEALY	SECTION
DATE 4/28/69	DATE 4/29/69	1
ENG [illegible]	PROD R.D. for H. Healy	ISSUED SECT.
DATE [illegible]	DATE 6/17/69	1

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION 7006385-0
23	1101830	RECTIFIER C20-BSCR GE	1
24	9006712	WASHER, NYLON 3/8 O.D. x ¼ I.F. x 1/16THK	1
25	1203374	SWITCH ROTARY T206 CTS CORP	1
26	9006431	SLOTTED FIL HD SCR 6-32 x ½ NYLON	1
27	9006857	SPACER THD ¼ HEX x 5/8 #6THD NYLON	1
28	9006707	WASHER NYLON 5/16 O.D. x 5/32 I.D. x 1/32	1
29	1203374	KNOB (SUPPLIED WITH ITEM 25)	1
30	9007015	GROMMET #1043 GEN CEMENT	1
31	9107350-3	#22 AWG WIRE TEF INS (RED)	A/R
32	9107360-2	18 AWG WIRE TEF INS (BRN)	A/R
33	9107350-1	22 AWG WIRE TEF INS (BLK)	A/R
34	9107350-5	22 AWG WIRE TEF INS (YEL)	A/R
35	9107350-4	22 AWG WIRE TEF INS (ORN)	A/R
36	9107350-7	22 AWG WIRE TEF INS (BLU)	A/R
37	9107350-16	22 AWG WIRE TEF INS (WHT)	A/R
38	9074[illegible]-3	#18 AWG WIRE TW. PR. BLK/WHT	A/R
39	9107360-3	#18 AWG WIRE TEF INS (RED)	A/R
40	9107360-6	#18 AWG WIRE TEF INS (GRN)	A/R
41	9107360-5	#18 AWG WIRE TEF INS (YEL)	A/R
42	9107360-16	#18 AWG WIRE TEF INS (WHT)	A/R
43	9074[illegible]	18 AWG TW PR RED/WHT	A/R
44	6034[illegible]	RESISTOR 1K, ½W, 5%	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
PUNCH CONTROL PP67-C	D-AD-7006385-0-0	A	PL	7006385-0-0	D	
	SHEET 2 OF 3	DIST.	G			

DEC FORM NO.
DR- 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. MARINI DATE 4/28/69	CHECKED D. HEALY DATE 4/29/69	SECTION 1
ENG DATE	PROD DATE	ISSUED SECT. 1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION 7006385-0
45	1101515	DIODE 1N91	9

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
PUNCH CONTROL PP67-C	D-AD-7006385-0-0	A	PL	7006385-0-0	D	
	SHEET 3 OF 3	DIST.	G			

DEC FORM NO.16-1031
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION DATE 2/19/71

TITLE PP67 C/D ADJUSTMENT PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
H. Jodice		A	SP	PP67-C-4	

DEC FORM NO. DRA 107

SHEET 1

ENGINEERING SPECIFICATION [redacted] CONTINUATION SHEET

TITLE PP67 C/D ADJUSTMENT PROCEDURE

I. Punch Mechanism Adjustment

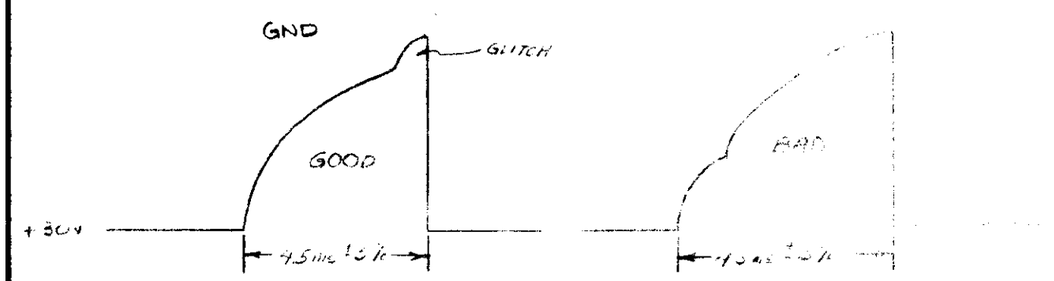
All mechanical adjustments for the punch are detailed in the BRPE Technical Manual. When it is believed that the punch mechanism is the cause of incorrect data being punched, the following procedure should be employed for best results.

1. Load the following program into LOC. 7000

```
7000)   7604          SR = 7000
        6314          LOAD  ADD
        7300          SR8-11 = Punch N°

        7040
        6026          START
        6021
        5205
        5203
```

2. Check each solenoid by securing a scope probe on the tab which is being fed by the solenoid driver (usually the solid color wire). The probe should be connected to channel 2 of the scope with the INVERTER switch pulled out.



SIZE	CODE	NUMBER	REV
A	SP	PP67-C-4	

DEC FORM NO 16-1222 DRA 108

The "glitch" should be positioned at the trailing edge of the sawtooth waveform (see above). This can be achieved by slackening the two screws which clamp the punch solenoid, and adjusting the solenoid until the "glitch" is in the correct position. Make sure that when making this adjustment, the solenoid is moved squarely in the vertical direction. If tilted, the armature may slip out of the blocking pawl.

3. To check the feed hole solenoid, the program will have to contain a stall so that the solenoid is de-energized between punching of characters. The following program would be suitable for running while checking all solenoids:

```
2ØØ/76Ø4        SR = Ø2ØØ
    6314         LOAD ADD
    72ØØ         SR8-11 = Punch N°
    6Ø26         START
    6Ø21
    52Ø4
    222Ø
    52Ø6
    7Ø4Ø
    52Ø3
```

Use the same method as described in Part 2 for adjusting this solenoid.

4. Punching alternate 1's and Ø's, slacken the screw holding the range finder and move the slide in one direction until punching begins to deteriorate: Note the position on the scale, them move the slide in the opposite direction until punching begins to deteriorate again and note the position on the slide. Set the range-finder at the midway point between the two positions and tighten the screw. If no punching errors occur using the above method then set the range finder at 30°.

II. Low Tape Adjustment

To adjust the Low Tape Indicator Arm, load the following program to select the particular punch you are adjusting.

```
                 SR = 7ØØØ
7ØØØ  /  76Ø4    LOAD ADD
         6314    SR8-11 = Punch N°
         74Ø2    START
```

Place the tape spool, with the amount of tape* considered to be a low tape condition, in the punch. Loosen the two screws which fasten the low tape switch; move the switch until the Low Tape light on the PA63 indicator panel just turns on. At this point the left and center contacts on the switch should just be breaking contact. Tighten the screws and check that the light remains on. Now lift the arm until the light goes out. There should be no more than 1/16" between the tape and the arm; if there is, readjust the switch until these conditions are met.

With the arm in the low tape condition, run the program from the following section. It should halt in location 7Ø04. With the arm not in the low tape condition, restart the program. The punch should start up and punch.

* There should be about 3/8" of paper tape left on the core.

III. Availability Switch Checkout

To checkout the switch, which is on the top of the punch, load the following program into core:

```
7ØØØ   /   76Ø4          SR = 7ØØØ
           6314          LOAD ADD
           6311          SR8-11 = Punch N°
           52Ø5          START
           74Ø2
           6Ø26
           6Ø21
           52Ø6
           52Ø5
```

Available Mode: Place the switch in this position and make sure that there is not a low tape condition. Run the above program; the punch should start up and punch.

Stop When Done Mode: Run the above program with the punch in the Available Mode. When the punch starts punching, turn the switch to the Stop When Done mode; the punch should continue punching as if nothing has changed.

Stop the program with the switch in the Stop When Done mode and restart the program. The program should halt in location 7ØØ4.

Continuous Mode: Place the switch in this position. The punch motor should start immediately. Start the above program; it should halt in location 7ØØ4.

Off Mode: With the switch in this position, start the above program. The program should halt at location 7ØØ4.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION DATE 1/24/72

TITLE PP67C/D ADJUSTMENT PROCEDURE FOR USE ON PA611-P CONTROLLER

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
H. Jodice	H. Jodice	A	SP	PP67-C-6	

DEC 16-(327)-1071-N971
DRA 107

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE PP67C/D ADJUSTMENT PROCEDURE FOR USE ON PA611-P CONTROLLER

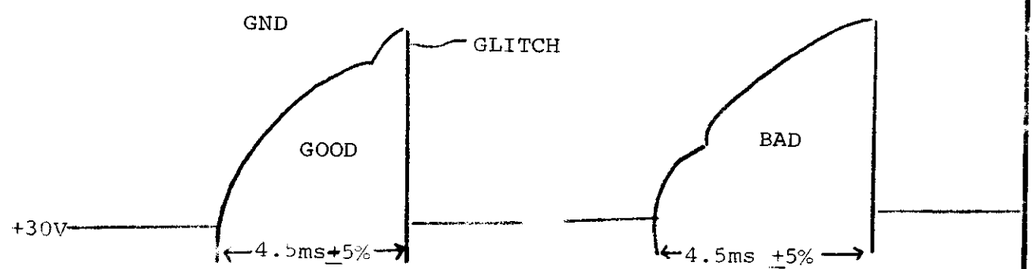
I. PUNCH MECHANISM ADJUSTMENT

All mechanical adjustments for the punch are detailed in the BRPE Technical Manual. When it is believed that the punch mechanism is the cause of incorrect data being punched, the following procedure should be employed for best results.

1. Load the following program into LOC. 1000:

```
1000)          CLR % Ø                 SR = 1000
        CMP/   CMP % Ø                 LOAD ADD
               MOV % Ø, @ # PPB        START
        TST/   TST B @ # PPS
               BPL  TST
               JMP @ # CMP
```

2. Check each solenoid by securing a scope probe on the tab which is being fed by the solenoid driver (usually the solid color wire). The probe should be connected to channel 2 of the scope with the INVERTER switch pulled out



SIZE	CODE	NUMBER	REV
A	SP	PP67-C-6	

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

The "Glitch" should be positioned at the trailing edge of the sawtooth waveform (see above). This can be achieved by slackening the two screws which clamp the punch solenoid, and adjusting the solenoid until the "glitch" is in the correct position. Make sure that when making this adjustment, the solenoid is moved squarely in the vertical direction. If tilted, the armature may slip out of the blocking pawl.

3. To check the feed hole solenoid, the program will have to contain a stall so that the solenoid is de-energized between punching of characters. The following program would be suitable for running while checking all solenoids:

```
2000)          CLR % Ø              SR = 2000
        CLR/   CLR % 1              LOAD ADD
        CMP/   CMP % Ø              START
               MOV % Ø, @ # PPB
        TST/   TST B @ # PPS
               BPL TST
        INC/   INC % 1
               TST % 1
               BPL INC
               JMP @ # CLR
```

Use the same method as described in Part 2 for adjusting this solenoid.

4. Punching alternate 1's and Ø's, slacken the screw holding the range finder and move the slide in one direction until punching begins to deteriorate: Note the position on the scale, then move the slide in the opposite direction until punching begins to deteriorate again and note the position on the slide. Set the range finder at the midway point between the two positions and tighten the screw. If no punching errors occur using the above method then set the range finder at 30^{o}.

II. LOW TAPE ADJUSTMENT

To adjust the Low Tape Indicator Arm, load the following program:

```
7000)   START/  TST @ # PPS            SR = 7000
                BPL   START            LOAD ADD
                MOV # 000, @ # TPB     START
          TST/  TST B @ # TPS
                BPL TST
                JMP @ # START
```

Place the tape spool, with the amount of tape* considered to be a low tape condition, in the punch. Loosen the two screws which fasten the low tape switch; move the switch until the teletype responds. At this point the left and center contacts on the switch should just be breaking contact. Tighten the screws and check that the teletype is still responding. Now lift the arm until the teletype stops. There should be no more than 1/16" between the tape and the arm; if there is, re-adjust the switch until these conditions are met.

* There should be about 3/8" of paper tape left on the core.

III. AVAILABILITY SWITCH CHECKOUT

To checkout the switch, which is on the top of the punch, use the program from the previous section. Load and start at 7000.

Available Mode: Place the switch in this position and make sure that there is not a low tape condition. Run the above program, the teletype should do nothing.

Stop When Done Mode: While the program is running, move the switch from the Available Mode; the teletype should respond.

Continuous Mode: Place the switch in this position. The punch motor should start immediately. Start the above program; the teletype should respond.

Off Mode: With the switch in this position, and the program running, the teletype should respond.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

MADE BY GEORGE MILLER	CHECKED G. Miller	SECTION
DATE 10-30-70	DATE 11-13-70	
ENG GEORGE MILLER	PROD A. Richards	ISSUED SECT.
DATE 10-30-70	DATE 11-13-70	

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	QUANTITY/VARIATION
1	BC01F	PUNCH CABLE	1
~~2~~	~~D-UA-BC01F-0-0~~	PRINTS - SEE A - ML - PP67-C	1
~~3~~	~~B-GS-G915-0-1~~	~~PUNCH CONTROL MODULE SCHEMATIC~~	~~1~~
~~4~~		~~PAPER TAPE--6 OR 8 LEVEL~~	~~4 BOXES~~
~~5~~		~~PRINTS--SEE PP67-C M.L.~~	~~1~~
3*	3610730-1 or -2	ONE ROLL OF YELLOW OILED TAPE (6) ONE ROLL OF YELLOW OILED TAPE (8)	

* LEVEL WILL DEPEND ON PUNCH. IF PUNCH IS TO BE SHIPPED WITH A PA611, PA63 or PA68-F, SEE THE RESPECTIVE ACCESSORY LISTS FOR PAPER TAPE SHIPMENT.

KIT CHECK BY _____ DATE _____
INSTALLATION CHECK BY _____ DATE _____

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV	ECO NO
PAPER TAPE PUNCH--PP67C	SHEET 1 OF 1	A	AL	PP67-C-3	A	PP67C-0001
		DIST.				

DEC FORM NO.
DRA 120

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 2/8/72

TITLE PP67C/D ACCEPTANCE CRITERIA

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	PP67C-00009	JODICE	2-9-72	H Jodice	2/8/72
B	ECO CHANGE	PP67C-00011	GLEESON	8/72	[illegible]	[illegible]

ENG	APPD	SIZE	CODE	NUMBER	REV
H. Jodice	H. Jodice	A	SP	PP67-C-5	B

DEC 16-(327)-1071-N971
DRA 107

SHEET 1 OF 4

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE PP67C/D ACCEPTANCE CRITERIA

SCOPE

To define the criteria necessary to accept, for shipment, the PP67C (6 level) and PP67D (8 level) Typesetting Paper Tape Punch.

NOTE: Paper Tape Part numbers are as follows:

Yellow Oiled Tape (6 level) - 36-10730-1
Yellow Oiled Tape (8 level) - 36-10730-2

TEST HARDWARE

Option 1: PDP-11 Family Computer with PA611C Controller and PR68E paper tape reader or

Option 2: PDP-8 Family Positive Bus Computer with PA63 Controller PD68D; 6 or 8 level Typesetting Paper Tape Reader.

TEST SOFTWARE

Option 1: MAINDEC-11-DZPAAA-PB
Option 2: MAINDEC-08-D2HC-PB
Prints: All prints on ML-PP67C
One roll of 6 or 8 level yellow, oiled tape; level will depend on punch.

PROCEDURE

1. Complete standard option check list.
2. Inspect punch for good workmanship, namely the punch amphenol connectors and the damping diodes mounted underneath the punch.
3. Option 1
   a. Load the punch with a tape roll containing about 1/2" thickness of tape left on the core.
   b. Load the following program:

```
000200 / 005737     202/172700     TST # PPS
  204 / 100775                    BMI .-4
  206 / 000000                    HALT
```

	SIZE	CODE	NUMBER	REV
	A	SP	PP67-C-5	B

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

SHEET 2 OF 4

PROCEDURE (continued)

3. c. Connect the punch to punch Ø slot of the PA611-P (FØ1).

d. Turn the 4 position switch on the punch to "OFF".

e. Start the program at ØØØ2ØØ. The program should run continuously. If it halts, there is an error.

f. Turn the 4 position switch to "CONTINUOUS", then "STOP WHEN DONE". The program should continue to run. Then turn the switch to "AVAILABLE"; the program should halt. If it does not, there is an error.

g. Load the punch with a tape roll containing about 3/8" thickness of tape left on the core. Start the program again; it should not halt. If it does, adjust the "OUT OF TAPE" micro switch on the punch until the program runs continuously.

h. Load the punch with a full roll of yellow tape. Load in MAINDEC-11-DZPAA-PB and run program 1 for one full roll of tape. Check the registration periodically to ensure there are exactly ten holes/inch. Verify the tape punched, using program 2.

4. Option 2

a. Load the following program:

```
7ØØØ/   7ØØ1
   1/   6311
   2/   5204
   3/   5200
   4/   6026
   5/   6021
   6/   5205
   7/   5200
```

b. Connect the punch to channel Ø (C36) of the PA63.

c. Turn the 4 position switch on the punch to "OFF".

d. Start the program at 7000. The program should show the AC being indexed, meaning the punch is not available. If tape is punched, there is an error. Turn the function selector to "CONTINUOUS" and "STOP WHEN DONE". The indications should be the same.

PROCEDURE (continued)

4. e. Load the punch with a tape roll containing about 1/2" thickness of tape left on the core. Turn the switch to "AVAILABLE" and a binary count pattern should be produced.

f. Remove the 1/2" tape roll and replace it with a roll containing about 3/8" of tape left on the core. This should bring about the not available condition (out of tape).

g. Load the punch with a full roll of yellow tape.

h. Load MAINDEC-08-D2HC-PB and start program #5. Let run as follows:

1) SR6 = 0 5 minutes
2) SR6 = 1 10 minutes
3) SR6 = 0 and 1 alternately - 10 minutes

Verify tape punches with Test Ø6 after each mode (after 1) then 2), then 3) to alleviate the impracticability of having 25 minutes tape piled up. Also periodically check the registration to ensure there are exactly ten holes/inch.

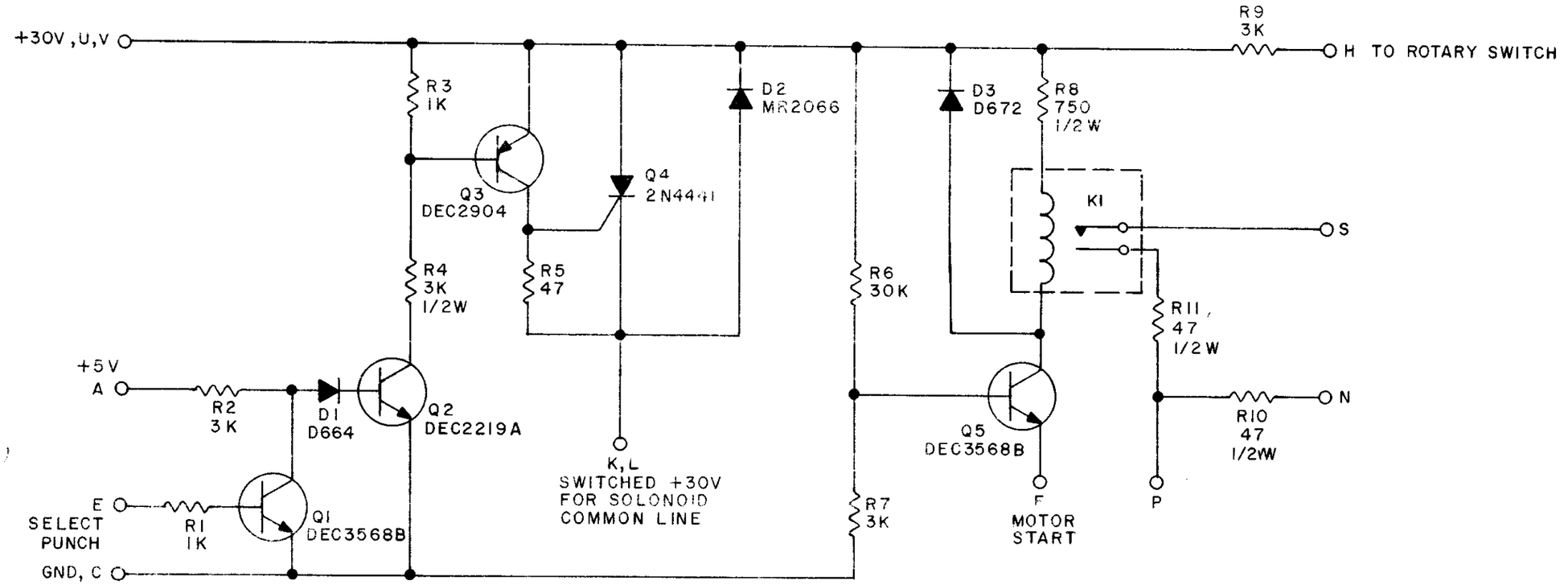
SHIPPING HARDWARE

1. Power Cord for punch (6 feet) DEC-7ØØ524Ø.

SHIPPING SOFTWARE

As in Test Software, but see Note below:

NOTE: Punch acceptance on a customers system is to be performed in conjunction with PA611, PA63 or PA68F acceptance. It is covered in the respective acceptance procedures. If punch to be shipped is part of a system, paper tape to be shipped will be covered in the respective Acceptance Procedure.



UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1/4 W, 5%
K1 IS 268-2A-X2-12VDC

REVISIONS	REV	CHK	CHG NO.

DRN. M. Haller	DATE 10-24-69	
CHK'D R. A. Valette	DATE 11/5/69	
ENG. [illegible]	DATE 2-5-70	
PROD	DATE	

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA
D664	1N3606	DEC2904	2N2904
MR2066	1N4003		
D672	1N3653		
DEC3568B	2N3569		
DEC2219A	2N2219		

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: PUNCH CONTROL G915

SIZE	CODE	NUMBER	REV.
B	CS	G915-0-1	

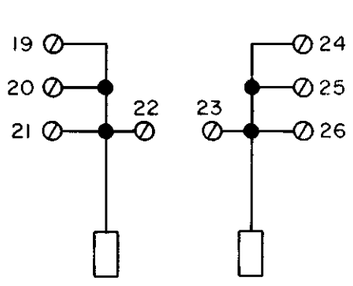
PRINTED CIRCUIT REV. A

DEC FORM NO.
DRB 102

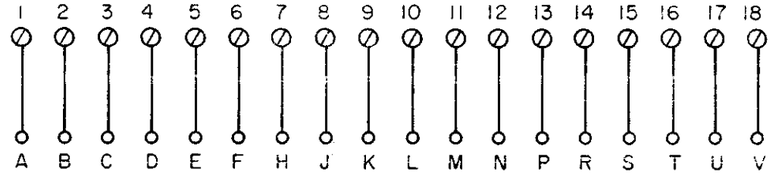
5

DIST. 324,434,435 3

PINK



TERMINAL TABS



UNLESS OTHERWISE INDICATED:
∅ ARE SPLIT LUGS
TABS ARE AMP. #60145-1

REVISIONS	REV	CHG NO.	CHK

DRN. BUTLER	DATE 12-569	
CHK'D	DATE	
ENG	DATE	
PROD	DATE	

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: CABLE [illegible] 873

SIZE | CODE | [illegible] | REV.

PRINTED CIRCUIT REV. A

DEC FORM NO. DRB 102