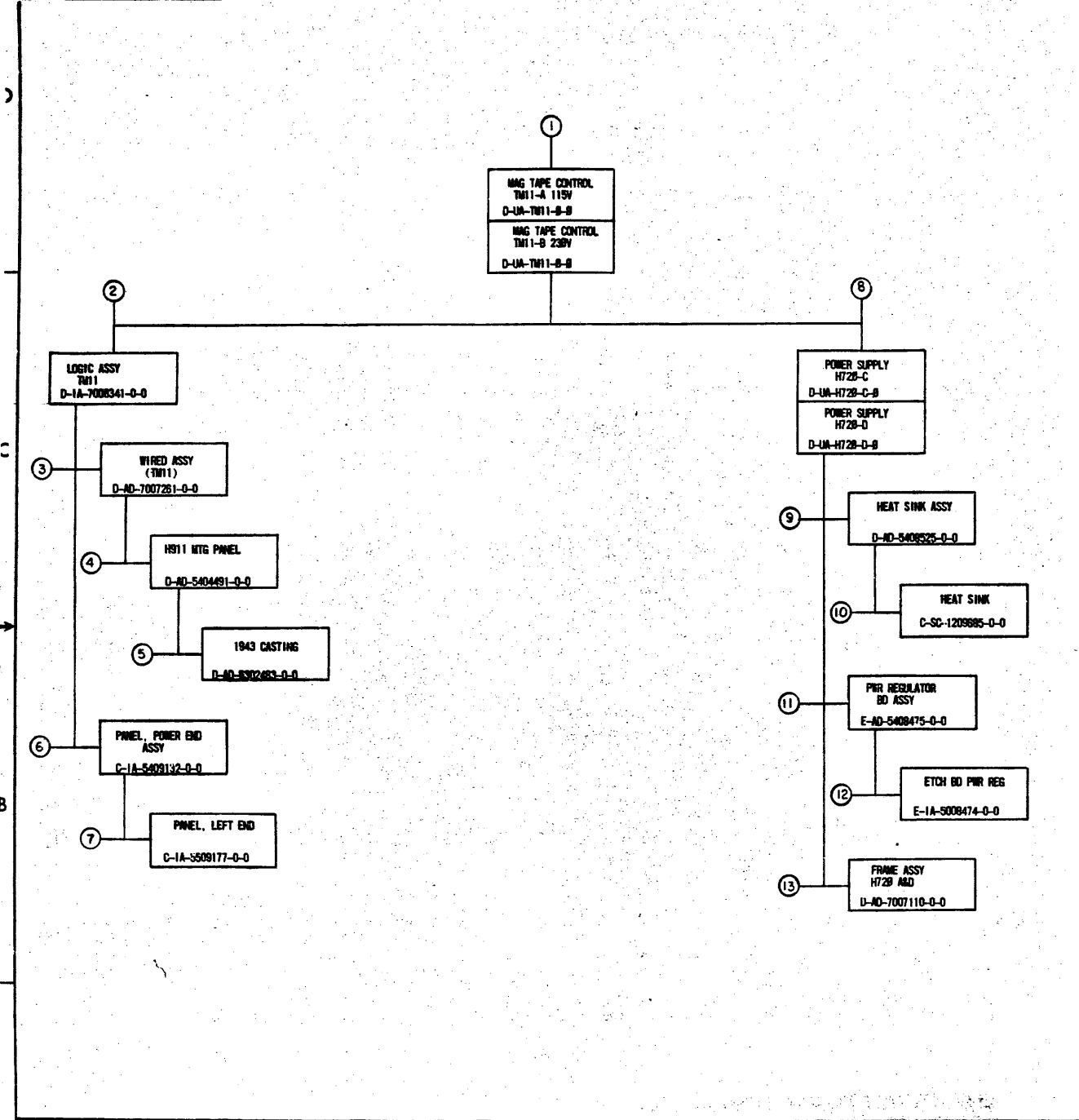


**TM11  
DECmagtape system  
engineering drawings**

**DIGITAL EQUIPMENT CORPORATION • MAYNARD, MASSACHUSETTS**



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MECHANICAL				DEPT USAGE			ELECTRICAL				DEPT USAGE		
FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C	FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	F/C		
1.	MAG TAPE CONTROL (TM11-A) MAG TAPE CONTROL (PL) MAG TAPE CONTROL (TM11-B) MAG TAPE CONTROL (PL)	D-1A-TM11-8-8 A-PL-TM11-8-8 D-1A-TM11-8-8 A-PL-TM11-8-8				1.	MAG TAPE CONTROL (TM11-A) MAG TAPE CONTROL (TM11-B) MODULE UTILIZATION MODULE UTILIZATION (PL) BUS CABLE INTERFACE MAG TAPE CABLE PWR/INPR MOD TM11 UNIT PANEL CABLE CONN START TAPE UNIT CONTROL TAPE UNIT MOTION AND TIMER CONTROL UNIT READY CONTROL FLUCT DECODE & TAPE UNIT WIRE TAPE UNIT INTERFACE MAG TAPE READ/WRITE LINES UNIT SELECT & ADDRESS SELECT MFI AND DR INPUTS LOW BYTE COMMAND & STATUS RED HIGH BYTE DATA BUFFER & READ LINES TO BUS CURRENT MEMORY ADDRESS LINES DATA BUFFER INPUTS MAGNETIC TAPE ERR 1 AND INIT MAGNETIC TAPE ERRORS 2 TM11 COMBINED PACKAGES REGISTER SELECT & DATA BUFFERS WIRE LIST MAX CONFIGURATION PROJECT SPECS ACCESSORY LIST MFG TEST SPEC & PROCEDURE SOFTWARE LIST	A-AL-TM11-A A-AL-TM11-B D-1A-TM11-8-82 A-PL-TM11-8-82 D-1A-TM11-8-83 D-1A-TM11-8-84 D-1A-TM11-8-85 D-1A-TM11-8-86 D-1A-TM11-8-87 D-1A-TM11-8-88 D-1A-TM11-8-89 D-1A-TM11-8-90 D-1A-TM11-8-91 D-1A-TM11-8-92 D-1A-TM11-8-93 D-1A-TM11-8-94 D-1A-TM11-8-95 D-1A-TM11-8-96 D-1A-TM11-8-97 D-1A-TM11-8-98 D-1A-TM11-8-99 D-1A-TM11-8-10 D-1A-TM11-8-11 D-1A-TM11-8-12 D-1A-TM11-8-13 D-1A-TM11-8-14 D-1A-TM11-8-15 D-1A-TM11-8-16 D-1A-TM11-8-17 D-1A-TM11-8-18 D-1A-TM11-8-19 D-1A-TM11-8-20 D-1A-TM11-8-21 D-1A-TM11-8-22 D-1A-TM11-8-23 D-AR-TM11-0-24 A-SP-TM11-0-25 A-AL-TM11-0-26 A-SP-TM11-0-27 A-SL-TM11-0-28					
2.	LOGIC ASSY (TM11)	D-1A-7008341-0-0				3.	WIRED ASSY WIRED ASSY	D-1A-7007261-0-0 A-PL-7007261-0-0					
3.	WIRED ASSY WIRED ASSY (PL) LOGIC FRAME DECALS AWT REVISION STATUS	D-1A-7007261-0-0 A-PL-7007261-0-0 A-DC-7408371-0-0 A-WF-7007261-0-0				8.	CIRCUIT SCHEMATIC (H728-C) CIRCUIT SCHEMATIC (H728-D)	D-1A-H728-9-1 D-CS-H728-9-1					
4.	HS11 MFG PANEL HS11 MFG PANEL (PL) 298 PIN CONN BLOCK #H803	D-1A-5404491-0-0 A-PL-5404491-0-0 E-SC-1205348-0-0				12.	ETCH BOARD REGULATOR PRINTED CIRCUIT	E-1A-5008474-0-0 PC-5008474					
5.	1943 CASTING 1943 CASTING (PL) 1943 FRAME CASTING	D-1A-5302483-0-0 A-PL-5302483-0-0 C-1A-1202885-0-0											
6.	PANEL, POWER END ASSY	C-1A-5409132-0-0											
7.	PANEL, LEFT END SILK SCREEN	C-1A-5509177-0-0 A-SS-7408383-0-1											
8.	POWER SUPPLY (H728 C) POWER SUPPLY (PL) POWER SUPPLY (H728 D) POWER SUPPLY (PL) POWER SUPPLY CHASSIS POWER SUPPLY COVER BRACKET SUPPORT CAPACITOR BRACKET POWER SUPPLY DECALS POWER SUPPLY DECALS (128 U) POWER SUPPLY DECALS (248 U)	D-1A-H728-8-8 A-PL-H728-8-8 D-1A-H728-8-8 A-PL-H728-8-8 E-1A-5308519-0-0 C-1A-5308519-0-0 C-1A-5308521-0-0 D-1A-5308529-0-0 D-DC-5308524-0-0 A-DC-5308771-0-0 A-DC-5308772-0-0											
9.	HEAT SINK ASSY HEAT SINK ASSY (PL) COIL, TRANSFORMER	D-1A-5408475-0-0 A-PL-5408475-0-0 C-SC-1639762-0-0											
10.	HEAT SINK HEAT SINK BUSHING	C-SC-1209885-0-0 A-SC-1209475-0-0											
11.	POWER REGULATOR BOARD ASSY POWER REGULATOR BOARD ASSY (PL) HEAT SINK X-Y COORDINATE HOLE LOCATION ASSY/DRILLING HOLE LAYOUT	E-1A-5008475-0-0 A-PL-5008475-0-0 B-1A-5308733-0-0 K-CD-5408475-0-4 M-5408475-0-5											
12.	ETCH BOARD POWER REGULATOR ASSY/DRILLING HOLE LAYOUT PRINTED CIRCUIT LAYOUTS	E-1A-5008474-0-0 A-PL-5008474-0-0 PC-5008474											
13.	FRAME ASSY H728 CSD FRAME ASSY H728 CSD (PL) CHASSIS POWER SUPPLY SCREEN FAN	D-1A-7007110-0-0 A-PL-7007110-0-0 D-1A-7408392-0-0 C-1A-7404881-0-0											

REV	DATE	BY	CHK	DESCRIPTION
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3	6-7-71	...		...
4	6-7-71	...		...
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18	6-7-71	...		...
19	6-7-71	...		...
20	6-7-71	...		...

FIRST USED ON OPTION/MODEL  
TM11

DATE: 6-7-71  
BY: W. J. ...  
CHK: ...  
DATE: 6-7-71  
BY: ...  
CHK: ...  
DATE: 6-7-71  
BY: ...  
CHK: ...

digital EQUIPMENT CORPORATION  
DRAWING INDEX LIST (TM11)  
DDITM11-0-1

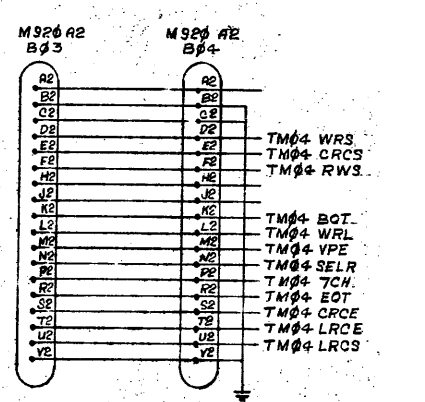
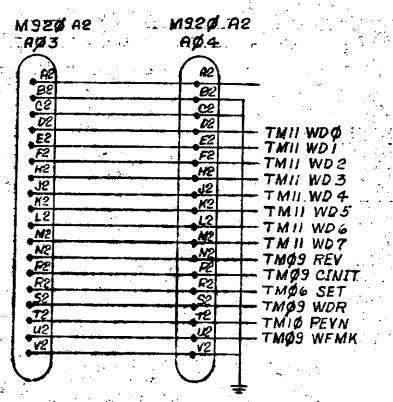
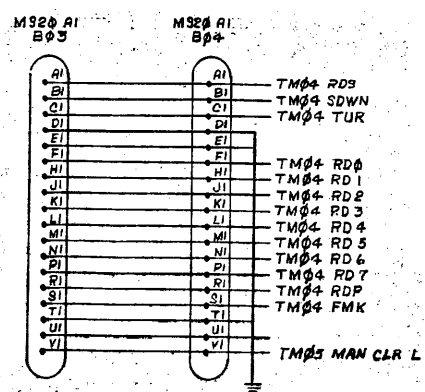
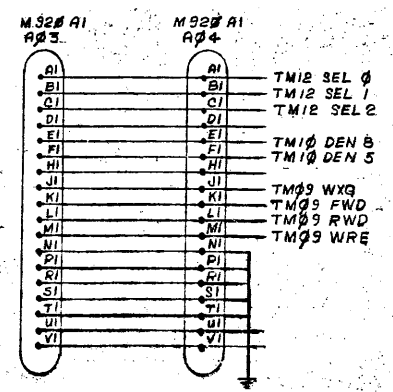




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8 7 6 5 4 3 2 1

TM11-0-04



TM04 BQ IN H	UE	PRIORITY JUMPER MODULE Q 736 B07	DE	BUS BR 7 L
TM01 BQ OUT H	VE		EE	BUS BR 6 L
BUS BQ 4 OUT H	TE		FE	BUS BR 5 L
BUS BQ 4 IN H	SE		HE	BUS BR 4 L
BUS BQ 5 OUT H	RE		JE	TM21 BR OUT L
BUS BQ 5 IN H	RE		KE	BUS BQ 7 IN H
BUS BQ 6 OUT H	NE	LE	BUS BQ 7 OUT H	
			ME	BUS BQ 6 IN H

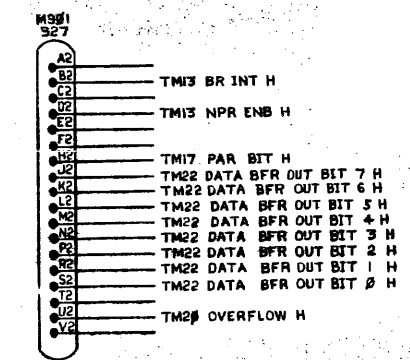
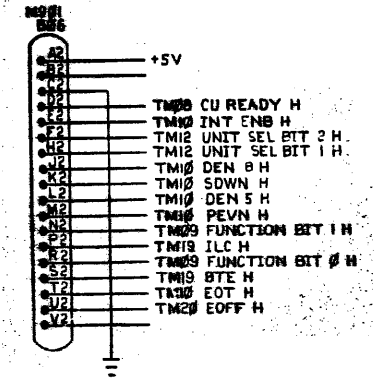
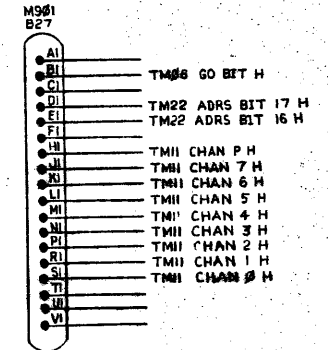
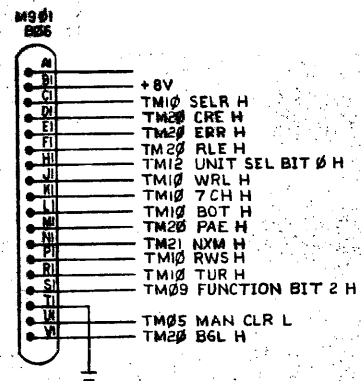
REV	A
CHANGE NO.	00009
DATE	1/17/71
BY	JRIZ
APP'D	[Signature]

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-11				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	DRW. DATE 2-9-71	DATE 2-9-71	EQUIPMENT CORPORATION	
TOLERANCES	CHKD. DATE 2-9-71	DATE 2-9-71	TITLE	
DECIMALS	ENG. DATE 2-9-71	DATE 2-9-71	MAG TAPE CABLE	
ANGLES	PROJ. DATE 2-9-71	DATE 2-9-71	PRICR JMPR	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROD. DATE 2-9-71	DATE 2-9-71	MOD	
MATERIAL	NEXT HIGHER ASSY.	A-1AL-TM11-0		
FINISH	SCALE	SHEET 2 OF 2		

8 7 6 5 4 3 2 1

TM11-0-04

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FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-11				
PARTS LIST				
<b>TMI1 MAINT PANEL CABLE CONN</b>				
MATERIAL		NEXT HIGHER ASSY		
FINISH		SCALE		
		D BSI TMI1-0-05		
		REV		
		DST.		

REVISED  
CHANGE NO.  
DATE

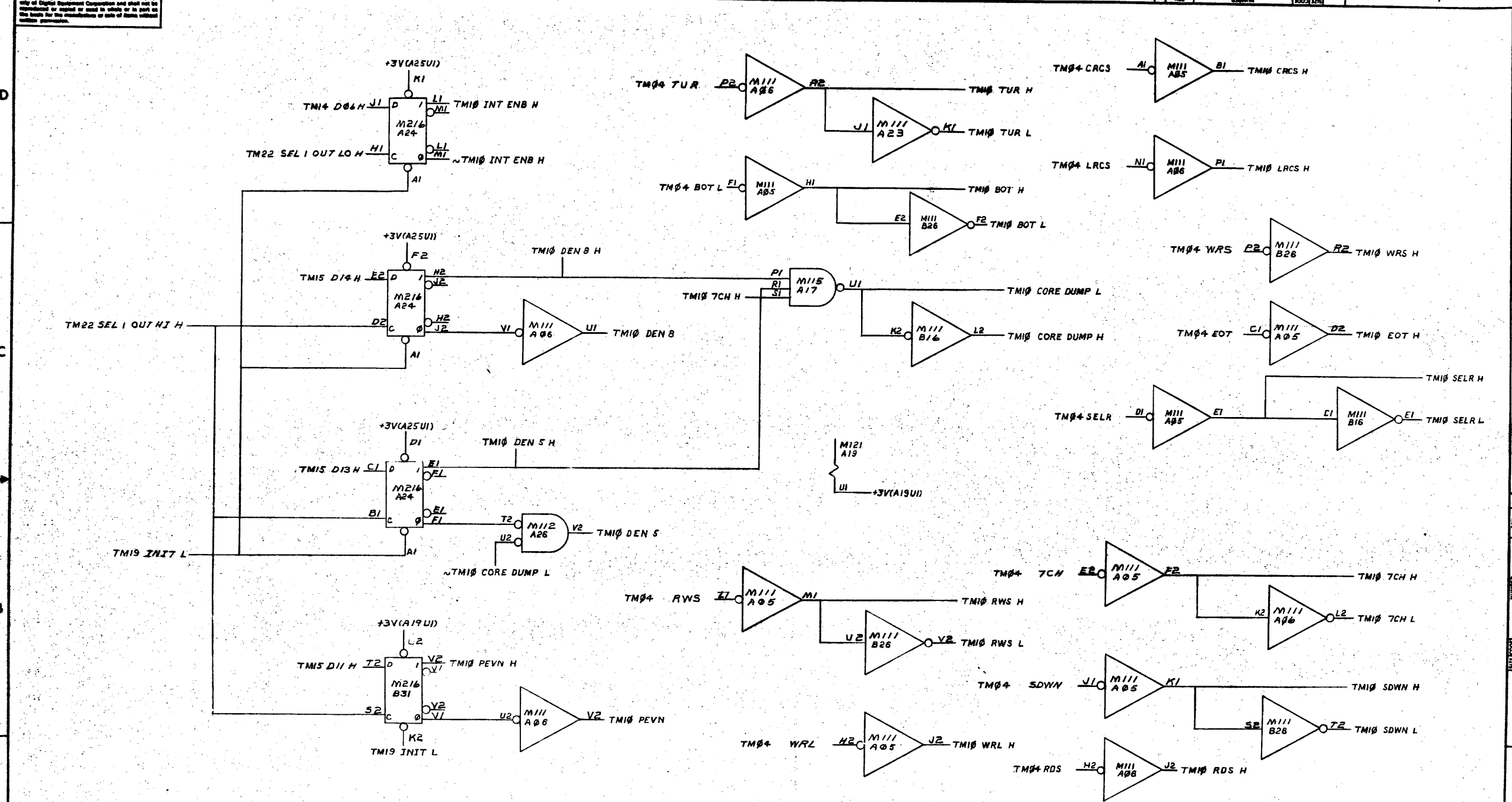
D BSI TMI1-0-05











REV	NO	DATE	BY
1	1		

SECTION NO. 8

FIRST USED ON OPTION/MOD	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-11				

UNLESS OTHERWISE SPECIFIED		DATE	
DRN	1-28-71	DATE	1-28-71
CHKD	3-29-71	DATE	3-29-71
ENGR	3-29-71	DATE	3-29-71
PROJ ENGR	3-29-71	DATE	3-29-71
PROD	5/16/71	DATE	5/16/71

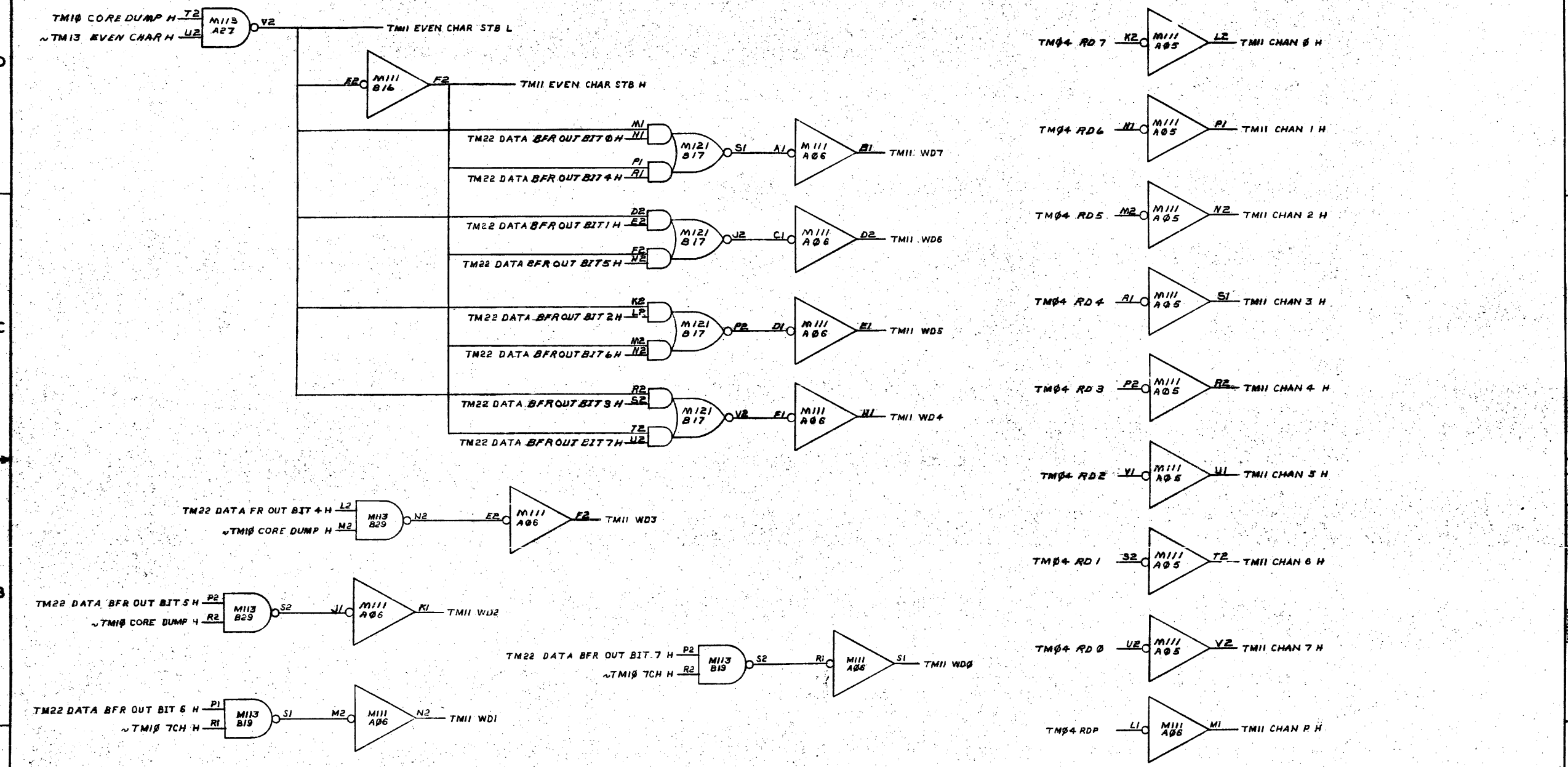
  

PARTS LIST		TITLE	
digital	EQUIPMENT CORPORATION	TAPPE UNIT INTERFACE	

FINISH	SCALE	SHEET	OF	DIST.
---	NONE			

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REV	CHANGE NO.	DATE

DEC FORM NO. 1024

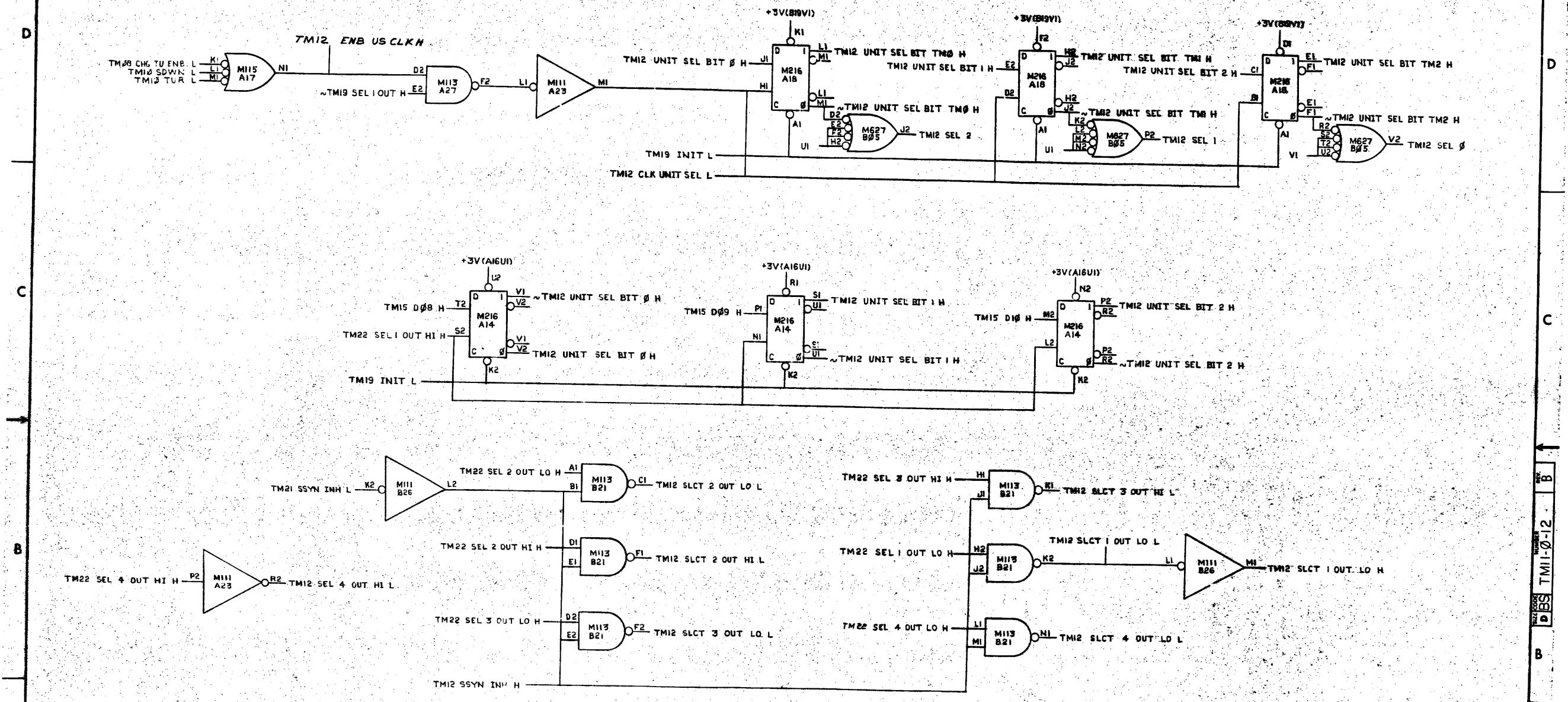
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PDP-11				
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UNLESS OTHERWISE SPECIFIED	CHK'D: <i>3</i>	DATE: <i>3/6/71</i>	DIGITAL EQUIPMENT CORPORATION	
DIMENSIONS IN INCHES	ENG: <i>3</i>	DATE: <i>1-29-71</i>	MAYNARD MASSACHUSETTS	
TOLERANCES	PROJ ENG: <i>3</i>	DATE: <i>1-29-71</i>	TITLE	
DIMENSIONS IN INCHES	PROD: <i>3</i>	DATE: <i>5/1/71</i>	MAG TAPE READ/WRITE LINES	
DECIMALS FRACTIONS ANGLES			NEXT HIGHER ASSY	
± .005 ± 1/64 ± 0°30'			A-ML-TMII-0	
FINE SURFACE QUALITY			SIZE/CODE	NUMBER
REMOVE BURRS AND BREAK SHARP CORNERS			DBS	TMII-0-11
MATERIAL			SCALE	NONE
			SHEET	OF 1
FINISH			DIST.	

REV  
DBS  
TMII-0-11



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21-0-11W1-12 2



REV.	DATE	BY	CHKD.
1	6-10-71	FR17	FR17
2	6-22-71	FR17	FR17
3	6-22-71	FR17	FR17
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8	6-22-71	FR17	FR17

FIRST USED ON OPTION/ MODEL  
PDP-11

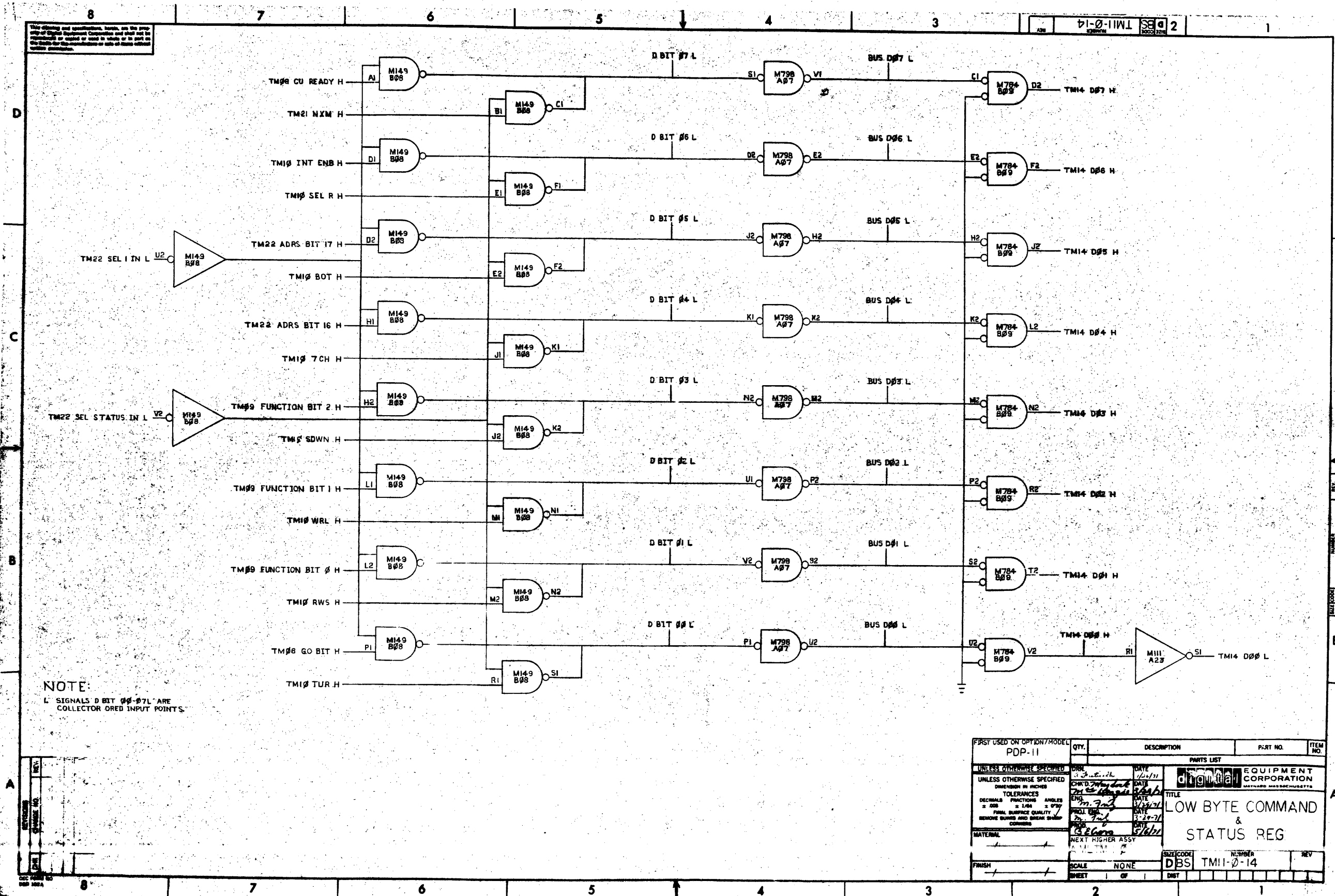
DO NOT SCALE DRAWING  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS IN INCHES  
TOLERANCES  
DIMENSIONAL FINISHES  
MATERIAL  
FINISH

DATE	BY	CHKD.	DATE
6/12/71	FR17	FR17	6/12/71
6/22/71	FR17	FR17	6/22/71
6/22/71	FR17	FR17	6/22/71
6/22/71	FR17	FR17	6/22/71
6/22/71	FR17	FR17	6/22/71

DESCRIPTION	PART NO.	ITEM NO.
EQUIPMENT CORPORATION MAYFIELD, MASSACHUSETTS		
TITLE		
TAPE UNIT & REGISTER SELECT		
SCALE		
SHEET 1 OF 1		
DBS TM11-0-12		



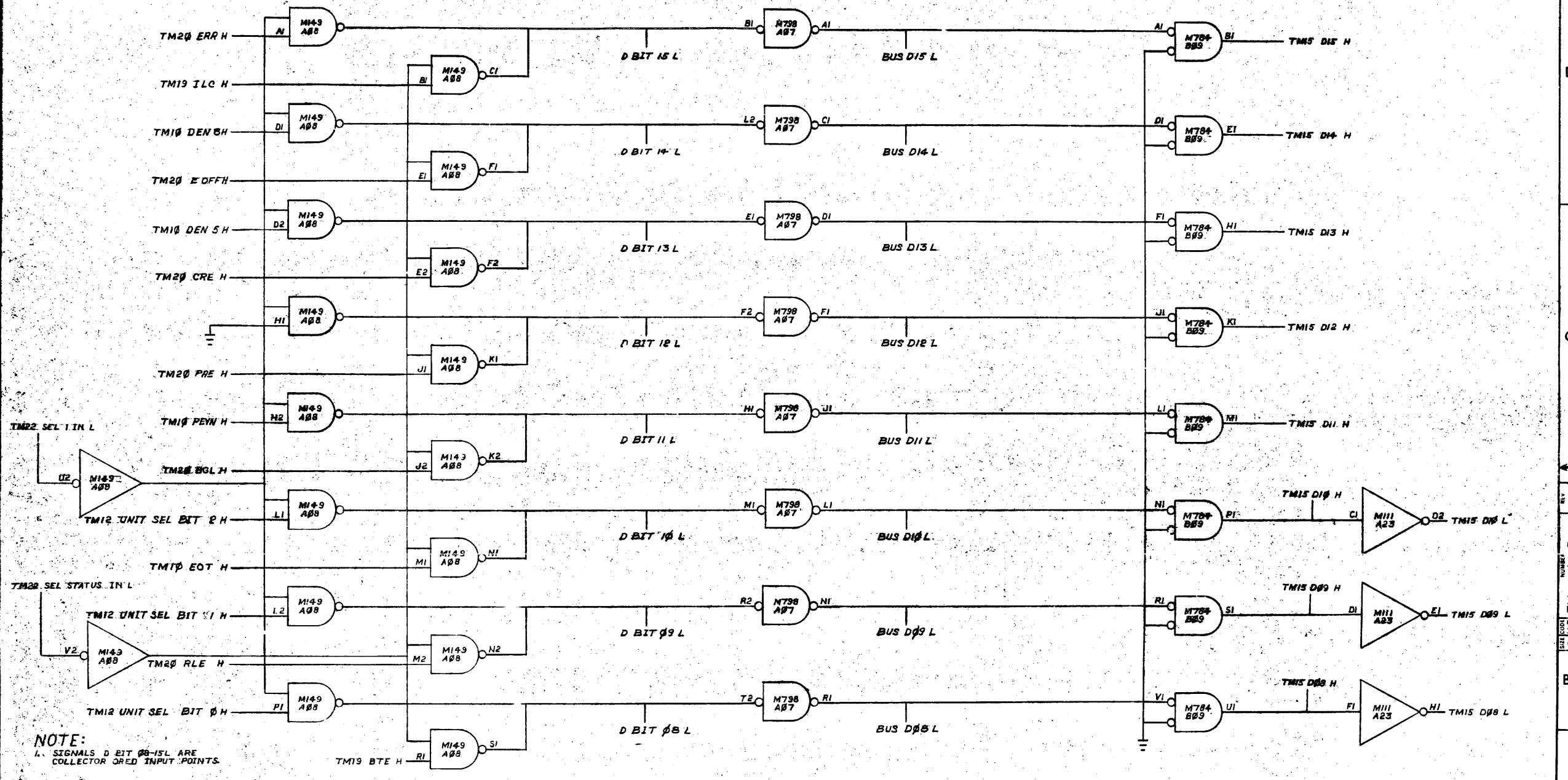
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NOTE:  
L SIGNALS D BIT 00-07L ARE COLLECTOR ORED INPUT POINTS.

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.								
PDP-11												
UNLESS OTHERWISE SPECIFIED												
DIM. <i>3/16</i> DATE <i>1/24/71</i>												
UNLESS OTHERWISE SPECIFIED												
DIMENSION IN INCHES												
TOLERANCES												
DECIMALS	FRACTIONS	ANGLES										
$\pm .005$	$\pm 1/64$	$\pm 1/16$										
FINISH SURFACE QUALITY												
REMOVE BURRS AND BREAK SHARP CORNERS												
MATERIAL												
NEXT HIGHER ASSY												
FINISH												
SCALE NONE												
SHEET OF												
PARTS LIST			TITLE									
<table border="1"> <tr> <th>DATE</th> <th>DATE</th> <th>DATE</th> <th>DATE</th> </tr> <tr> <td><i>1/24/71</i></td> <td><i>3/24/71</i></td> <td><i>3-24-71</i></td> <td><i>5/16/71</i></td> </tr> </table>			DATE	DATE	DATE	DATE	<i>1/24/71</i>	<i>3/24/71</i>	<i>3-24-71</i>	<i>5/16/71</i>	<b>Digital EQUIPMENT CORPORATION</b> LOW BYTE COMMAND & STATUS REG	
DATE	DATE	DATE	DATE									
<i>1/24/71</i>	<i>3/24/71</i>	<i>3-24-71</i>	<i>5/16/71</i>									
SIZE/CODE			NUMBER									
DBS			TM11-0-14									
REV			REV									

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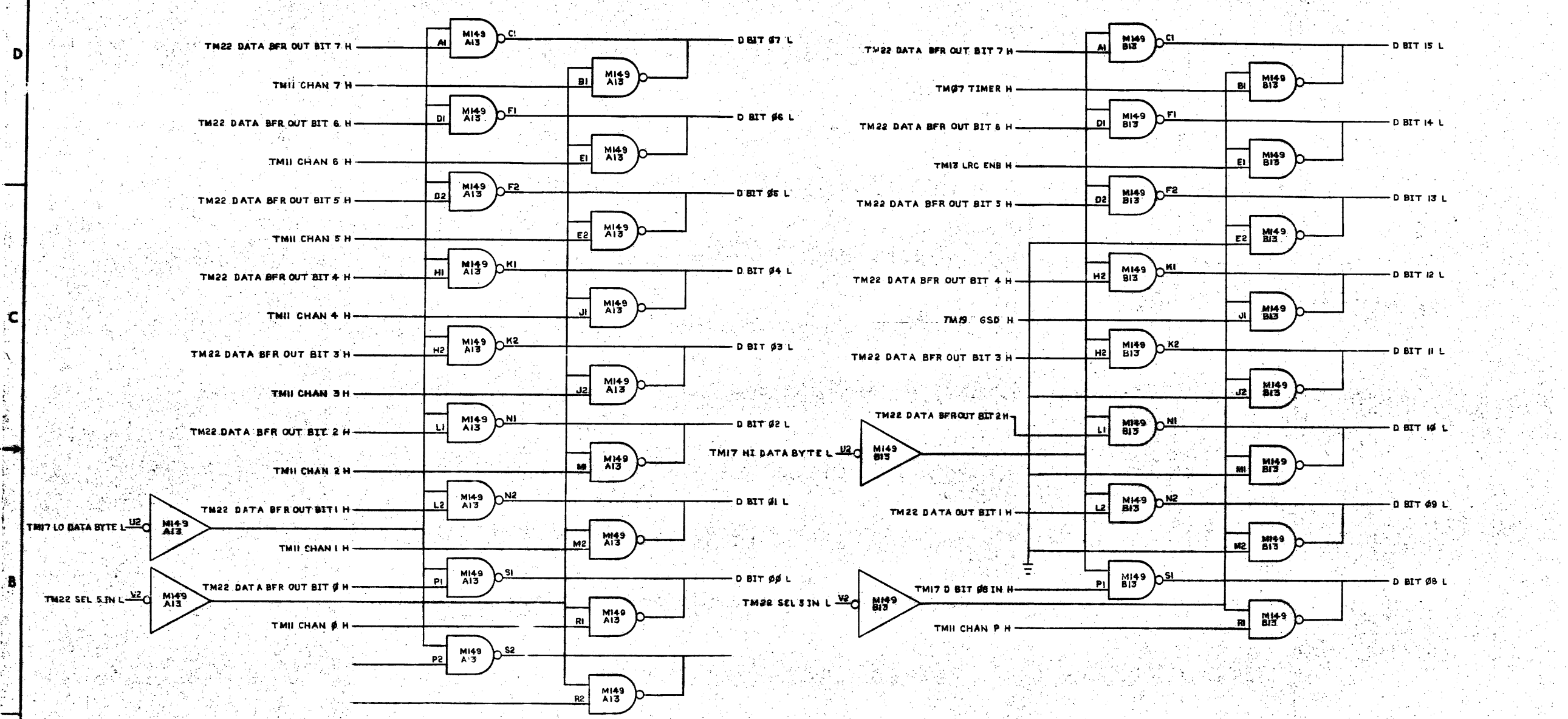


NOTE:  
1. SIGNALS D BIT 08-15L ARE COLLECTOR DRED INPUT POINTS.

REV.	NO.	DATE

FIRST USED ON OPTION MODEL PDP-11	QTY.	DESCRIPTION	PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES DECIMALS FRACTIONS ANGLES ± .005 ± 1/32 ± 0°30' REMOVE BURRS AND BREAK SHARP CORNERS	DATE 1-19-71	DATE 3-29-71	DATE 1-29-71	DATE 3/4/71
PARTS LIST				
DIGITAL EQUIPMENT CORPORATION				
TITLE HIGH BYTE COMMAND & STATUS REG				
NEXT HIGHER ASSY A-ML-TM11-0				
SCALE SHEET 2 OF 1				
SIZE CODE NUMBER REV. DBS TM11-0-15				

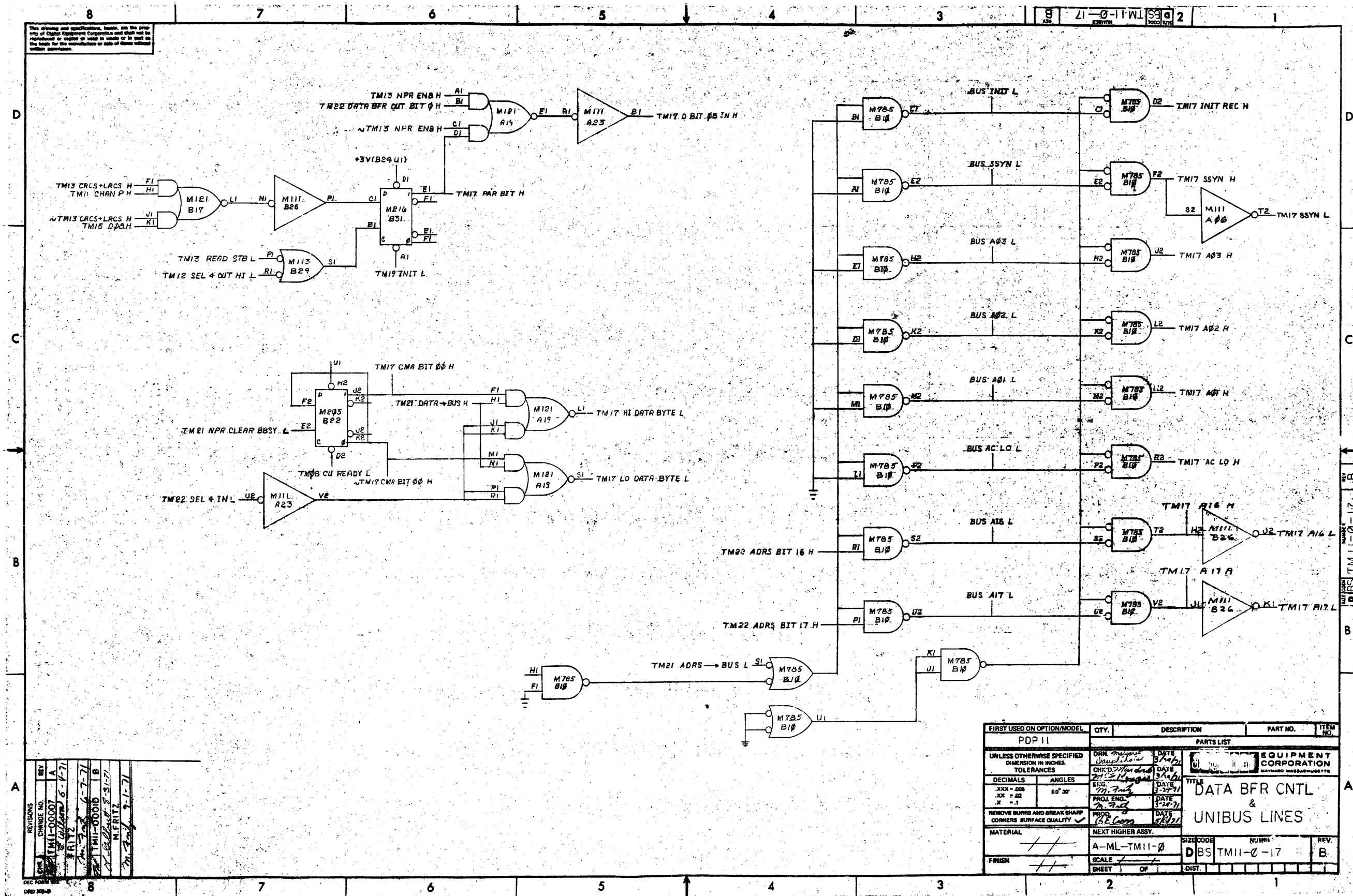
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REV.	CHG. NO.	DATE	BY
1	00008		A
2			
3			
4			
5			
6			
7			

FIRST USED ON OPTION/MODEL PDP-11	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED	DATE	DIGITAL EQUIPMENT CORPORATION MAYFIELD MASSACHUSETTS		
UNLESS OTHERWISE SPECIFIED	DATE	TITLE		
DIMENSION IN INCHES	DATE	DATA BUFFER & READ LINES TO BUS		
TOLERANCES	DATE	SUBCODE NUMBER REV.		
DECIMALS FRACTIONS ANGLES	DATE	DBS TM11-0-16 A		
± .008 ± .1/64 ± .020	DATE	SHEET OF		
FINISH SURFACE QUALITY	DATE	DST.		
REMOVE BURRS AND BREAK SHARP CORNERS	DATE	17		
MATERIAL	DATE			
NEXT MEMBER ASSY	DATE			
SCALE	DATE			
SHEET	DATE			

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REV	CHG	NO.	DATE	BY	CHKD	DATE	BY
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2		0008	6-7-71	M. F. ...			
3		0009	6-11-71	M. F. ...			
4		0010	8-31-71	M. F. ...			
5		0011	9-1-71	M. F. ...			

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 11				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED	DRN. <i>W. J. ...</i>	DATE <i>3-24-71</i>	EQUIPMENT CORPORATION	
DIMENSION IN INCHES	CHKD. <i>W. J. ...</i>	DATE <i>3-24-71</i>	MAYNARD MASSCHUSETTS	
TOLERANCES	ENG. <i>M. F. ...</i>	DATE <i>3-24-71</i>	TITLE	
DECIMALS	PROJ. ENG. <i>M. F. ...</i>	DATE <i>3-24-71</i>	DATA BFR CNTL	
ANGLES	PROD. <i>M. F. ...</i>	DATE <i>3-24-71</i>	& UNIBUS LINES	
.XXX - .008			NEXT HIGHER ASSY.	
.XXX - .02			A-ML-TM11-0	
.X - .1			SCALE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY			SHEET OF	
MATERIAL			SIZE CODE	
FINISH			D B S T M 11 - 0 - 17	
			REVISION	
			B	



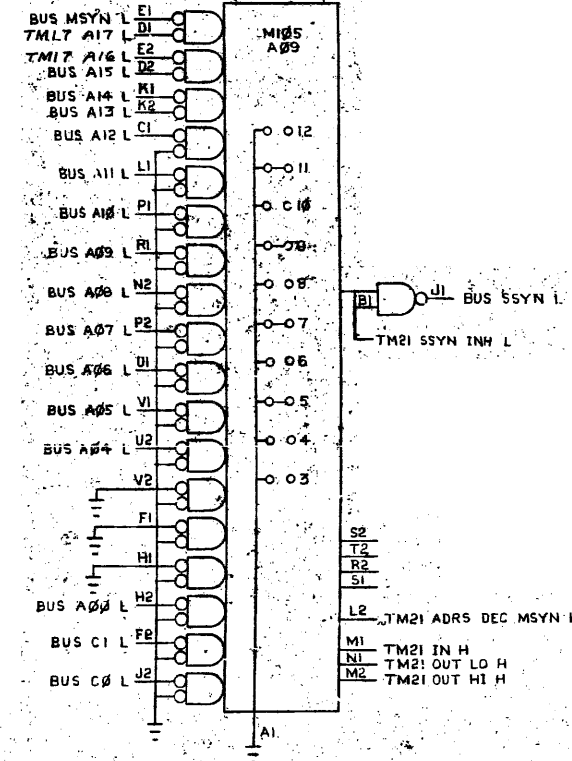
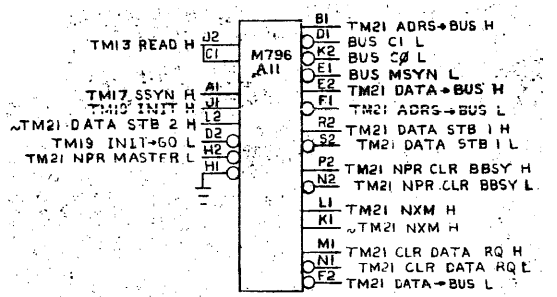
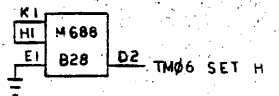
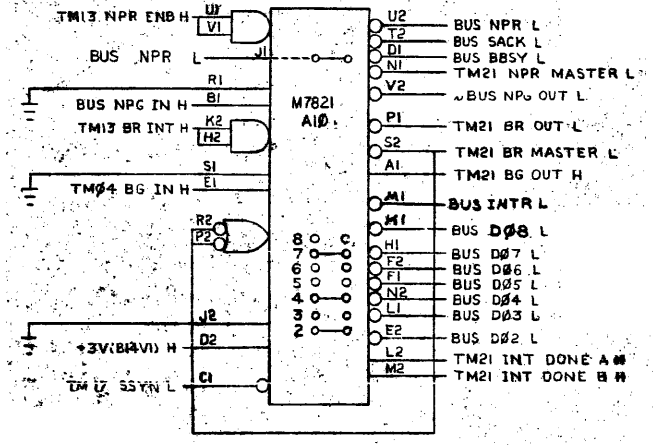
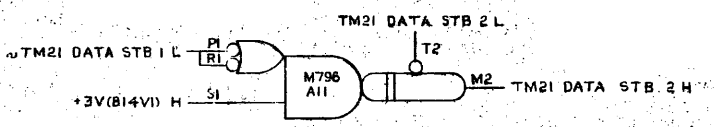
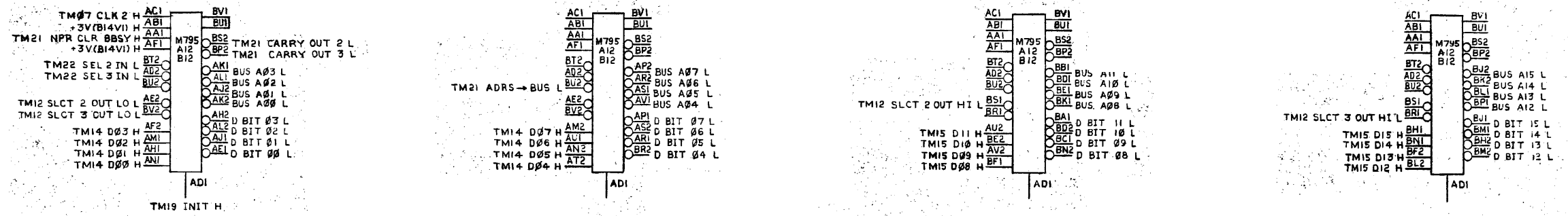








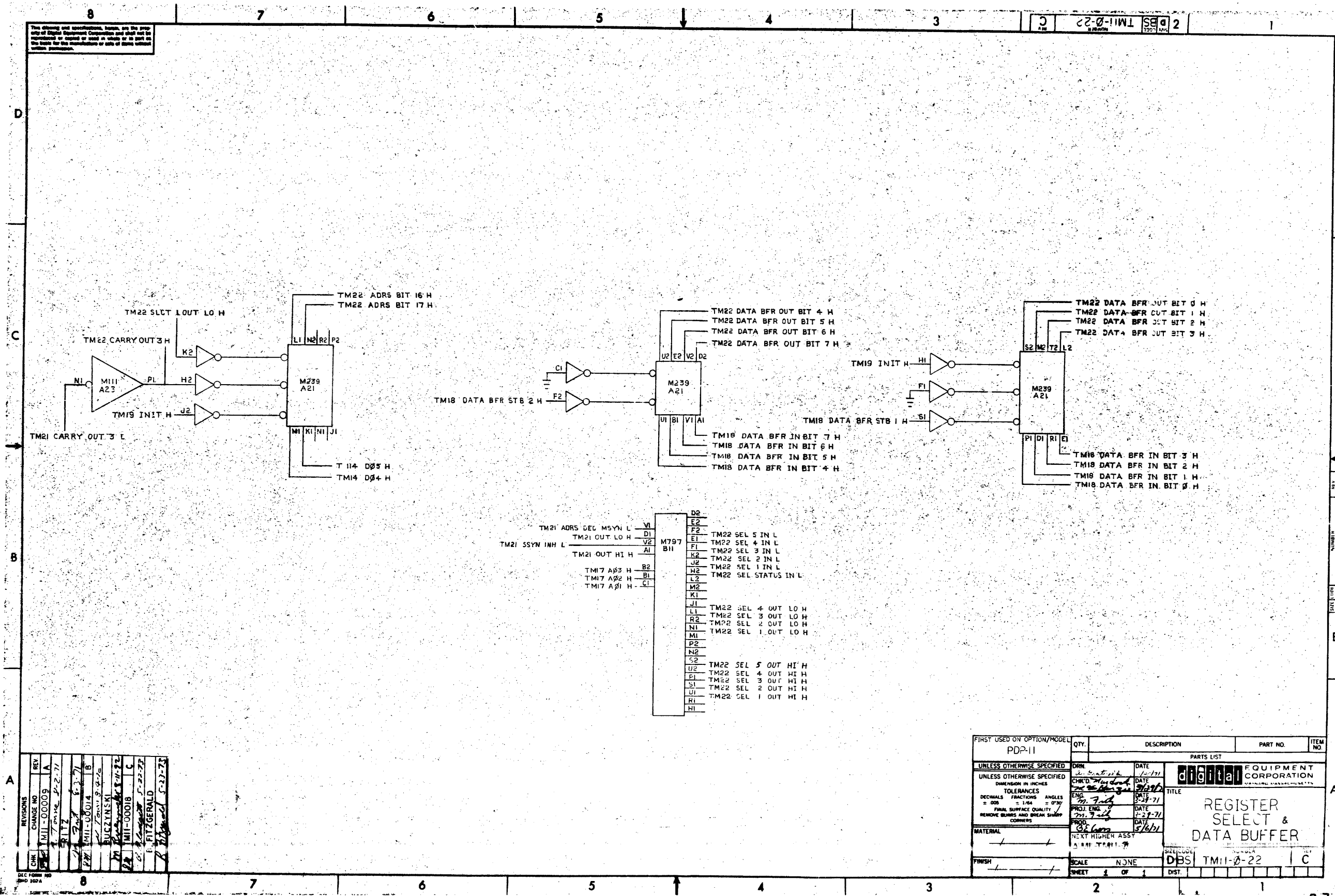
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3	00009	B	1-1-71
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5	00011	D	1-1-71
6	00012	D	1-1-71
7	00013	E	1-1-71
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22	00028	F	1-1-71
23	00029	F	1-1-71
24	00030	F	1-1-71
25	00031	F	1-1-71
26	00032	F	1-1-71
27	00033	F	1-1-71
28	00034	F	1-1-71
29	00035	F	1-1-71
30	00036	F	1-1-71
31	00037	F	1-1-71
32	00038	F	1-1-71
33	00039	F	1-1-71
34	00040	F	1-1-71
35	00041	F	1-1-71
36	00042	F	1-1-71
37	00043	F	1-1-71
38	00044	F	1-1-71
39	00045	F	1-1-71
40	00046	F	1-1-71
41	00047	F	1-1-71
42	00048	F	1-1-71
43	00049	F	1-1-71
44	00050	F	1-1-71
45	00051	F	1-1-71
46	00052	F	1-1-71
47	00053	F	1-1-71
48	00054	F	1-1-71
49	00055	F	1-1-71
50	00056	F	1-1-71
51	00057	F	1-1-71
52	00058	F	1-1-71
53	00059	F	1-1-71
54	00060	F	1-1-71
55	00061	F	1-1-71
56	00062	F	1-1-71
57	00063	F	1-1-71
58	00064	F	1-1-71
59	00065	F	1-1-71
60	00066	F	1-1-71
61	00067	F	1-1-71
62	00068	F	1-1-71
63	00069	F	1-1-71
64	00070	F	1-1-71
65	00071	F	1-1-71
66	00072	F	1-1-71
67	00073	F	1-1-71
68	00074	F	1-1-71
69	00075	F	1-1-71
70	00076	F	1-1-71
71	00077	F	1-1-71
72	00078	F	1-1-71
73	00079	F	1-1-71
74	00080	F	1-1-71
75	00081	F	1-1-71
76	00082	F	1-1-71
77	00083	F	1-1-71
78	00084	F	1-1-71
79	00085	F	1-1-71
80	00086	F	1-1-71
81	00087	F	1-1-71
82	00088	F	1-1-71
83	00089	F	1-1-71
84	00090	F	1-1-71
85	00091	F	1-1-71
86	00092	F	1-1-71
87	00093	F	1-1-71
88	00094	F	1-1-71
89	00095	F	1-1-71
90	00096	F	1-1-71
91	00097	F	1-1-71
92	00098	F	1-1-71
93	00099	F	1-1-71
94	00100	F	1-1-71

QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST			
DIGITAL EQUIPMENT CORPORATION MAYFELD, MASSACHUSETTS			
TITLE TM11 COMBINED PACKAGES			
NEXT HIGHER ASSY A-ML-TM11-0		SIZE CODE D/BS	NUMBER TM11-0-21
SCALE NONE		REV. F	
SHEET OF		DST.	

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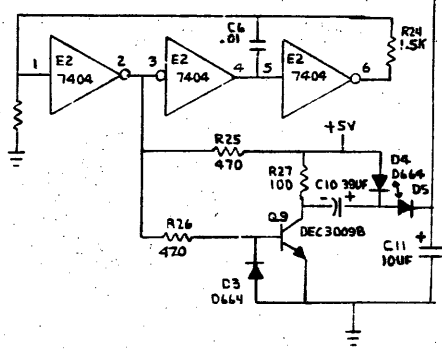
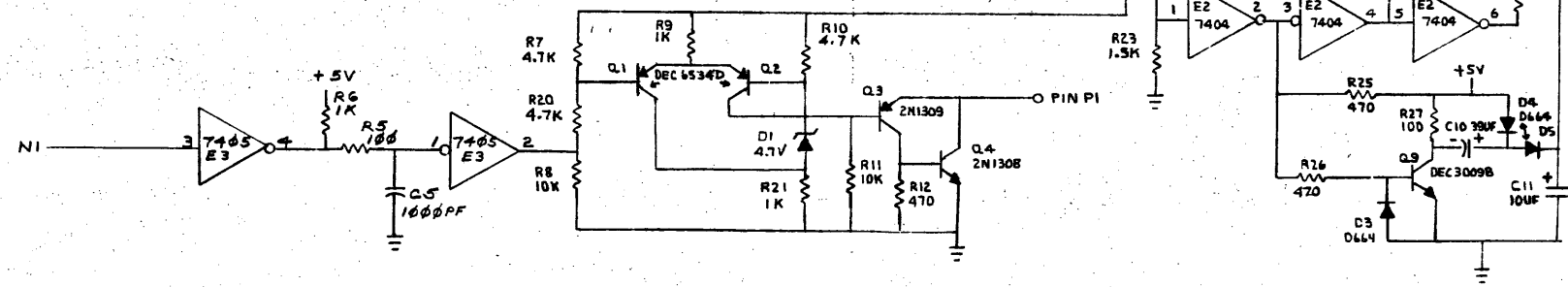
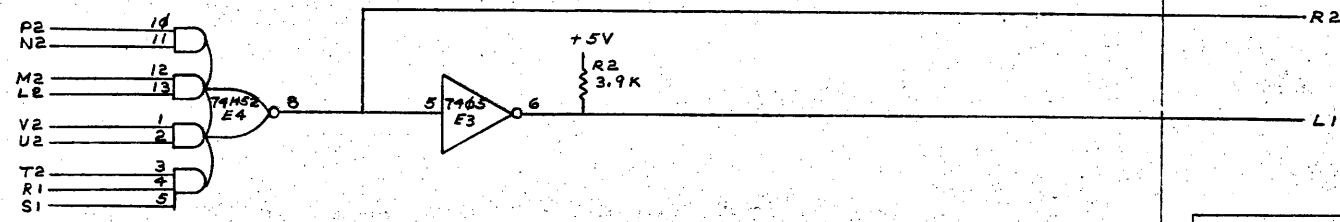
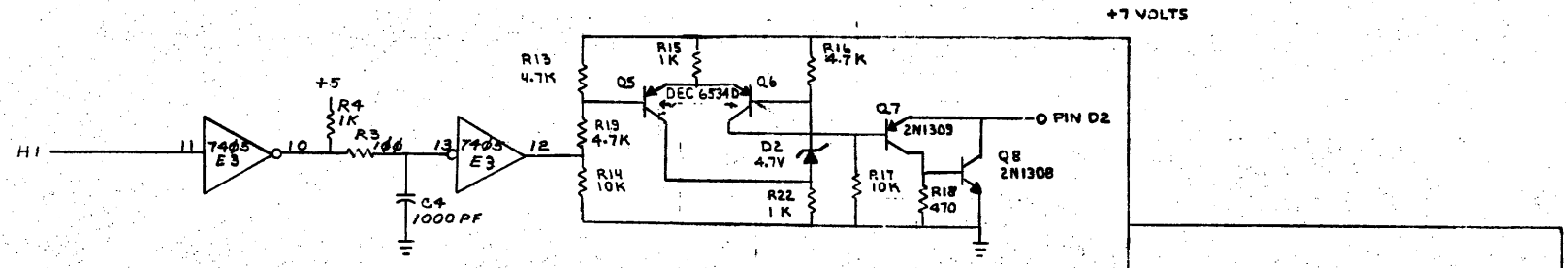
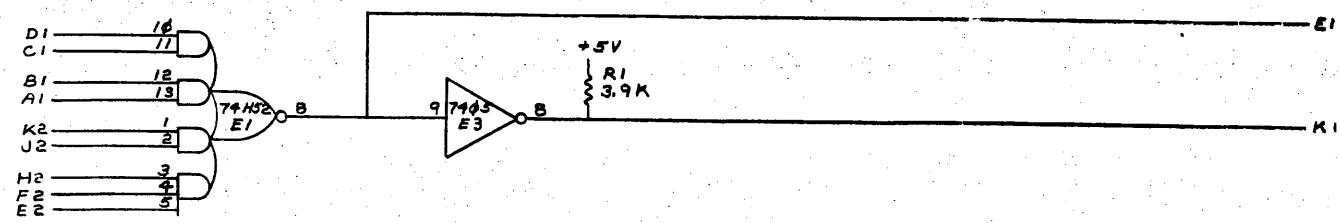
REV	CHANGE NO	REV
A	1	1111-00009
B	2	1111-00014
C	3	1111-00018
D	4	1111-00022
E	5	1111-00027
F	6	1111-00031
G	7	1111-00035
H	8	1111-00039
I	9	1111-00043
J	10	1111-00047
K	11	1111-00051
L	12	1111-00055
M	13	1111-00059
N	14	1111-00063
O	15	1111-00067
P	16	1111-00071
Q	17	1111-00075
R	18	1111-00079
S	19	1111-00083
T	20	1111-00087
U	21	1111-00091
V	22	1111-00095
W	23	1111-00099
X	24	1111-00103
Y	25	1111-00107
Z	26	1111-00111

FIRST USED ON OPTION/MODEL PD-11	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS FRACTIONS ANGLES ± .005 ± .1/64 ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	DRN DATE CHK'D DATE ENG DATE PROJ. ENG DATE PROD DATE	DATE 12/2/71 DATE 3/24/71 DATE 12/29/71 DATE 5/6/71	<b>digital</b> EQUIPMENT CORPORATION	
MATERIAL	NEXT HIGHER ASSY		REGISTER SELECT & DATA BUFFER	
FINISH	SCALE NONE	SHEET 4 OF 1	SIZE CODE DBS TM11-0-22   C	



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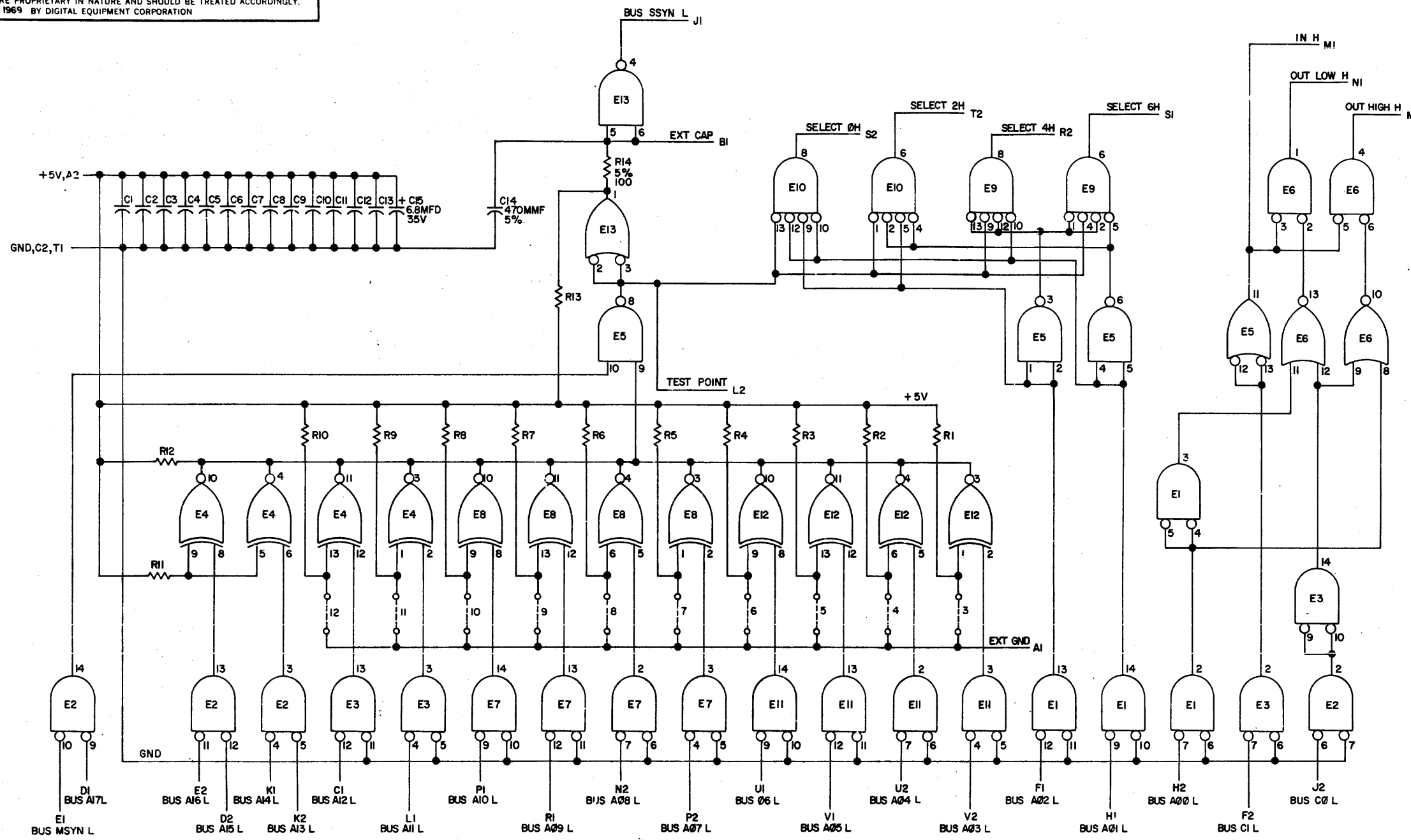
1-0-889W50 2



REV	CHANGE NO
LINK	
DEC FORM NO	DSD M2-B

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 11				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN 5/19/72 CHK 6/1/72	DATE 5/19/72 DATE 6/1/72	<b>digital</b> EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	
DECIMALS	ANGLES	ENG 6/1/72	TITLE UNIBUS POWER FAIL DRIVERS	
.XXX - .005	±0° 30'	PROJ. ENG 6-1-72		
.XX - .02		DATE 6/1/72		
.X - .1		DATE 6/1/72		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROJ. MGR 6/1/72	DATE 6/1/72		
MATERIAL	NEXT HIGHER ASSY	SIZE CODE	NUMBER	REV.
FINISH	SCALE NONE	DCS M688-0-1		E
	SHEET 2 OF 2	DIST.		

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UNLESS OTHERWISE INDICATED:  
 ○ INDICATES JUMPERS  
 RESISTORS ARE 1K, 1/4W, 5%  
 CAPACITORS ARE .01MFD, 100V, 20%  
 E1, E2, E3, E7, E11 ARE DEC8540  
 E4, E8, E12 ARE DEC8242  
 E9, E10 ARE DEC8815  
 E5 IS DEC7400  
 E6 IS DEC7402  
 E13 IS DEC8881  
 PIN 1 ON E1, E2, E3, E7, E11 = GND  
 PIN 8 ON E1, E2, E3, E7, E11 = +5V  
 PIN 7 ON E4, E5, E6, E8, E9, E10, E12, E13 = GND  
 PIN 14 ON E4, E5, E6, E8, E9, E10, E12, E13 = +5V

REV	NO.	BY	CHKD	DATE
A	1			
B	1			
C	1			

DRN	DATE
CHKD	DATE
ENG	DATE
PROJ	DATE

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA



TITLE			
ADDRESS SELECTOR M105			
SIZE	CODE	NUMBER	REV
C	CS	M105-0-1	C
PRINTED CIRCUIT REV.			

DEC FORM NO. DRC 102

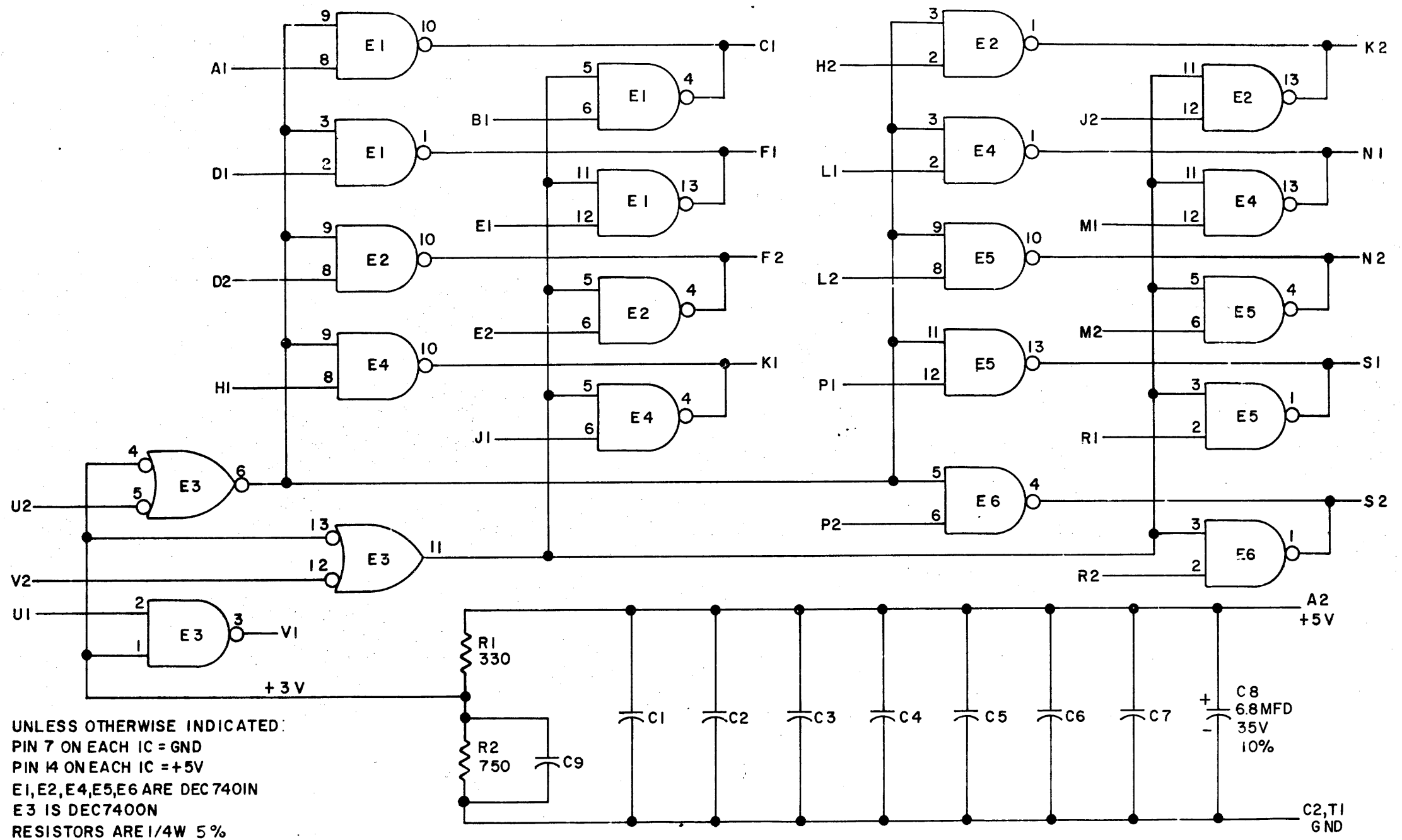
MS 449-P6

Dist. 325 934 +135°

5 Pink

REV. C  
 NUMBER M105-0-1  
 SIZE CODE C CS

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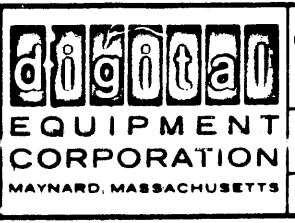


UNLESS OTHERWISE INDICATED:  
 PIN 7 ON EACH IC = GND  
 PIN 14 ON EACH IC = +5V  
 E1, E2, E4, E5, E6 ARE DEC 7401N  
 E3 IS DEC 7400N  
 RESISTORS ARE 1/4W 5%  
 CAPACITORS ARE .01MFD, 50V,

REVISONS	CHK	CHG NO.	REV.
		0001	B
		0002	C
		0003	D

DRN.	DATE
<i>[Signature]</i>	3-26-69
CHK'D	DATE
<i>[Signature]</i>	3-29-69
ENGR.	DATE
<i>[Signature]</i>	4/23/69
PROD.	DATE

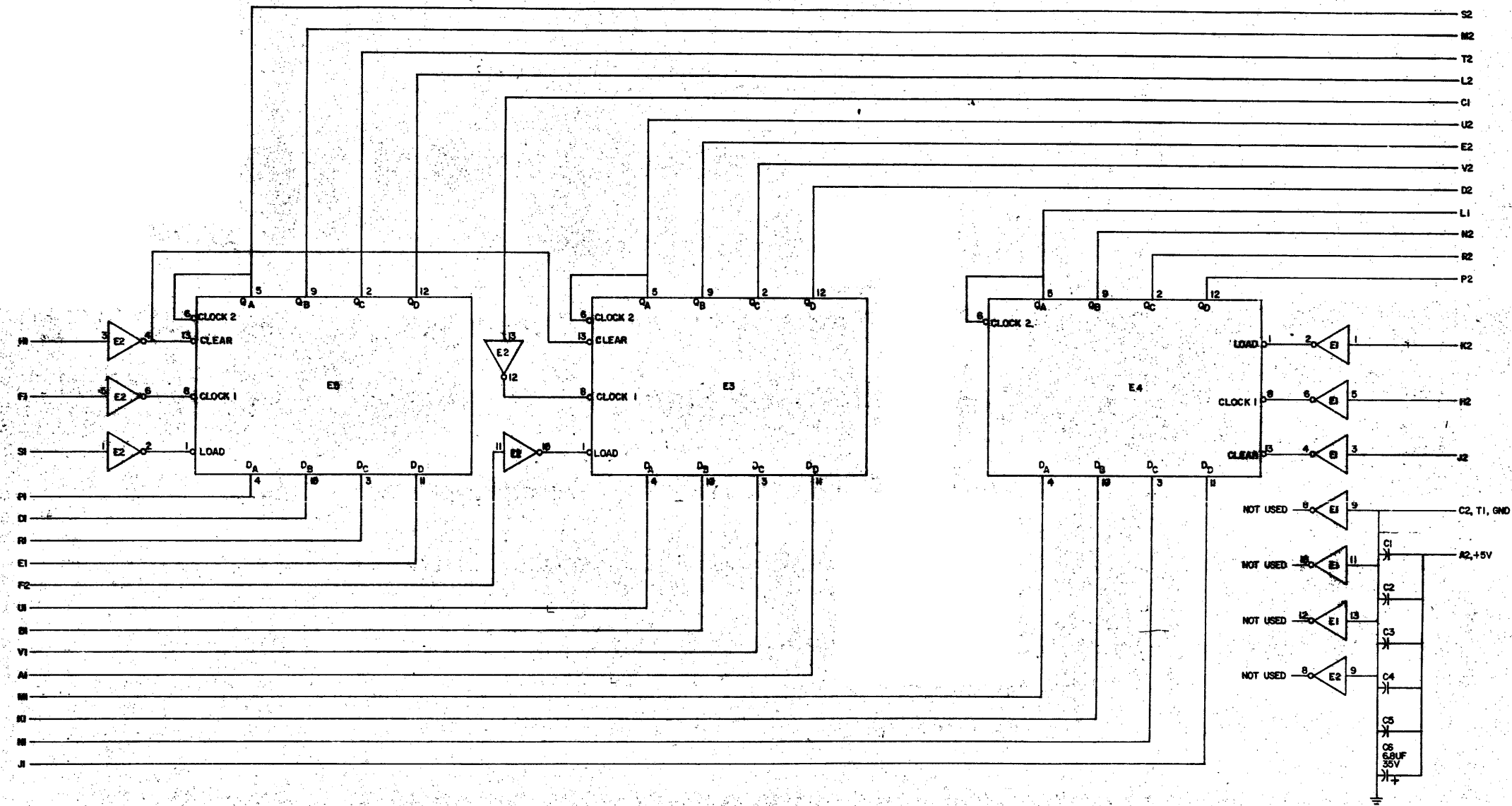
TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA



TITLE			
9X2 NAND WIRED OR MATRIX			
M149			
SIZE	CODE	NUMBER	REV.
B	CS	M149-0-1	D
PRINTED CIRCUIT REV.			C

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D 13 M239-0-1



UNLESS OTHERWISE INDICATED:  
 CAPACITORS ARE .01UF, 100V, 20%  
 E3, E4, E5 ARE DEC74H97  
 E1, E2 ARE DEC74H94  
 ON ALL IC'S PIN 14 = +5V, PIN 7 = GND

MS 1077

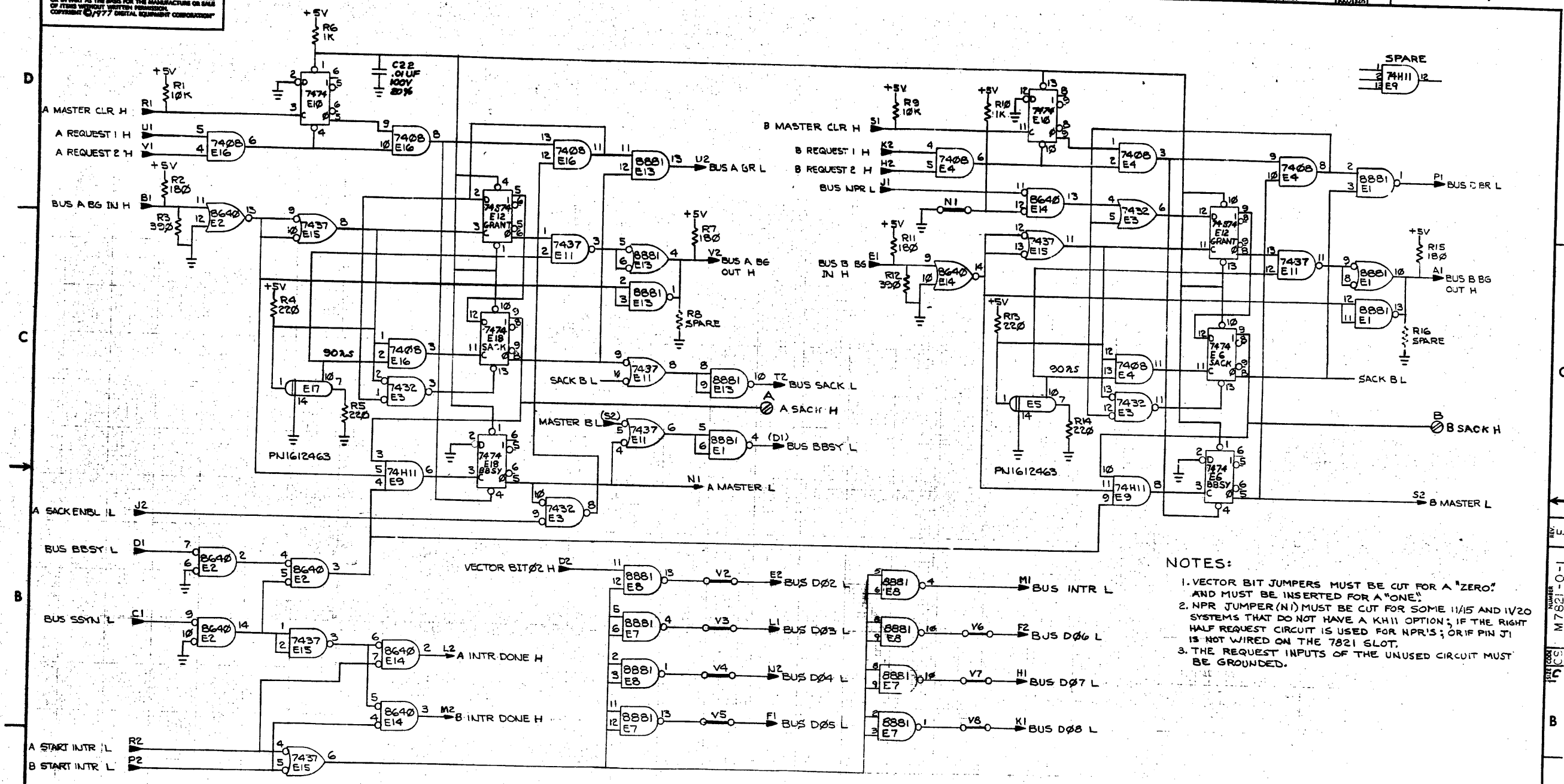
TRANSISTOR & DIODE CONVERSION CHART				TITLE	
DEC	EA	DEC	EA	NO.	REV.
				THREE 4-BIT COUNTER REGISTER	M239

EQUIPMENT CORPORATION  
 PRINTED CIRCUIT REV. 1A

PINK



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- NOTES:
1. VECTOR BIT JUMPERS MUST BE CUT FOR A "ZERO" AND MUST BE INSERTED FOR A "ONE".
  2. NPR JUMPER (N1) MUST BE CUT FOR SOME 11/15 AND 11/20 SYSTEMS THAT DO NOT HAVE A KH11 OPTION; IF THE RIGHT HALF REQUEST CIRCUIT IS USED FOR NPR'S; OR IF PIN J1 IS NOT WIRED ON THE 7821 SLOT.
  3. THE REQUEST INPUTS OF THE UNUSED CIRCUIT MUST BE GROUNDDED.

DEC DELAY LINE	14	-
DEC 8640	1	8
IC TYPE	8640	+5V

ORDERED BY ARE. MINIMUM PINS 7 AND 26 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS

A2 +5V

C1	.01UF	100V	20%	THRU	C18	.01UF	100V	20%	C19	6.8UF	35V	10%	C20	6.8UF	35V	10%	C21	6.8UF	35V	10%
----	-------	------	-----	------	-----	-------	------	-----	-----	-------	-----	-----	-----	-------	-----	-----	-----	-------	-----	-----

C2, T1

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
ETCH BOARD REV. D				
DATE	11 AUG 77	DATE	11 AUG 77	DATE
CHKD	DATE	11 AUG 77	DATE	11 AUG 77
ENG	DATE	11 AUG 77	DATE	11 AUG 77
PROL	DATE	11 AUG 77	DATE	11 AUG 77
PRG	DATE	11 AUG 77	DATE	11 AUG 77

digital

TITLE: INTERRUPT CONTROL M7821

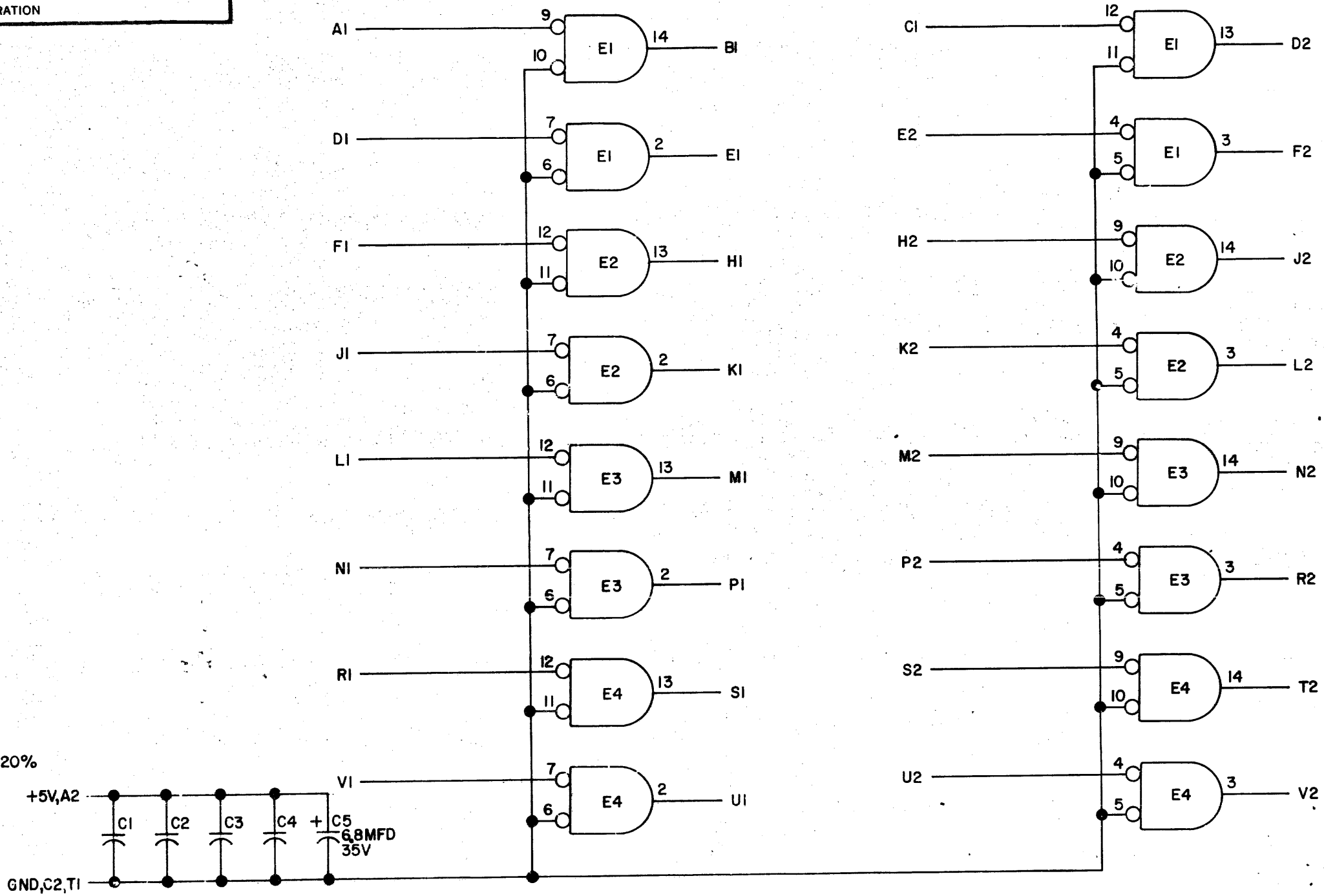
SIZE CODE: DCS M7821-0-1

REV. F

SEMICONDUCTOR CONVERSION CHART

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NOTE:  
FOR YA ONLY  
IC'S ARE DEC 384.



UNLESS OTHERWISE INDICATED:  
CAPACITORS ARE .01MFD, 100V, 20%  
IC'S ARE DEC 8640  
PIN 1 ON EACH IC=GND  
PIN 8 ON EACH IC=+5V

REV	CHG NO	REV
A	00001	
B	00002	
C	00003	
D	00004	
E	00005	

DRN	DATE
CHK'D	DATE
ENG	DATE
PROD	DATE

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA



TITLE UNIBUS RECEIVERS M784			
SIZE B	CODE CS	NUMBER M784-0-1	REV E
PRINTED CIRCUIT REV.			A B C

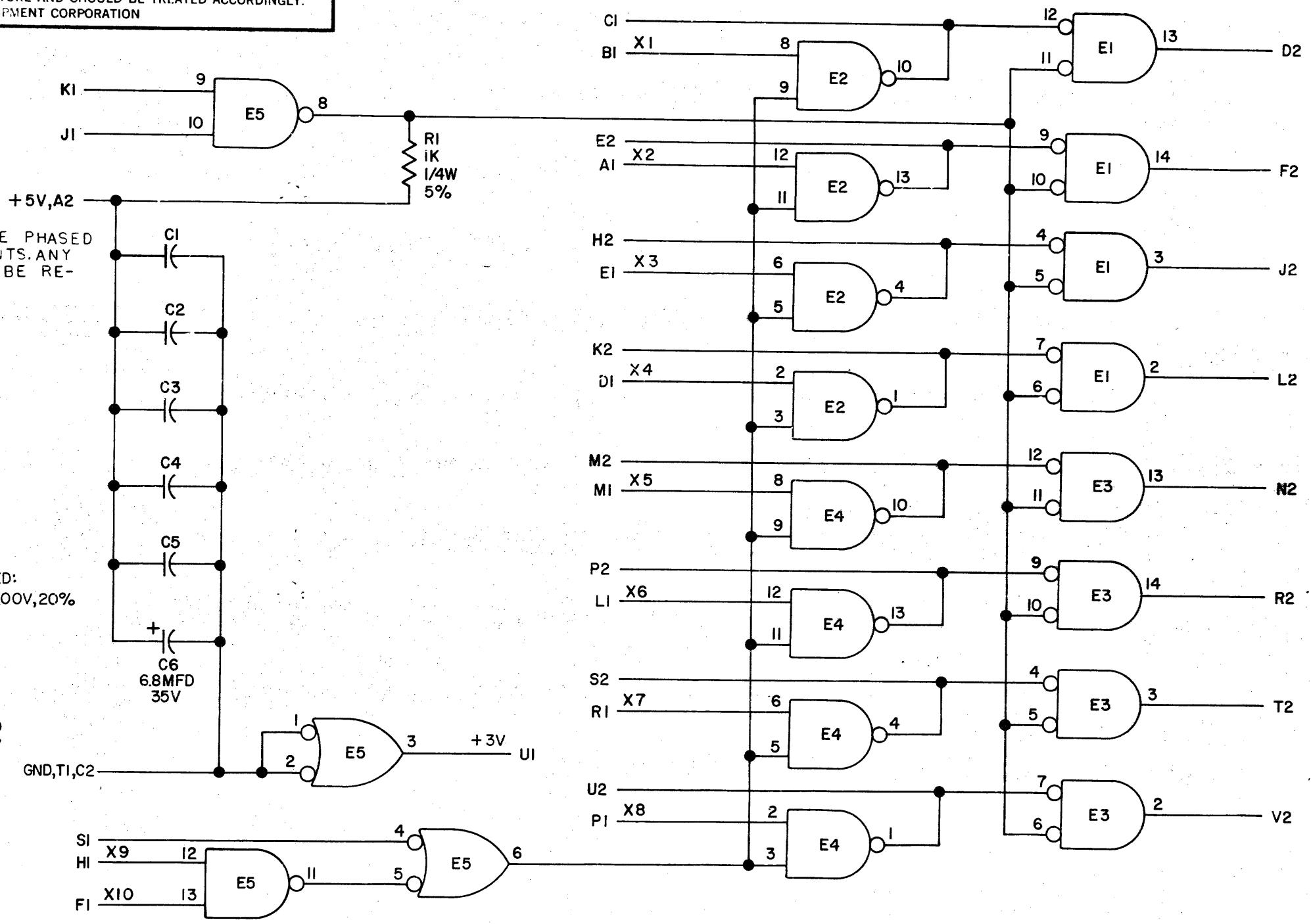
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REV. C  
 NUMBER M785-0-1  
 SIZE CODE B CS

NOTE:

DEC 8640'S WERE PHASED IN AS 380 REPLACEMENTS. ANY 380 FAILURES SHOULD BE REPLACED BY 8640'S.

UNLESS OTHERWISE INDICATED:  
 CAPACITORS ARE .01MFD, 100V, 20%  
 E1, E3 ARE DEC 8640  
 E2, E4 ARE DEC8881  
 E5 IS DEC7400  
 PIN 1 ON E1, E3 = GND  
 PIN 8 ON E1, E3 = +5V  
 PIN 7 ON E2, E4, E5 = GND  
 PIN 14 ON E2, E4, E5 = +5V



REV. NO.	CHG. NO.	REV.
0001	A	
0003	B	
0004	C	

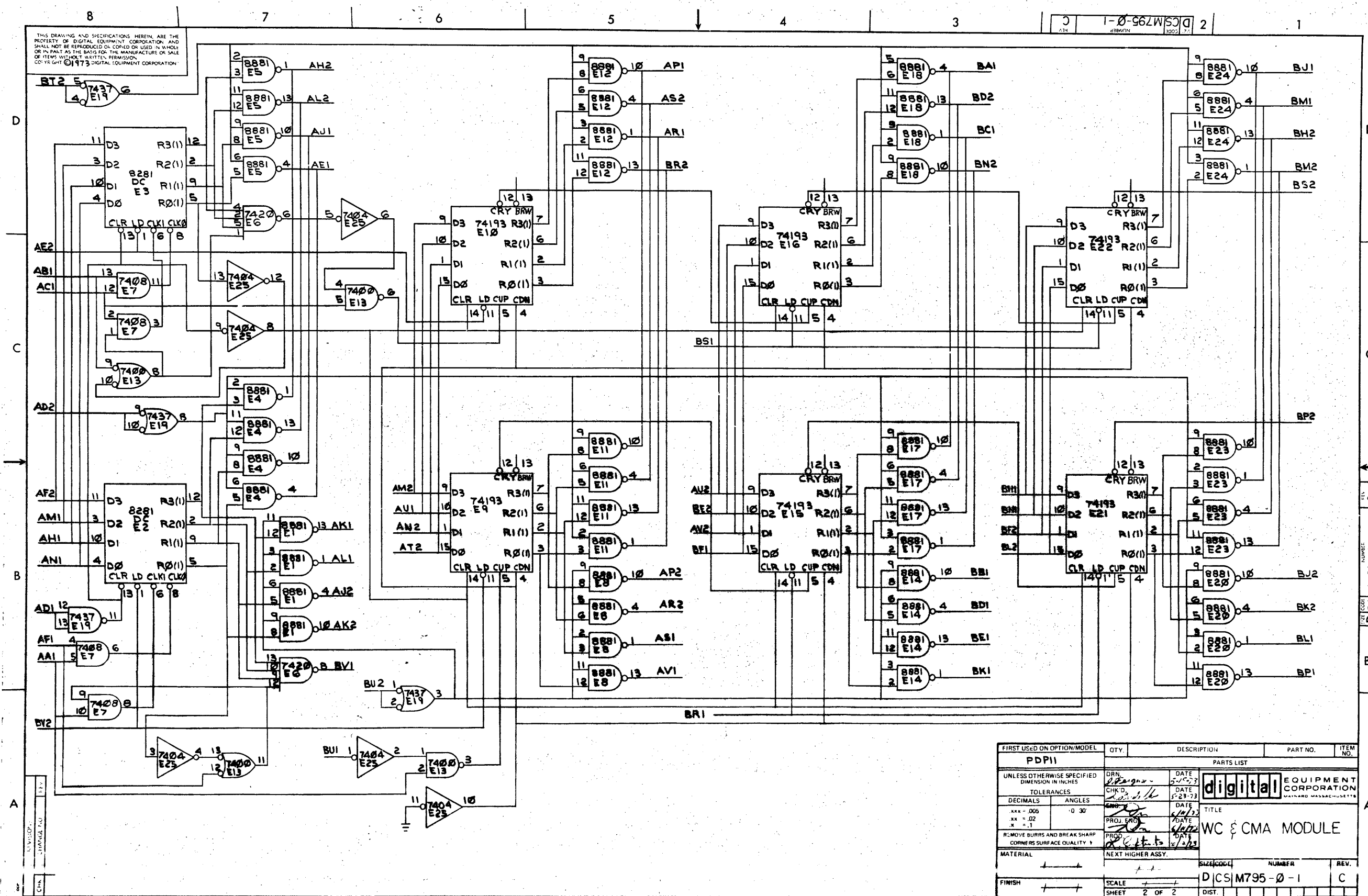
DRN.	<i>B. Patey</i>	DATE	11-19-69
CHK'D	<i>[Signature]</i>	DATE	1-7-70
ENG'D	<i>[Signature]</i>	DATE	3/11/70
PROD.		DATE	

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA



TITLE UNIBUS TRANCEIVERS M785			
SIZE	CODE	NUMBER	REV.
B	CS	M785-0-1	C
PRINTED CIRCUIT REV.			A B





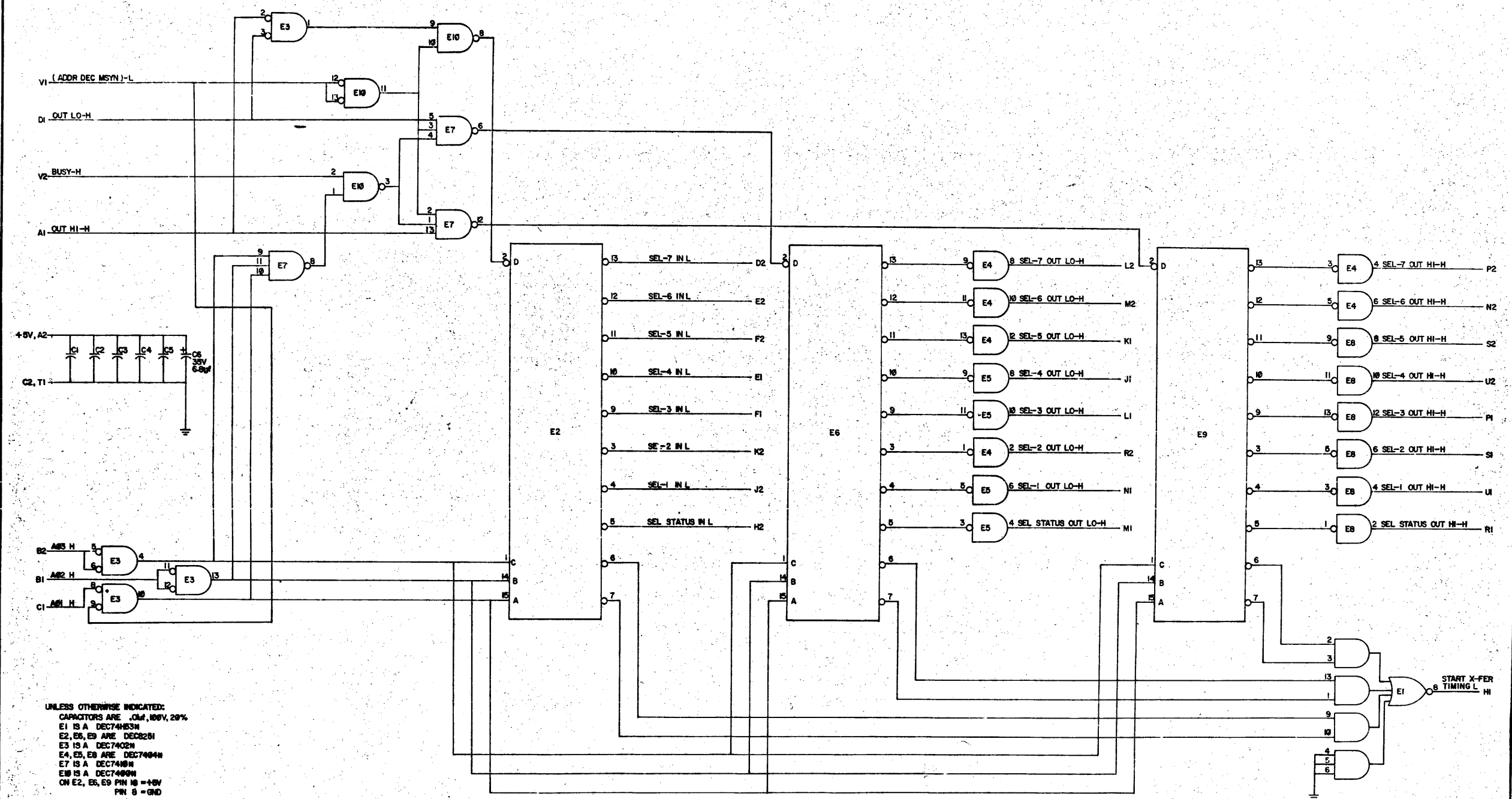
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1-0-662WCS 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP11		PARTS LIST		
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES		DRN: <i>J. Eng...</i>	DATE: 5-15-73	 <b>digital</b> EQUIPMENT CORPORATION <small>WATKINSVILLE, MASSACHUSETTS</small>
TOLERANCES		CHK'D: <i>J. Eng...</i>	DATE: 5-23-73	
DECIMALS	ANGLES	ENG: <i>J. Eng...</i>	DATE: 6/1/73	
.xxx - .005	0° 30'	PROJ. ENG: <i>J. Eng...</i>	DATE: 6/1/73	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY 1		PROD: <i>J. Eng...</i>	DATE: 6/1/73	TITLE: WC & CMA MODULE
MATERIAL	NEXT HIGHER ASSY.	SIZE/COLOR	NUMBER	REV.
FINISH	SCALE	D C S I M 795 - 0 - 1		C
	SHEET 2 OF 2	DIST.		

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1-0-8/67 W 53 0  
 100-1-1-1



UNLESS OTHERWISE INDICATED:  
 CAPACITORS ARE .001, 50V, 20%  
 E1 IS A DEC74053N  
 E2, E6, E9 ARE DEC8201  
 E3 IS A DEC7402N  
 E4, E5, E8 ARE DEC7404N  
 E7 IS A DEC7400N  
 E10 IS A DEC7400N  
 ON E2, E6, E9 PIN 10 = +5V  
 PIN 8 = GND  
 ON ALL OTHER IC'S PIN 14 = +5V  
 PIN 7 = GND

DATE: 7/1/70 BY: [Signature] CHECKED: [Signature]	TRANSISTOR & DIODE CONVERSION CHART				TITLE: REGISTER SELECT MODULE M797
	DEC	EIA	DEC	EIA	
EQUIPMENT CORPORATION		PRINTED CIRCUIT REV. [ ]		SIZE: D CS NUMBER: M797 -0-1 REV: A	

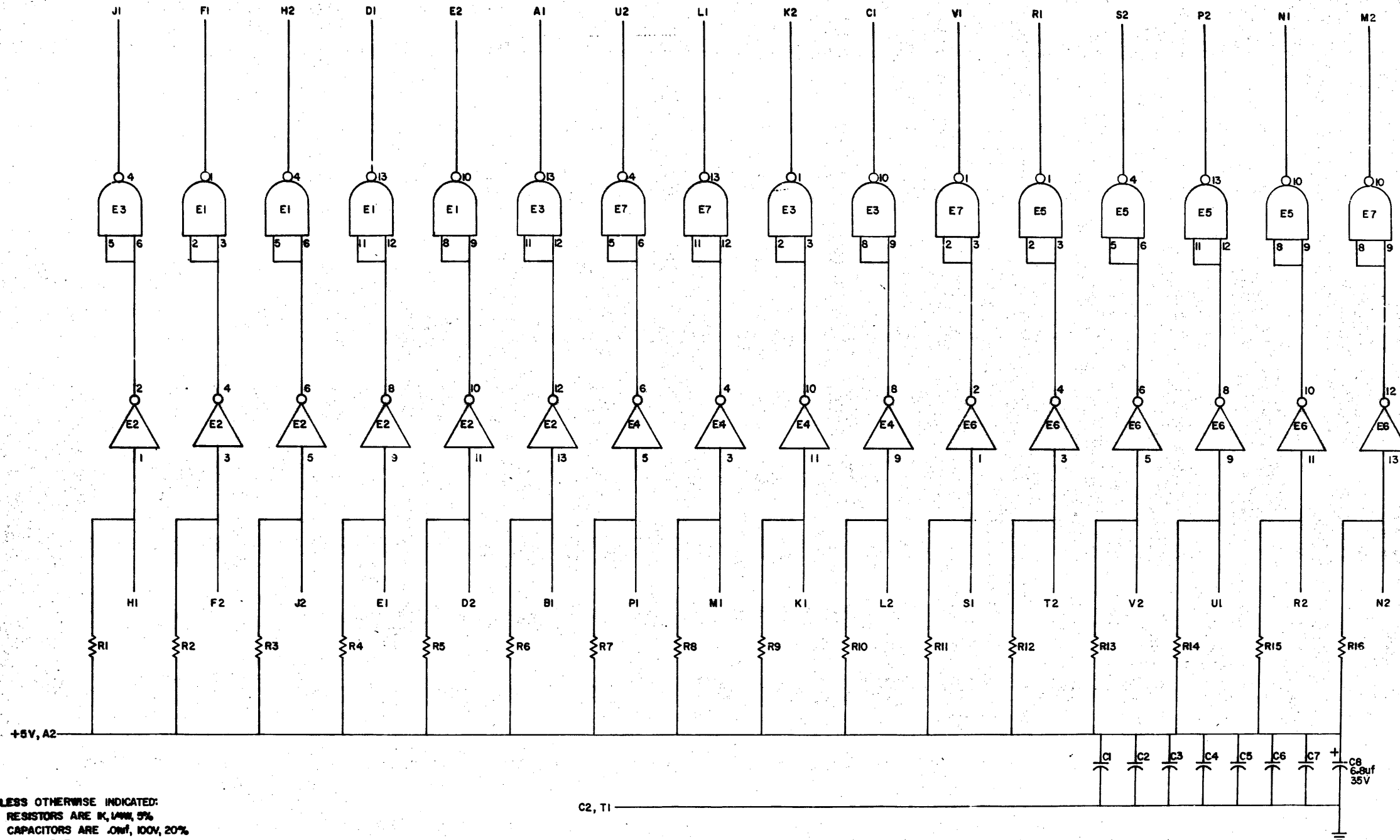
34

MT.72

DIST. 324,434,435

5-1011

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UNLESS OTHERWISE INDICATED:  
 RESISTORS ARE 1/4W, 5%  
 CAPACITORS ARE .01uf, 100V, 20%  
 E1, E3, E5, E7 ARE DEC888  
 E2, E4, E6 ARE DEC7404

REV. A  
 NUMBER 0-1  
 M798  
 CS  
 C

REVISIONS  
 CHK ENG. NO. 100001  
 DEC FORM NO. DRC 108

DATE 7/1/70  
 DATE 7-28-70  
 DATE 8/11-70

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA

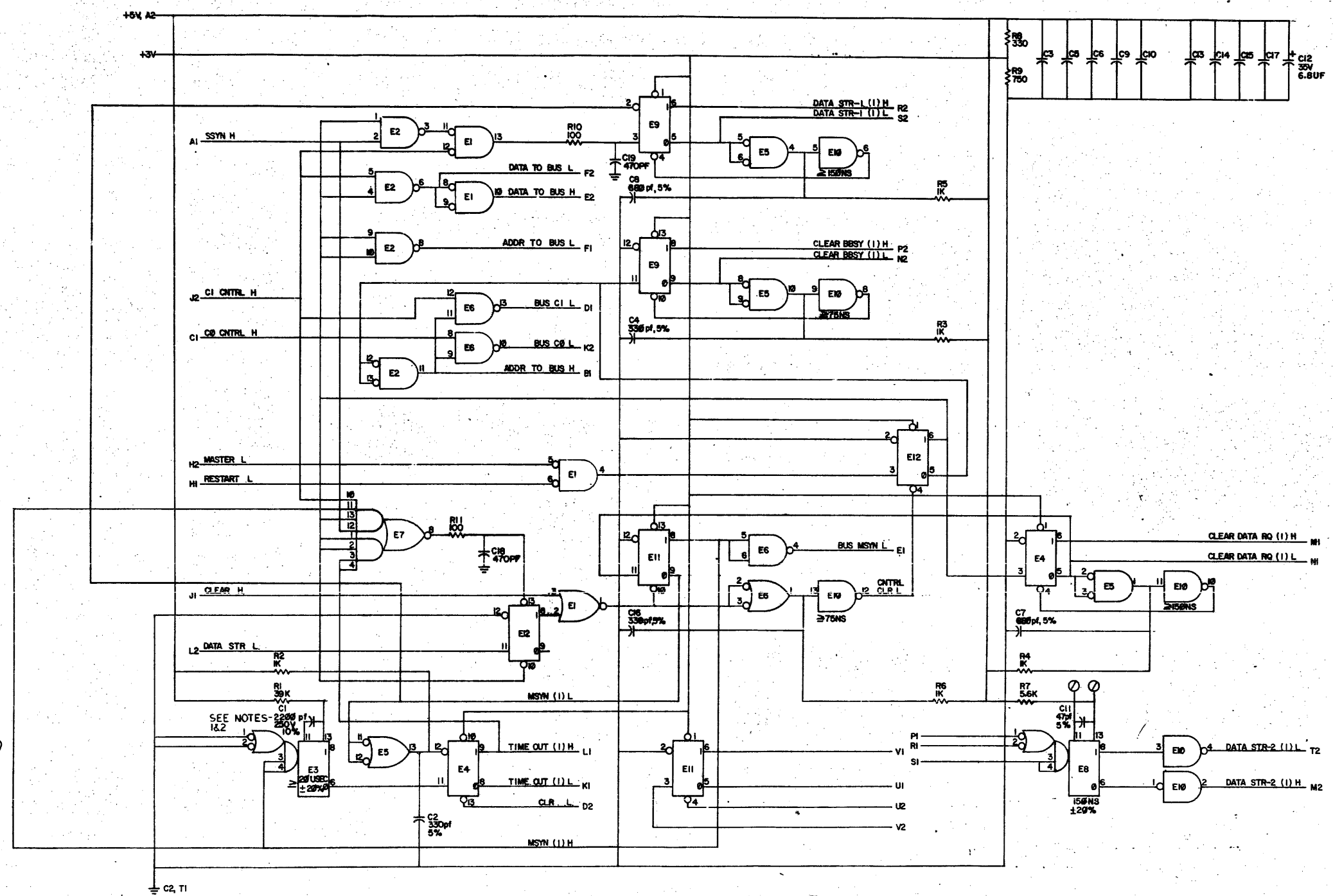
TITLE UNIBUS DRIVER  
 M798  
 EQUIPMENT CORPORATION  
 MAYNARD, MASSACHUSETTS  
 SIZE CODE C CS  
 NUMBER M798-0-1  
 REV. A  
 PRINTED CIRCUIT REV. B

P1

PINK-BLUE  
 35

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DATE CODE M796-0-1



NOTE: 1. C1 IS CHANGED TO 5000PF ± 20% (1001765) FOR A DELAY OF 32MS MINIMUM WHEN USED WITH A DL 10.  
2. FOR M796-YA CHANGE C1 TO 6.8µF 35V (P/N-1000067)

UNLESS OTHERWISE INDICATED:  
RESISTORS ARE 1/4W, 5%  
CAPACITORS ARE .01µF, 100V, 20%  
E1 IS DEC7402  
E2 IS DEC7408  
E3, E9 ARE DEC3091  
E4, E9, E11, E12 ARE DEC7474  
E5 IS DEC7401  
E6 IS DEC3081  
E7 IS DEC7405  
E8 IS DEC7404  
⊗ = SPLIT LUGS

DESIGNED BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE
TESTED BY	DATE
ASSEMBLED BY	DATE
WARRANTY BY	DATE

TRANSISTOR & DIODE CONVERSION CHART			
DEC	SI	DEC	SI

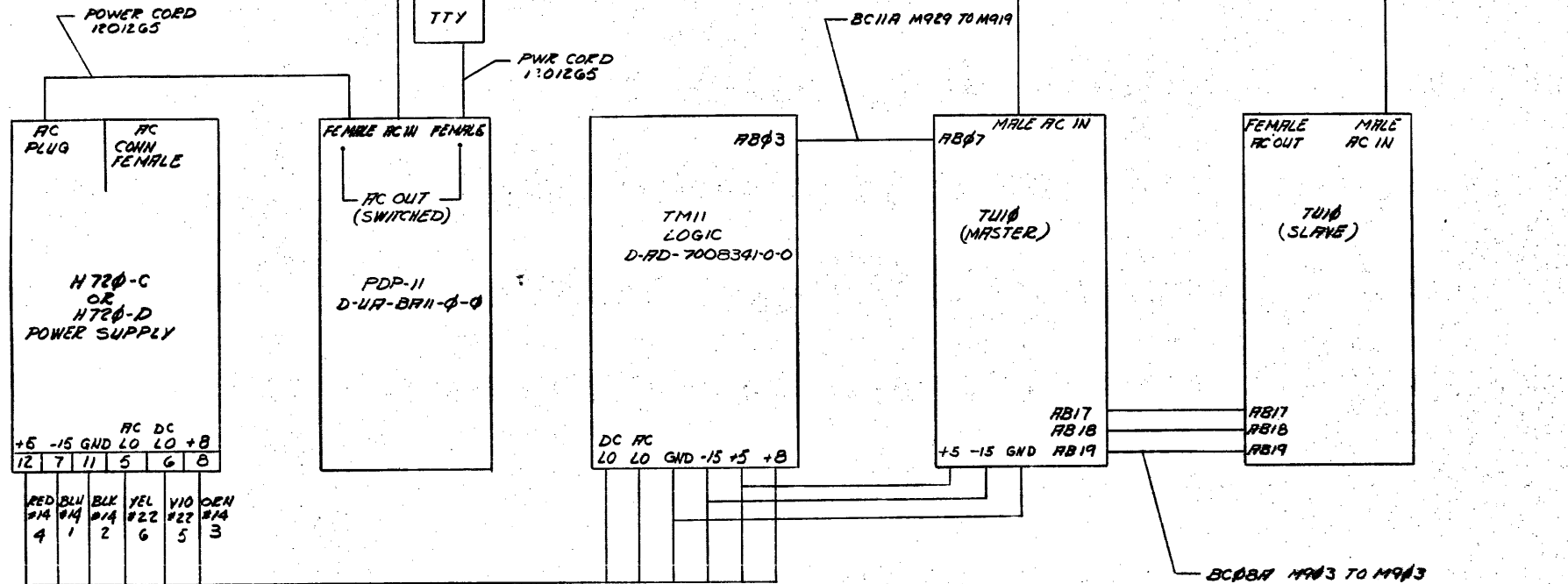
EQUIPMENT CORPORATION		UNIBUS MASTER CONTROL M796	
DATE	CODE	DATE	CODE



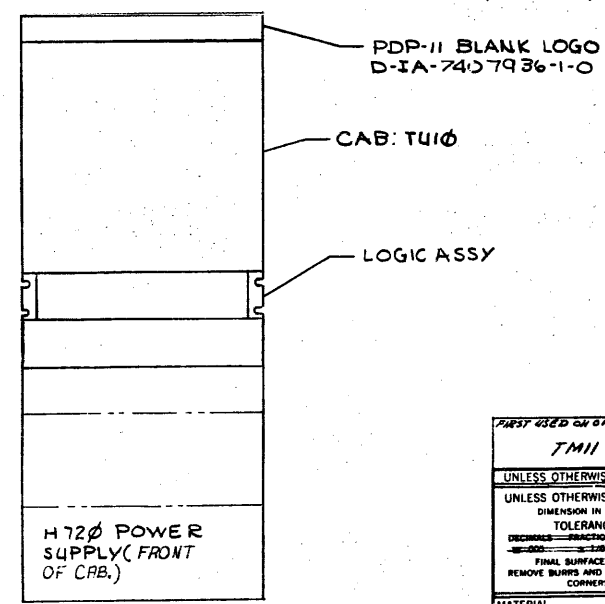


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- NOTES:**
- TUIØ MAXIMUM CONFIGURATION:
  - 1. MAXIMUM OF 8 TRANSPORTS PER CONTROLLER.
  - 2. TOTAL CABLE LENGTH NOT TO EXCEED 80 FEET.
  - 3. ALL TRANSPORTS ARE TO BE BOLTED TOGETHER.
  - 4. BC08A-10 CABLES ARE USED TO INTERCONNECT TRANSPORTS.



POWER HARNESS  
D-7-7008742-0-0  
SUPPLIED WITH D-UR-TM11-Ø-Ø



REV	DATE	BY	CHKD
A	12-17-71	FRITZ	FRITZ
B	1-2-72	FRITZ	FRITZ
C	1-2-72	FRITZ	FRITZ
D	1-2-72	FRITZ	FRITZ
E	1-2-72	FRITZ	FRITZ
F	1-2-72	FRITZ	FRITZ
G	1-2-72	FRITZ	FRITZ
H	1-2-72	FRITZ	FRITZ
I	1-2-72	FRITZ	FRITZ
J	1-2-72	FRITZ	FRITZ
K	1-2-72	FRITZ	FRITZ
L	1-2-72	FRITZ	FRITZ
M	1-2-72	FRITZ	FRITZ
N	1-2-72	FRITZ	FRITZ
O	1-2-72	FRITZ	FRITZ
P	1-2-72	FRITZ	FRITZ
Q	1-2-72	FRITZ	FRITZ
R	1-2-72	FRITZ	FRITZ
S	1-2-72	FRITZ	FRITZ
T	1-2-72	FRITZ	FRITZ
U	1-2-72	FRITZ	FRITZ
V	1-2-72	FRITZ	FRITZ
W	1-2-72	FRITZ	FRITZ
X	1-2-72	FRITZ	FRITZ
Y	1-2-72	FRITZ	FRITZ
Z	1-2-72	FRITZ	FRITZ

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		
	digital EQUIPMENT CORPORATION		
	TITLE: MAX CONFIGURATION (TUIØ)		
	SIZE CODE: DARTM11-Ø-24		
	NUMBER: E		
	DIST: G		

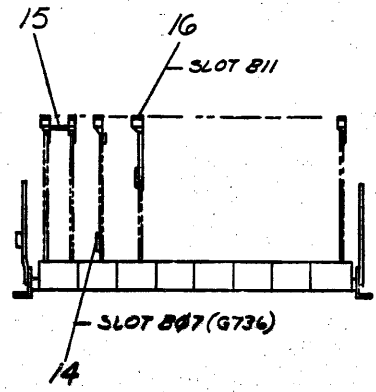
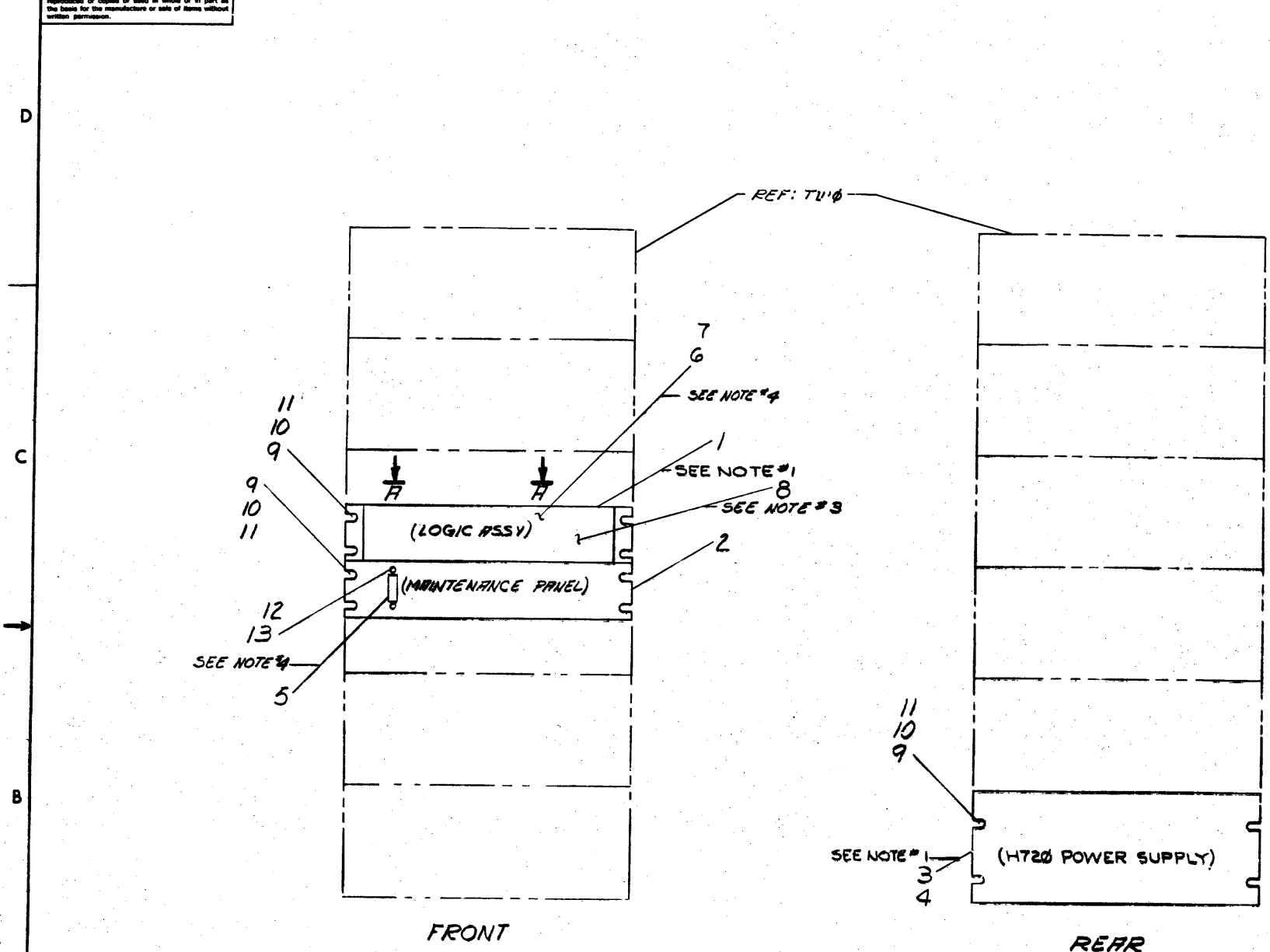


DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			LEGEND		QUANTITY / VARIATION												
ACCESSORY LIST			D	DOCUMENT	TM11-0						KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE	
MADE BY	K. HAMEL	CHECKED	DN	DOCUMENT CHANGE NOTICE													
DATE	6/14/72	DATE	PA	PAPER TAPE ASCII													
ENG	Michael Buczynski	PROD	PB	PAPER TAPE BINARY													
DATE	7-16-72	DATE	PM	PAPER TAPE READ-IN-MODE													
SECTION		ISSUED SECT.															
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION															
1	TM11-0	COMPLETE PRINT SET (SEE A-ML-TM11-0)	1														
2	DEC-11-HTMA-D	MAINTENANCE MANUAL	1														
3	LIB KIT-11-TM11-0	SOFTWARE KIT (SEE A-SL-TM11-0-28)	1														
4	BC11A-8	UNIBUS CABLE 8'	1														
NOTE: THE FOLLOWING ITEMS ARE REQUIRED FOR FIELD ADD-ONS ONLY)																	
5	DEC-11-HR5A-D	H720 POWER SUPPLY ENGINEERING DRAWINGS	1														
6	DEC-11-HR5B-D	H720 POWER SUPPLY MAINTENANCE MANUAL	1														
7	MAINDEC-11-DEOGA-	GTP TAPE AND WRITE-UP (LATEST REVISION)															
NOTE: THE FOLLOWING ITEMS ARE REQUIRED WHEN UNIT IS NOT CABINET-MOUNTED																	
8	70-8288-8F	REMOTE SENSE CABLE (H720 POWER SUPPLY)	1														
9	70-7006-1	JUMPER PLUG (H720 POWER SUPPLY)	1														
10	70-7006-2	JUMPER PLUG (H720 POWER SUPPLY)	1														
11	BC 1-5	MASTER INTERFACE CABLE 5'	1														
12	90-251	MOUNTING HARDWARE	1														
13	91-1710/ 90-8849	HOO K UP WIRE	1														
TITLE			ASSY. NO.		SIZE CODE		NUMBER			REV.		ECO NO					
DEC MAGTAPE CONTROL PDP-11			D-UA-TM11-0-0		A AL		TM11-0-26			B		TM11-00014					
SHEET OF			DIST.														

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LEGEND	
NUMBER	VARIATION
TMII-A	115 V
TMII-B	230 V

- NOTES:**
1. ARRANGEMENT IN CAB TO BE DETERMINED BY SYSTEM REQUIREMENTS.
  2. FOR DRAWING INDEX LIST REFER TO DWG # D-DI-TMII-0-1.
  3. FOR MAX CONFIGURATION AND WIRING OF POWER HARNESS (ITEM # 8) REFER TO DWG # D-PR-TMII-0-24.
  4. FOR LOCATION OF CABLES (ITEM NO'S 5, 6, & 7) REFER TO DWG # D-MI-TMII-0-02.



REV	DATE	BY	CHK	DESCRIPTION
A	6-4-71			INITIALS
B	6-7-71			
C	8-1-71			
D	8-11-72			
E	5-3-74			

REV	DATE	BY	CHK	DESCRIPTION
A	8-1-71			INITIALS
B	8-6-71			
C	8-2-71			
D	8-2-71			

**PDP-11**

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

DIMENSION IN INCHES

TOLERANCES

ANGLES

FINISH SURFACE QUALITY

REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

SCALE

SHEET 1 OF 1

DATE CODE

DIA TMII-0-0

NUMBER

REV. D

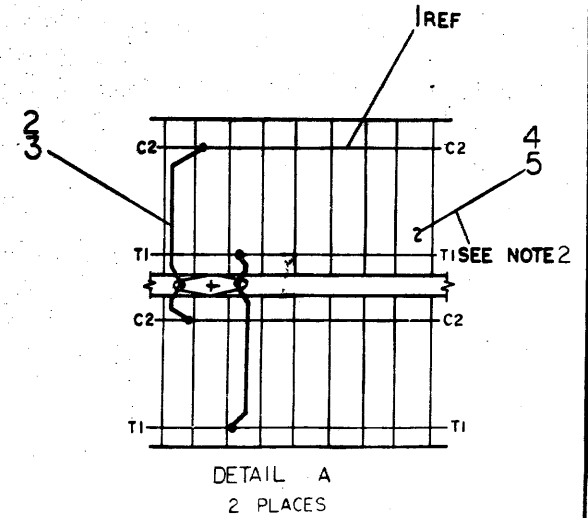
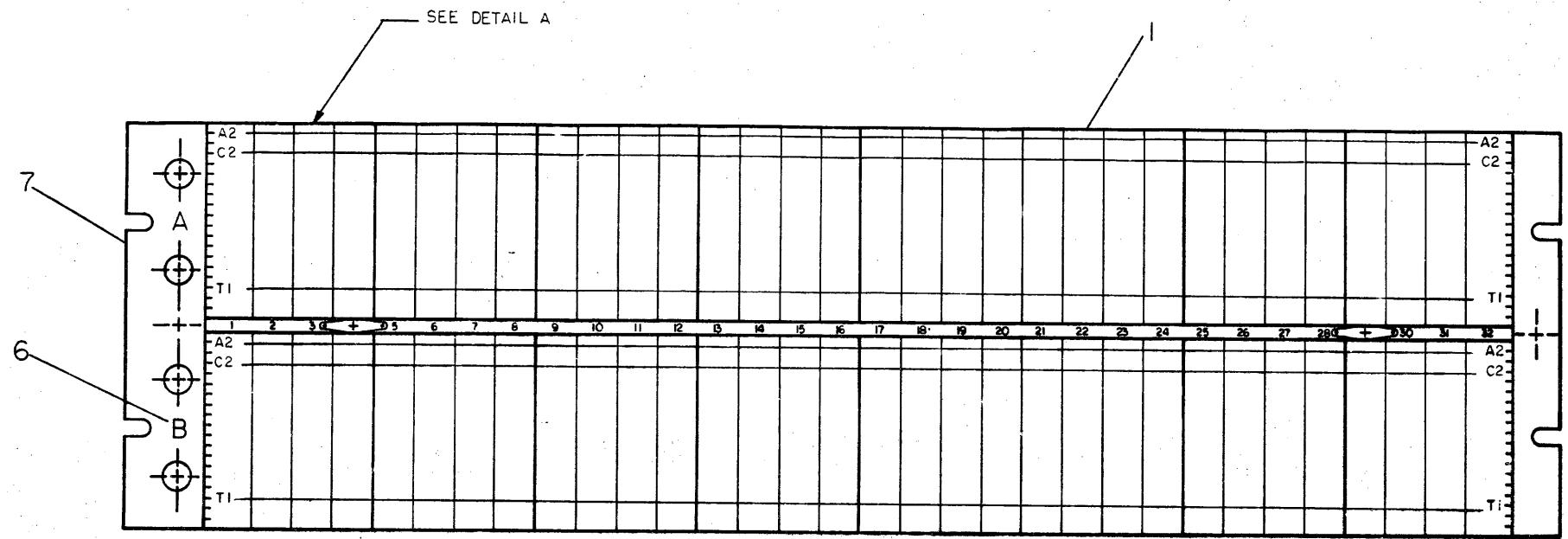
EQUIPMENT CORPORATION

MAG TAPE CONTROL



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**NOTES:**  
 1. CONNECTIONS ON ITEM NUMBER 1 & 2 TO BE LOCATED AND SOLDERED AT MINIMUM PRACTICAL HEIGHT ABOVE BLOCKS.  
 2. USE YELLOW WIRE (ITEM #4) FOR MACHINE WRAPPED AND BLUE WIRE (ITEM #5) FOR HAND WRAPPED WIRING.



REV	CHG	NO.	BY	DATE
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	1
8	1	1	1	1

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 11					
DO NOT SCALE DRAWING		PARTS LIST			
UNLESS OTHERWISE SPECIFIED		EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			
DIMENSION IN INCHES		TITLE			
TOLERANCES		WIRED ASS'Y (T.M.I.)			
DECIMAL FRACTIONS ANGLES		D-IA-7008341-0-0			
± .005 ± .001 ± .0005		D-IA-7008341-0-0			
FINAL SURFACE QUALITY		D-IA-7008341-0-0			
REMOVE BURRS AND BREAK SHARP CORNERS		D-IA-7008341-0-0			
MATERIAL		D-IA-7008341-0-0			
FINISH		D-IA-7008341-0-0			
SCALE NONE		D-IA-7008341-0-0			
SHEET OF		D-IA-7008341-0-0			



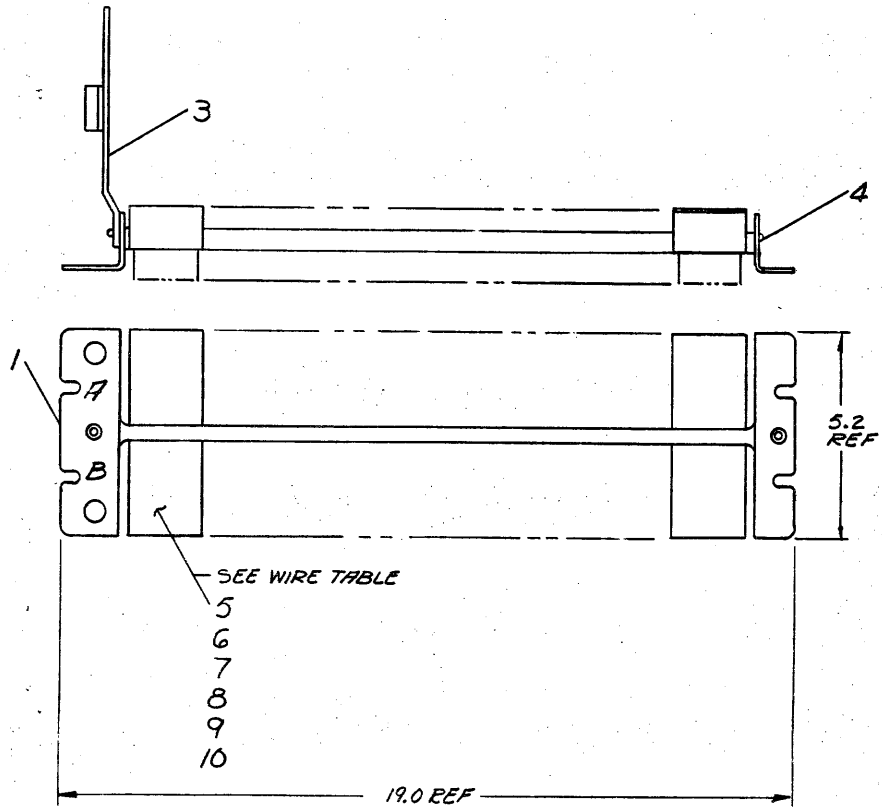
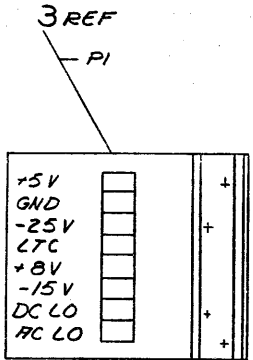


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2 DIA7008341-0-0

WIRE TABLE						
ITEM NO	RWG	COLOR	FROM		TO	
			CONNECTION	WITH	CONNECTION	WITH
5	18	RED	PI - +5V	SOLDER	#01R2	SOLDER
6	18	BLK	PI - GND		#01C2	
7	18	BLU	PI - -15V		#31B2	
8,9	22	YEL	PI - ACLO		B01F1	
8,10	22	VIO	PI - DCLO	SOLDER	B01F2	SOLDER

EXTERNAL COMPONENT TABLE			
ITEM	DESCRIPTION	FROM	TO
11	CAPACITOR	A09B1	A11C2



REF (AWT) WIRE REVISION	A-WF7007261-0	12
1 CRP TERMINATOR 1200PF 5% 100V	7409005	11
#22 TEF THIN WALL TUBING VIO	9107256-77	10
#22 TEF THIN WALL TUBING YEL	9107256-44	9
#22 RWG BUS WIRE	9107560-01	8
#18 RWG SOLID TEFLON INS BLU	9107696-66	7
#18 RWG SOLID TEFLON INS BLK	9107696-00	6
#18 RWG SOLID TEFLON INS RED	9107696-22	5
8 POP RIVET #AD44B'S 4SMS	9006507	4
1 PANEL, POWER END ASSY	674-5409132-0-0	3
1 PANEL, FRONT END	674-5409132-0-0	2
1 WIRER ASSY (TMI)	D-70-7007261-0-0	1

REV	DATE	BY	CHK
A	6-12-71		
B	6-7-71		
C	7-1-74		

UNLESS OTHERWISE SPECIFIED	DRN	DATE	2/23/71
DIMENSION IN INCHES	CHKD	DATE	4-1-71
TOLERANCES	ENG	DATE	4-6-71
ANGLES	PROJ ENG	DATE	4-6-71
REMOVE BURRS AND BREAK SHARP CORNERS	PROD	DATE	5-7-71

TITLE: LOGIC ASSY (TMI)

SIZE CODE: DIST

NUMBER: DIA7008341-0-0

REV: B

SHEET 1 OF 1

DIA7008341-0-0 B


DRWG NO

K-WL-TM11-Ø-23

REVLTR

T

REVISIONS			
REV LTR	ECO NO	DATE	ENG
A	TM11-00002	4-12-71	M.F.
B	TM11-00003	4-22-71	M.F.
C	TM11-00004	5-12-71	M.F.
D	TM11-00005	5-12-71	M.F.
E	TM11-00007	6-4-71	M.F.
F	TM11-00008	6-25-71	M.F.
H	TM11-00009	8-2-71	M.F.
J	TM11-00010	9-1-71	M.F.
K	TM11-00011	12-13-71	M.B.
L	TM11-00012	1-4-72	M.B.
M	TM11-00013	5-25-72	M.B.
N	TM11-00014	8-4-72	M.B.
P	TM11-00015	12-6-72	M.B.
R	TM11-00016	3-14-73	M.F.
S	TM11-00018	5-23-73	M.F.
T	TM11-00020	6-74	M.F.

DRAWN <i>M. F. King</i>	DATE 3/8/71	 <b>DIGITAL</b> EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE WIRE LIST (TM11)		
CHECKED <i>A. M. King</i>	DATE 3/8/71		FOR TAPE* FILE*		
ENG. <i>M. F. King</i>	DATE 3/9/71		SIZE K	CODE WL	DWG. NO. TM11-Ø-23
PROJ. ENG. <i>M. F. King</i>	DATE 3/9/71		ASSY. NO. D-AD-7007261-0-0	REV LTR T	
PROD <i>B.E. Cross</i>	DATE 3-9-71	SCALE + +	SHEET 1	OF 1	DIST.

TM11-T RUN NAME	HND288.V22(22) 11/06/73										8-JUL-74	8:51	PAGE 1		
	A/P	PIN	ORDER	BAY -	Q	DRAW	RV	PG	Y	X	Z	REMARKS	LENGTH	EXCEPTIONS	RUN
	NAME	PIN	ORDER	ORDER											NUMBER
+3V A160U1		A14N2		1-01 *		TM11-10					2				1
+3V A160U1		A14R1		1-02 *		TM11-10					1				1
+3V A160U1		A14U2		1-03 *		TM11-10					2				1
+3V A160U1		A16U1		1-04 *		TM11-10									1
+3V A160U1				1									8-4/8		1
+3V A190U1		A18K2		1-01 *					I		2				2
+3V A190U1		A19U1		1-02 *					R1		1				2
+3V A190U1		B31U2		1-03 *					R1						2
+3V A190U1				1									13-2/8		2
+3V A250U1		A24F2		1-01 *		TM11-08					1				3
+3V A250U1		A24D1		1-02 *		TM11-08					2				3
+3V A250U1		A24K1		1-03 *		TM11-08					1				3
+3V A250U1		A24M2		1-04 *		TM11-17					2				3
+3V A250U1		A24N2		1-05 *		TM11-17					1				3
+3V A250U1		A25U1		1-06 *		TM11-17									3
+3V A250U1				1									14-0/8		3
+3V A25V1		A24R1		1-01 *		TM11-17					1				4
+3V A25V1		A25V1		1-02 *		TM11-17									4
+3V A25V1				1									3-0/8		4
+3V B050U1		B05H1		1-01 *		TM11-07					2				5
+3V B050U1		B05E2		1-02 *		TM11-10					1				5
+3V B050U1		B05F2		1-03 *		TM11-10					2				5
+3V B050U1		B05J1		1-04 *		TM11-07					1				5
+3V B050U1		B05L2		1-05 *		TM11-10					2				5
+3V B050U1		B05H2		1-06 *		TM11-10					1				5
+3V B050U1		B05K1		1-07 *		TM11-07					2				5
+3V B050U1		B05M2		1-08 *		TM11-10					1				5
+3V B050U1		B05N2		1-09 *		TM11-10					2				5
+3V B050U1		B05U1		1-10 *		TM11-10									5
+3V B050U1				1									24-6/8		5
+3V B05V1		B05A1		1-01 *		TM11-04					2				6
+3V B05V1		B05B1		1-02 *		TM11-04					1				6
+3V B05V1		B05C1		1-03 *		TM11-04					2				6
+3V B05V1		B05S2		1-04 *		TM11-10					1				6
+3V B05V1		B05T2		1-05 *		TM11-10					2				6
+3V B05V1		B05V1		1-06 *		TM11-10					1				6
+3V B05V1		B05U2		1-07 *		TM11-10									6
+3V B05V1				1									16-6/8		6

TM11-T RUN NAME	HND288.V22(22) 11/06/73										8-JUL-74	8:51	PAGE 2		
	A/P	PIN	ORDER	BAY -	Q	DRAW	RV	PG	Y	X	Z	REMARKS	LENGTH	EXCEPTIONS	RUN
	NAME	PIN	ORDER	ORDER											NUMBER
+3V B140U1		A14D1		1-01 *		TM11-07					2				7
+3V B140U1		A14F2		1-02 *		TM11-07					1				7
+3V B140U1		A14K1		1-03 *		TM11-07					2				7
+3V B140U1		B14U1		1-04 *		TM11-07									7
+3V B140U1				1									11-6/8		7
+3V B14V1		A12B1		1-01 *		TM11-19					2				8
+3V B14V1		A12P1		1-02 *		TM11-18					1				8
+3V B14V1		A10D2		1-03 *		TM11-22					2				8
+3V B14V1		A11S1		1-04 *		TM11-24					1				8
+3V B14V1		B14V1		1-05 *		TM11-22									8
+3V B14V1				1									16-0/8		8
+3V B150U1		B14D1		1-01 *		TM11-11					1				9
+3V B150U1		B14P1		1-02 *		TM11-04					2				9
+3V B150U1		B15U1		1-03 *		TM11-11									9
+3V B150U1				1									6-4/8		9
+3V B190U1		B18A1		1-01 *		TM11-05					1				10
+3V B190U1		B19U1		1-02 *		TM11-05									10
+3V B190U1				1									4-4/8		10
+3V B19V1		A18D1		1-01 *		TM11-10					2				11
+3V B19V1		A18F2		1-02 *		TM11-10					1				11
+3V B19V1		A18K1		1-03 *		TM11-10					2				11
+3V B19V1		B18K2		1-04 *		TM11-17					1				11
+3V B19V1		B19V1		1-05 *		TM11-17					2				11
+3V B19V1		B20H2		1-06 *		TM11-16					1				11
+3V B19V1		B20F2		1-07 *		TM11-16					2				11
+3V B19V1		B20E2		1-08 *		TM11-16									11
+3V B19V1				1									23-6/8		11
+3V B20U1		B20J1		1-01 *		TM11-10					2				12
+3V B20U1		B20H1		1-02 *		TM11-10					1				12
+3V B20U1		B20K1		1-03 *		TM11-10					2				12
+3V B20U1		B20N1		1-04 *		TM11-16					1				12
+3V B20U1		B20P1		1-05 *		TM11-16					2				12
+3V B20U1		B20S2		1-06 *		TM11-16					1				12
+3V B20U1		B20U1		1-07 *		TM11-16					2				12
+3V B20U1		B20U2		1-08 *		TM11-16					1				12
+3V B20U1		B20R1		1-09 *		TM11-16					2				12
+3V B20U1		B20T2		1-10 *		TM11-16									12
+3V B20U1				1									23-6/8		12

4h

84

TM11.T RUN NAME	HND288.V22(22) 11/06/73					REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 3 RUN NUMBER
	A/P	PTN NAME	ORDER PTN	BAY - ORDER	Q				
+3V B22U1		B22D1		1-01 *	TM11-04			13	
+3V B22U1		B22H2		1-02 *	TM11-25			13	
+3V B22U1		B22H1		1-03 *	TM11-11			13	
+3V B22U1		B22P2		1-04 *		I		13	
+3V B22U1		B22U1		1-05 *	TM11-25			13	
+3V B22U1				1			11-4/8	13	
+3V B29U1		B29U1		1-01 *	TM11-25			14	
+3V B29U1		B31D1		1-02 *	TM11-25			14	
+3V B29U1				1			4-4/8	14	
+3V B30U1		B30C1		1-01 *	TM11-07			15	
+3V B30U1		B30D1		1-02 *	TM11-07			15	
+3V B30U1		B30J1		1-03 *	TM11-07			15	
+3V B30U1		B30L2		1-04 *	TM11-07			15	
+3V B30U1		B30K1		1-05 *	TM11-07			15	
+3V B30U1		B30M2		1-06 *	TM11-07			15	
+3V B30U1		B30N2		1-07 *	TM11-07			15	
+3V B30U1		B30R1		1-08 *	TM11-07			15	
+3V B30U1		B30P1		1-09 *	TM11-07			15	
+3V B30U1		B30U1		1-10 *	TM11-07			15	
+3V B30U1				1			24-0/8	15	
+3V B30V1		B30T2		1-01 *	TM11-07			16	
+3V B30V1		B30V1		1-02 *	TM11-07			16	
+3V B30V1		B30U2		1-03 *	TM11-07			16	
+3V B30V1				1			5-2/8	16	
+3V B32U1		B31R1		1-01 *		R1		17	
+3V B32U1		B32U1		1-02 *		R1		17	
+3V B32U1		B31N2		1-03 *		1		17	
+3V B32U1				1			6-0/8	17	
+8V		B06B1			TM11-03			18	
7 CH		A05E2		1-01 *	TM11-08			19	
7 CH		B04P2		1-02 *	TM11-02	C		19	
7 CH		B04P2		1-03 *	TM11-02	C		19	
7 CH				1			9-0/8	19	
7 CH	H	A05F2		1-01 *	TM11-08			20	
7 CH	H	A06K2		1-02 *	TM11-08			20	
7 CH	H	B06K1		1-03 *	TM11-12			20	
7 CH	H	B08J1		1-04 *	TM11-03	C		20	
7 CH	H	A17S1		1-05 *	TM11-08			20	
7 CH				1			19-2/8	20	

TM11.T RUN NAME	HND288.V22(22) 11/06/73					REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 4 RUN NUMBER
	A/P	PTN NAME	ORDER PTN	BAY - ORDER	Q				
7 CH	L	A06L2		1-01 *	TM11-08			21	
7 CH	L	B19R1		1-02 *	TM11-09			21	
7 CH	L	B19R2		1-03 *	TM11-09			21	
7 CH	L	B25L1		1-04 *	TM11-15			21	
7 CH	L	B25E1		1-05 *	TM11-15			21	
7 CH				1			20-6/8	21	
A01	H	B10N2		1-01 *	TM11-25			22	
A01	H	B11C1		1-02 *	TM11-26			22	
A01				1			3-4/8	22	
A02	H	B10L2		1-01 *	TM11-25			23	
A02	H	B11B1		1-02 *	TM11-26			23	
A02				1			3-4/8	23	
A03	H	B10J2		1-01 *	TM11-25			24	
A03	H	B11G2		1-02 *	TM11-26			24	
A03				1			3-2/8	24	
A16	H	B10T2		1-01 *		I		25	
A16	H	B26H2		1-02 *		I		25	
A16				1			10-6/8	25	
A16	L	A09E2		1-01 *		I		26	
A16	L	B26J2		1-02 *		I		26	
A16				1			12-2/8	26	
A16C1		A16C1		1-01 *	TM11-15			27	
A16C1		A20F1		1-02 *	TM11-15			27	
A16C1				1			4-6/8	27	
A16F2		A16F2		1-01 *	TM11-06			28	
A16F2		A20E2		1-02 *	TM11-06			28	
A16F2				1			4-2/8	28	
A16K2		A16K2		1-01 *	TM11-15			29	
A16K2		B23A1		1-02 *	TM11-15			29	
A16K2		B23F1		1-03 *	TM11-15			29	
A16K2		B23M1		1-04 *	TM11-15			29	
A16K2		B24M1		1-05 *	TM11-15			29	
A16K2		B24F1		1-06 *	TM11-15			29	
A16K2		B24A1		1-07 *	TM11-15			29	
A16K2		B25A1		1-08 *	TM11-15			29	
A16K2		B25F1		1-09 *	TM11-15			29	
A16K2				1			26-6/8	29	

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 5
	A/P	PIN NAME	ORDER PIN	BAY - ORDER											RUN NUMBER
A16N2		A16N2		1-01 *											30
A16N2		B32R2		1-02 *									11-4/8		30
A16N2				1											30
A16S1		A16S1		1-01 *											31
A16S1		A20D2		1-02 *									5-2/8		31
A16S1				1											31
A16S2		A16S2		1-01 *											32
A16S2		A16T2		1-02 *									2-4/8		32
A16S2				1											32
A17	H	B10V2		1-01 *											33
A17	H	B26J1		1-02 *									10-6/8		33
A17				1											33
A17	L	B26K1		1-01 *											34
A17	L	A09D1		1-02 *									12-2/8		34
A17				1											34
A17D1		A17D1		1-01 *											35
A17D1		A27H2		1-02 *									7-6/8		35
A17D1				1											35
A17H2		A17H2		1-01 *											36
A17H2		B05D1		1-02 *									9-4/8		36
A17H2				1											36
A17J1		A17J1		1-01 *											37
A17J1		A27L2		1-02 *									7-6/8		37
A17J1				1											37
A17M2		A17H1		1-01 *											38
A17M2		A17M2		1-02 *									3-0/8		38
A17M2				1											38
A17S2		A17S2		1-01 *											39
A17S2		B29U2		1-02 *									9-4/8		39
A17S2				1											39
A18U1		A18U1		1-01 *											40
A18U1		A29U2		1-02 *									8-0/8		40
A18U1				1											40
A19E1		A19E1		1-01 *											41
A19E1		A23A1		1-02 *									4-4/8		41
A19E1				1											41

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 6
	A/P	PIN NAME	ORDER PIN	BAY - ORDER											RUN NUMBER
A19J2		A19J2		1-01 *											42
A19J2		A22E1		1-02 *									3-6/8		42
A19J2				1											42
A19P2		A19P2		1-01 *											43
A19P2		A22F1		1-02 *									4-0/8		43
A19P2				1											43
A19V2		A19V2		1-01 *											44
A19V2		A22H1		1-02 *									4-2/8		44
A19V2				1											44
A20E1		A20E1		1-01 *											45
A20E1		B14B1		1-02 *									6-2/8		45
A20E1				1											45
A20J2		A29B1		1-01 *											46
A20J2		A26J2		1-02 *											46
A20J2		B15L2		1-03 *									13-4/8		46
A20J2				1											46
A20P2		A20P2		1-01 *											47
A20P2		B18S2		1-02 *									5-6/8		47
A20P2				1											47
A20S1		A20S1		1-01 *											48
A20S1		A28A1		1-02 *									7-0/8		48
A20S1				1											48
A20V2		A20V2		1-01 *											49
A20V2		A32D1		1-02 *									8-6/8		49
A20V2				1											49
A22D1		A22D1		1-01 *											50
A22D1		A28J1		1-02 *									5-4/8		50
A22D1				1											50
A22H2		A22H2		1-01 *											51
A22H2		A29D1		1-02 *									6-0/8		51
A22H2				1											51
A22J1		A22J1		1-01 *											52
A22J1		B18J1		1-02 *									6-0/8		52
A22J1				1											52

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TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8151	PAGE 9
	A/P	PIN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
A26N2		A26N2		1-01 *							2				73
A26N2		B25F2		1-02 *							1				73
A26N2		B25M2		1-03 *							2				73
A26N2		B24N2		1-04 *							1				73
A26N2		B24M2		1-05 *							2				73
A26N2		B24T2		1-06 *							1				73
A26N2		B24U2		1-07 *							1				73
A26N2				1									18-2/8		73
A26S2		A26S2		1-01 *							1				74
A26S2		A29L1		1-02 *											74
A26S2				1									4-0/8		74
A27C1		A22S1		1-01 *							1				75
A27C1		A27C1		1-02 *											75
A27C1				1									5-4/8		75
A27F1		A24U2		1-01 *							1				76
A27F1		A27F1		1-02 *											76
A27F1				1									4-2/8		76
A27F2		A21L1		1-01 *							1				77
A27F2		A27F2		1-02 *											77
A27F2				1									4-6/8		77
A27K1		A20U2		1-01 *							1				78
A27K1		A27K1		1-02 *											78
A27K1				1									6-0/8		78
A27K2		A20K2		1-01 *							1				79
A27K2		A27K2		1-02 *											79
A27K2				1									5-6/8		79
A27N1		A27D1		1-01 *							1				80
A27N1		A27N1		1-02 *											80
A27N1				1									3-2/8		80
A27N2		A20L2		1-01 *							1				81
A27N2		A27N2		1-02 *											81
A27N2				1									6-0/8		81
A27S1		A31K2		1-01 *							1				82
A27S1		A31L2		1-02 *							1				82
A27S1		A27S1		1-03 *							1				82
A27S1		B26F1		1-04 *							1				82
A27S1				1									11-6/8		82

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8151	PAGE 10
	A/P	PIN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
A27S2		A27S2		1-01 *							1				83
A27S2		B21T2		1-02 *							1				83
A27S2				1									6-4/8		83
A28P1		A28P1		1-01 *							1				84
A28P1		B21M2		1-02 *							1				84
A28P1				1									6-6/8		84
A28R1		A27J1		1-01 *							1				85
A28R1		A28R1		1-02 *											85
A28R1				1									3-2/8		85
A29F2		A28L2		1-01 *							1				86
A29F2		A29F2		1-02 *											86
A29F2				1									3-0/8		86
A29K1		A29K1	B30S2	1-01 *							1				87
A29K1		B30S2		1-02 *											87
A29K1				1									6-2/8		87
A29K2		A29K2		1-01 *							1				88
A29K2		B12M2		1-02 *							1				88
A29K2				1									6-0/8		88
A29N1		A28V2		1-01 *							1				89
A29N1		A29N1		1-02 *											89
A29N1				1									3-2/8		89
A29N2		A29N2		1-01 *							R1				90
A29N2		B20K2		1-02 *							R1				90
A29N2		B20L2		1-03 *							1				90
A29N2				1									10-4/8		90
A29S1		A26J2		1-01 *							R1				91
A29S1		A29S1		1-02 *											91
A29S1				1									3-6/8		91
A29S2		A22V2		1-01 *							1				92
A29S2		A29S2		1-02 *											92
A29S2				1									6-0/8		92
A29V2		A29V2		1-01 *							1				93
A29V2		A32E1		1-02 *											93
A29V2				1									4-4/8		93

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TM11.1 RUN NAME	HND288.V22(22) 11/06/73	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 11 RUN NUMBER
A30H1			A20H2		1-01 *								R1			94
A30H1			A30H1		1-02 *								R1			94
A30H1														7-0/8		94
A30J1			A30J1		1-01 *											95
A30J1			A29H1		1-02 *											95
A30J1														3-0/8		95
A30L1			A17N2		1-01 *								TM11-11			96
A30L1			A30L1		1-02 *								TM11-11			96
A30L1														8-6/8		96
A31A1			A31A1		1-01 *											97
A31A1			A31C1		1-02 *											97
A31A1														2-4/8		97
A31E2			A31E2		1-01 *											98
A31E2			B14R1		1-02 *											98
A31E2														12-4/8		98
A31H2			A32S2		1-01 *											99
A31H2			A32S1		1-02 *											99
A31H2			A31H2		1-03 *											99
A31H2														6-0/8		99
A31P1			A31P1		1-01 *											100
A31P1			A31V1		1-02 *											100
A31P1														3-0/8		100
A31R1			A31N1		1-01 *											101
A31R1			A31M1		1-02 *											101
A31R1			A31R1		1-03 *											101
A31K1			A31L1		1-04 *											101
A31R1			A31J2		1-05 *											101
A31R1														10-6/8		101
A32M1			A32M1		1-01 *								TM11-05			102
A32M1			B32H2		1-02 *								TM11-05			102
A32M1			B31N1		1-03 *								TM11-05			102
A32M1														8-0/8		102
AC LO		H	A25J1		1-01 *								TM11-07			103
AC LO		H	B10R2		1-02 *								TM11-25			103
AC LO														11-0/8		103

TM11.1 RUN NAME	HND288.V22(22) 11/06/73	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 12 RUN NUMBER
ADRS BIT 16		H	A21L1		1-01 *								R1			104
ADRS BIT 16		H	B10R1		1-02 *								R1			104
ADRS BIT 16		H	B08H1		1-03 *								R1			104
ADRS BIT 16		H	B27E1		1-04 *								I			104
ADRS BIT 16														25-0/8		104
ADRS BIT 17		H	A21N2		1-01 *								R1			105
ADRS BIT 17		H	B08D2		1-02 *								R1			105
ADRS BIT 17		H	B10P1		1-03 *								R1			105
ADRS BIT 17		H	B27D1		1-04 *								I			105
ADRS BIT 17														24-6/8		105
ADRS DEC MSYN		L	A09L2		1-01 *								TM11-21			106
ADRS DEC MSYN		L	B11V1		1-02 *								TM11-26			106
ADRS DEC MSYN														6-4/8		106
ADRS IO BUS		H	A11B1										TM11-24		1-PIN RUN	107
ADRS TO BUS		L	A11F1		1-01 *								TM11-24			108
ADRS TO BUS		L	B10S1		1-02 *								TM11-25			108
ADRS TO BUS		L	B12U2		1-03 *								TM11-18			108
ADRS TO BUS														10-2/8		108
B10K1			B10J1		1-01 *								TM11-25			109
B10K1			B10K1		1-02 *								TM11-25			109
B10K1			B10U1		1-03 *								TM11-14			109
B10K1														5-6/8		109
B12V1			B12U1		1-01 *								TM11-18			110
B12V1			B12V1		1-02 *								TM11-18			110
B12V1														2-4/8		110
B14J2			B24D2		1-01 *								TM11-15			111
B14J2			B23D2		1-02 *								TM11-15			111
B14J2			B23R2		1-03 *								TM11-15			111
B14J2			B23K2		1-04 *								TM11-15			111
B14J2			B14J2		1-05 *											111
B14J2														16-0/8		111
B14K2			B32B1		1-01 *											112
B14K2			A26L2		1-02 *											112
B14K2			A25R1		1-03 *											112
B14K2			B14K2		1-04 *											112
B14K2														17-6/8		112



TM11-T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 13
	A/P	PTN	ORDER	BAY -									LENGTH	EXCEPTIONS	RUN
	NAME	PIN	ORDER	ORDER											NUMBER
B14M1	B14M1		1-01 *				R1				1				113
B14M1	B14M2		1-02 *				R1				2				113
B14M1	B20A1		1-03 *				I				1				113
B14M1	B19A1		1-04 *				I				1				113
B14M1			I										11-0/8		113
B14R2	B14R2		1-01 *				R1				1				114
B14R2	B19T2		1-02 *				R1				1				114
B14R2			I										5-0/8		114
B14U2	A32E2		1-01 *								1				115
B14U2	B14U2		1-02 *								1				115
B14U2			I										13-2/8		115
B15C1	B15C1		1-01 *								1				116
B15C1	A23S2		1-02 *								1				116
B15C1			I										7-2/8		116
B15K1	B15K1		1-01 *								1				117
B15K1	B22A1		1-02 *								1				117
B15K1			I										6-2/8		117
B15K2	A18R1		1-01 *								1				118
B15K2	B15K2		1-02 *								1				118
B15K2			I										5-0/8		118
B15N1	A28B1		1-01 *								1				119
B15N1	B15N1		1-02 *								1				119
B15N1			I										10-4/8		119
B16B1	B16B1		1-01 *								1				120
B16B1	B17A1		1-02 *								1				120
B16B1			I										2-6/8		120
B16K1	A17E2		1-01 *								1				121
B16K1	B16K1		1-02 *								1				121
B16K1			I										6-0/8		121
B17E1	B17E1		1-01 *								1				122
B17E1	B18E2		1-02 *								1				122
B17E1			I										3-0/8		122
B17J2	A06C1		1-01 *								1				123
B17J2	B17J2		1-02 *								1				123
B17J2			I										9-6/8		123

TM11-T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 14
	A/P	PTN	ORDER	BAY -									LENGTH	EXCEPTIONS	RUN
	NAME	PIN	ORDER	ORDER											NUMBER
B17L1	B17L1		1-01 *				R1				1				124
B17L1	B26N1		1-02 *				R1				1				124
B17L1			I										7-0/8		124
B17P2	A06D1		1-01 *								1				125
B17P2	B17P2		1-02 *								1				125
B17P2			I										9-4/8		125
B17S1	A06A1		1-01 *								1				126
B17S1	B17S1		1-02 *								1				126
B17S1			I										9-6/8		126
B17V2	A06F1		1-01 *								1				127
B17V2	B17V2		1-02 *								1				127
B17V2			I										10-0/8		127
B18E1	A16A1		1-01 *								1				128
B18E1	B18E1		1-02 *								1				128
B18E1			I										6-0/8		128
B18H2	B18H2		1-01 *								1				129
B18H2	B15E2		1-02 *								1				129
B18H2			I										4-0/8		129
B18R2	B18R2		1-01 *								1				130
B18R2	B32L1		1-02 *								1				130
B18R2			I										9-2/8		130
B19C1	B22S1		1-01 *								1				131
B19C1	B19C1		1-02 *								1				131
B19C1			I										4-4/8		131
B19F1	B20B1		1-01 *								1				132
B19F1	B19F1		1-02 *								1				132
B19F1			I										3-0/8		132
B19F2	A25R2		1-01 *								1				133
B19F2	B19F2		1-02 *								1				133
B19F2			I										6-0/8		133
B19K1	A32D2		1-01 *								1				134
B19K1	B19K1		1-02 *								1				134
B19K1			I										10-6/8		134
B19K2	B19J1		1-01 *								1				135
B19K2	B19K2		1-02 *								1				135
B19K2			I										2-4/8		135

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TM11.1 RUN NAME	HND288, V22(22) A/P PTN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 15 RUN NUMBER
B19N2	B19J2		1-01 *							1	I			136
B19N2	B19H2		1-02 *							2	R1			136
B19N2	B19N2		1-03 *								R1			136
B19N2			1									5-4/8		136
B19S1	A06H2		1-01 *							1	TM11-09			137
B19S1	B19S1		1-02 *								TM11-09			137
B19S1			1									10-0/8		137
B19S2	A06R1		1-01 *							1	TM11-09			138
B19S2	B19S2		1-02 *								TM11-09			138
B19S2			1									10-2/8		138
B20E1	B20E1		1-01 *							1	I			139
B20E1	B19U2		1-02 *								I			139
B20E1			1									4-0/8		139
B20P2	A28T2		1-01 *							1	I			140
B20P2	B20P2		1-02 *								I			140
B20P2			1									7-4/8		140
B21S1	A17V2		1-01 *							1	I			141
B21S1	B21S1		1-02 *								I			141
B21S1			1									5-4/8		141
B21S2	B21S2		1-01 *							1	I			142
B21S2	B21U2		1-02 *								I			142
B21S2			1									2-4/8		142
B21V2	B21V2		1-01 *							1	I			143
B21V2	B26H2		1-02 *								I			143
B21V2			1									5-0/8		143
B22U2	B22U2		1-01 *							1	I			144
B22U2	B14K1		1-02 *								I			144
B22U2			1									7-0/8		144
B22V2	B22V2		1-01 *							1	I			145
B22V2	B19E1		1-02 *								I			145
B22V2			1									5-0/8		145
B23J2	B16H2		1-01 *							1	TM11-15			146
B23J2	B23J2		1-02 *								TM11-15			146
B23J2			1									6-0/8		146

TM11.1 RUN NAME	HND288, V22(22) A/P PTN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 16 RUN NUMBER
B23P2	B16N1		1-01 *							1	TM11-15			147
B23P2	B23P2		1-02 *								TM11-15			147
B23P2			1									6-0/8		147
B23V2	B16H2		1-01 *							1	TM11-15			148
B23V2	B23V2		1-02 *								TM11-15			148
B23V2			1									6-2/8		148
B24J2	B16R1		1-01 *							1	TM11-15			149
B24J2	B24J2		1-02 *								TM11-15			149
B24J2			1									7-0/8		149
B24P2	B16P2		1-01 *							1	TM11-15			150
B24P2	B24P2		1-02 *								TM11-15			150
B24P2			1									6-2/8		150
B24V2	B16V1		1-01 *							1	TM11-15			151
B24V2	B24V2		1-02 *								TM11-15			151
B24V2			1									6-4/8		151
B25J2	B16S2		1-01 *							1	TM11-15			152
B25J2	B25J2		1-02 *								TM11-15			152
B25J2			1									7-2/8		152
B25P2	B16U2		1-01 *							1	TM11-15			153
B25P2	B25P2		1-02 *								TM11-15			153
B25P2			1									7-0/8		153
B26H1	B26H1		1-01 *							1	I			154
B26H1	B14T2		1-02 *								I			154
B26H1			1									8-4/8		154
B26N2	A20P2		1-01 *							1	I			155
B26N2	B26N2		1-02 *								I			155
B26N2			1									7-0/8		155
B26P1	B26P1		1-01 *							1	I			156
B26P1	B31C1		1-02 *								I			156
B26P1			1									5-4/8		156
B28K1	B28K1		1-01 *							1				157
B28K1	B28H1		1-02 *											157
B28K1			1									2-4/8		157
B29C1	B29C1		1-01 *							1				158
B29C1	B29H2		1-02 *											158
B29C1			1									3-0/8		158

TM11.T RUN NAME	HND288.V22(22) 11/06/73		BAY -	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 1/ RUN NUMBER
	A/P	PIN NAME	ORDER PIN	ORDER										
B29F1		A27M1		1-01 *						I				159
B29F1		B29F1		1-02 *						I				159
B29F1												5-0/8		159
B29K1		A10D1		1-01 *							TM11-06			160
B29K1		B29K1		1-02 *							TM11-06			160
B29K1												6-0/8		160
B29K2		B29K2		1-01 *										161
B29K2		B29B1		1-02 *										161
B29K2		A29A1		1-03 *										161
B29K2												8-4/8		161
B29N2		A06E2		1-01 *							TM11-09			162
B29N2		B29N2		1-02 *							TM11-09			162
B29N2												15-4/8		162
B29S1		B29S1		1-01 *										163
B29S1		B31B1		1-02 *										163
B29S1												4-4/8		163
B29S2		A06J1		1-01 *							TM11-09			164
B29S2		B29S2		1-02 *							TM11-09			164
B29S2												15-4/8		164
B29V2		A29E2		1-01 *							TM11-11			165
B29V2		B29V2		1-02 *							TM11-11			165
B29V2												6-6/8		165
B31M1		A20S2		1-01 *							TM11-04			166
B31M1		B31M1		1-02 *							TM11-04			166
B31M1												8-4/8		166
B31P1		B31P1		1-01 *							TM11-05			167
B31P1		B31U1		1-02 *							TM11-05			167
B31P1												2-6/8		167
B31P2		B31P2		1-01 *										168
B31P2		B17D1		1-02 *										168
B31P2												10-0/8		168
B31R2		B31R2		1-01 *										169
B31R2		B17D1		1-02 *										169
B31R2												10-2/8		169

TM11.T RUN NAME	HND288.V22(22) 11/06/73		BAY -	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 18 RUN NUMBER
	A/P	PIN NAME	ORDER PIN	ORDER										
B31V1		A06U2		1-01 *							TM11-08			170
B31V1		B31V1		1-02 *							TM11-08			170
B31V1												16-0/8		170
B32C1		A16J2		1-01 *										171
B32C1		B32C1		1-02 *										171
B32C1												11-0/8		171
B32F1		B18L2		1-01 *										172
B32F1		B32F1		1-02 *										172
B32F1												9-2/8		172
B32K1		B16A1		1-01 *							TM11-05			173
B32K1		B17C1		1-02 *							TM11-05			173
B32K1		B32K1		1-03 *							TM11-05			173
B32K1												13-2/8		173
B32K2		A31S1		1-01 *							TM11-05			174
B32K2		A31U1		1-02 *							TM11-05			174
B32K2		B32K2		1-03 *							TM11-05			174
B32K2												7-0/8		174
B32N1		A30R1		1-01 *										175
B32N1		B32N1		1-02 *										175
B32N1												5-2/8		175
B32S1		B29H1		1-01 *							TM11-06			176
B32S1		B32S1		1-02 *							TM11-06			176
B32S1												4-2/8		176
BG IN	H	A10E1		1-01 *							TM11-22			177
BG IN	H	B07U2		1-02 *							TM11-02			177
BG IN												7-2/8		177
BG OUT	H	A10A1		1-01 *							TM11-22			178
BG OUT	H	B07V2		1-02 *							TM11-02			178
BG OUT												7-6/8		178
BGL	H	A24S1		1-01 *							TM11-17		TERM HENRY	179
BGL	H	A08J2		1-02 *							TM11-13			179
BGL	H	B06V1		1-03 *	C						TM11-03		CABLE	179
BGL												17-2/8		179
BGL	L	A24U1		1-01 *							TM11-17			180
BGL	L	B29L1		1-02 *							TM11-17			180
BGL												5-6/8		180



TM11.T RUN NAME	A/P	PIN NAME	ORDER PTN	HAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 21 RUN NUMBER
BUS A06	L	A12R2		1-01 *							2			TERM HERE?	198
BUS A06	L	A09U1		1-02 *							1				198
BUS A06	L	B02L2		1-03 *	C						2			CABLE	198
BUS A06	L	B01L2		1-04 *	C								13-4/8	CABLE	198
BUS A06	L														198
BUS A07	L	A12P2		1-01 *							2			TERM HERE?	199
BUS A07	L	A09P2		1-02 *							1				199
BUS A07	L	B02L1		1-03 *	C						2			CABLE	199
BUS A07	L	B01L1		1-04 *	C								13-4/8	CABLE	199
BUS A07	L														199
BUS A08	L	A09N2		1-01 *							2			TERM HERE?	200
BUS A08	L	B12K1		1-02 *							1				200
BUS A08	L	B02M2		1-03 *	C						2			CABLE	200
BUS A08	L	B01M2		1-04 *	C								15-2/8	CABLE	200
BUS A08	L														200
BUS A09	L	A09R1		1-01 *							2			TERM HERE?	201
BUS A09	L	B12E1		1-02 *							1				201
BUS A09	L	B02M1		1-03 *	C						2			CABLE	201
BUS A09	L	B01M1		1-04 *	C								15-0/8	CABLE	201
BUS A09	L														201
BUS A10	L	A09P1		1-01 *							2			TERM HERE?	202
BUS A10	L	B12D1		1-02 *							1				202
BUS A10	L	B02N2		1-03 *	C						2			CABLE	202
BUS A10	L	B01N2		1-04 *	C								15-0/8	CABLE	202
BUS A10	L														202
BUS A11	L	A09L1		1-01 *							2			TERM HERE?	203
BUS A11	L	B12B1		1-02 *							1				203
BUS A11	L	B02N1		1-03 *	C						2			CABLE	203
BUS A11	L	B01L1		1-04 *	C								15-4/8	CABLE	203
BUS A11	L														203
BUS A12	L	A09C1		1-01 *							1			TERM HERE?	204
BUS A12	L	B12P1		1-02 *							2				204
BUS A12	L	B02P2		1-03 *	C						1			CABLE	204
BUS A12	L	B01P2		1-04 *	C								16-6/8	CABLE	204
BUS A12	L														204
BUS A13	L	A09K2		1-01 *							2			TERM HERE?	205
BUS A13	L	B12L1		1-02 *							1				205
BUS A13	L	B02P1		1-03 *	C						2			CABLE	205
BUS A13	L	B01P1		1-04 *	C								16-2/8	CABLE	205
BUS A13	L														205

TM11.T RUN NAME	A/P	PIN NAME	ORDER PTN	HAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 22 RUN NUMBER
BUS A14	L	A09K1		1-01 *							2			TERM HERE?	206
BUS A14	L	B12K2		1-02 *							1				206
BUS A14	L	B02R2		1-03 *	C						2			CABLE	206
BUS A14	L	B01R2		1-04 *	C								16-0/8	CABLE	206
BUS A14	L														206
BUS A15	L	A09D2		1-01 *							2			TERM HERE?	207
BUS A15	L	B12J2		1-02 *							1				207
BUS A15	L	B02R1		1-03 *	C						2			CABLE	207
BUS A15	L	B01R1		1-04 *	C								17-0/8	CABLE	207
BUS A15	L														207
BUS A16	L	B10S2		1-01 *							R1				208
BUS A16	L	B02S2		1-02 *							R1				208
BUS A16	L	B01S2		1-03 *							R1				208
BUS A16	L												9-0/8		208
BUS A17	L	B10U2		1-01 *							R1				209
BUS A17	L	B02S1		1-02 *							R1				209
BUS A17	L	B01S1		1-03 *							R1				209
BUS A17	L												9-4/8		209
BUS AC LO	L	B01F1		1-01 *	C						2			CABLE	210
BUS AC LO	L	B02F1		1-02 *	C						1			CABLE	210
BUS AC LO	L	B10P2		1-03 *									9-4/8	TERM HERE?	210
BUS AC LO	L														210
BUS BBSY	L	A01P2		1-01 *	C						2			CABLE	211
BUS BBSY	L	A02P2		1-02 *	C						1			CABLE	211
BUS BBSY	L	A10D1		1-03 *									9-4/8	TERM HERE?	211
BUS BBSY	L														211
BUS HG 4 IN	H	B01E2		1-01 *							1				212
BUS HG 4 IN	H	B07S2		1-02 *									6-0/8		212
BUS HG 4 IN	H														212
BUS HG 4 OUT	H	B02E2		1-01 *	C						1			CABLE	213
BUS HG 4 OUT	H	B07T2		1-02 *									5-4/8	TERM HERE?	213
BUS HG 4 OUT	H														213
BUS HG 5 IN	H	B01B1		1-01 *							1				214
BUS HG 5 IN	H	B07P2		1-02 *									6-0/8		214
BUS HG 5 IN	H														214
BUS HG 5 OUT	H	B02B1		1-01 *	C						1			CABLE	215
BUS HG 5 OUT	H	B07R2		1-02 *									5-6/8	TERM HERE?	215
BUS HG 5 OUT	H														215

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TM11.T RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 23 RUN NUMBER
BUS BG 6 IN	H	B01A1		1-01 *		TM11-01									216
BUS BG 6 IN	H	B07M2		1-02 *		TM11-02									216
BUS BG 6 IN													6-2/8		216
BUS BG 6 OUT	H	B02A1		1-01 *	C	TM11-01								CABLE	217
BUS BG 6 OUT	H	B07N2		1-02 *		TM11-02								TERM HERE?	217
BUS BG 6 OUT													5-6/8		217
BUS HG 7 IN	H	A01V1		1-01 *	C	TM11-01								CABLE	218
BUS HG 7 IN	H	B07K2		1-02 *		TM11-02								TERM HERE?	218
BUS HG 7 IN													6-2/8		218
BUS BG 7 OUT	H	A02V1		1-01 *	C	TM11-01								CABLE	219
BUS BG 7 OUT	H	B07L2		1-02 *		TM11-02								TERM HERE?	219
BUS BG 7 OUT													5-6/8		219
BUS BR 4	L	B01D2		1-01 *	C	TM11-01								CABLE	220
BUS BR 4	L	B02D2		1-02 *	C	TM11-01								CABLE	220
BUS BR 4	L	B07H2		1-03 *		TM11-02								TERM HERE?	220
BUS BR 4													7-6/8		220
BUS BR 5	L	B01C1		1-01 *	C	TM11-01								CABLE	221
BUS BR 5	L	B02C1		1-02 *	C	TM11-01								CABLE	221
BUS BR 5	L	B07F2		1-03 *		TM11-02								TERM HERE?	221
BUS BR 5													8-2/8		221
BUS BR 6	L	A01U2		1-01 *	C	TM11-01								CABLE	222
BUS BR 6	L	A02U2		1-02 *	C	TM11-01								CABLE	222
BUS BR 6	L	B07E2		1-03 *		TM11-02								TERM HERE?	222
BUS BR 6													8-2/8		222
BUS BR 7	L	A01T2		1-01 *	C	TM11-01								CABLE	223
BUS BR 7	L	A02T2		1-02 *	C	TM11-01								CABLE	223
BUS BR 7	L	B07D2		1-03 *		TM11-02								TERM HERE?	223
BUS BR 7													8-2/8		223
BUS C0	L	A11K2		1-01 *		TM11-24								TERM HERE?	224
BUS C0	L	A09J2		1-02 *		TM11-21									224
BUS C0	L	B02U2		1-03 *	C	TM11-01								CABLE	224
BUS C0	L	B01U2		1-04 *	C	TM11-01								CABLE	224
BUS C0													13-6/8		224
BUS C1	L	A11O1		1-01 *		TM11-24								TERM HERE?	225
BUS C1	L	A09F2		1-02 *		TM11-21									225
BUS C1	L	B02T2		1-03 *	C	TM11-01								CABLE	225
BUS C1	L	B01T2		1-04 *	C	TM11-01								CABLE	225
BUS C1													13-6/8		225

TM11.T RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 24 RUN NUMBER
BUS D00	L	A01C1		1-01 *	C	TM11-01								CABLE	226
BUS D00	L	A02C1		1-02 *	C	TM11-01								CABLE	226
BUS D00	L	A07U2		1-03 *		TM11-12									226
BUS D00	L	B09U2		1-04 *		TM11-12								TERM HERE?	226
BUS D00													14-0/8		226
BUS D01	L	A01D2		1-01 *	C	TM11-01								CABLE	227
BUS D01	L	A02D2		1-02 *	C	TM11-01								CABLE	227
BUS D01	L	A07S2		1-03 *		TM11-12									227
BUS D01	L	B09S2		1-04 *		TM11-12								TERM HERE?	227
BUS D01													13-4/8		227
BUS D02	L	A01D1		1-01 *	C	TM11-01								CABLE	228
BUS D02	L	A02D1		1-02 *	C	TM11-01								CABLE	228
BUS D02	L	A07P2		1-03 *		TM11-12									228
BUS D02	L	A10E2		1-04 *		TM11-22									228
BUS D02	L	B09P2		1-05 *		TM11-12								TERM HERE?	228
BUS D02													18-6/8		228
BUS D03	L	A01E2		1-01 *	C	TM11-01								CABLE	229
BUS D03	L	A02E2		1-02 *	C	TM11-01								CABLE	229
BUS D03	L	A07M2		1-03 *		TM11-12									229
BUS D03	L	A10L1		1-04 *		TM11-22									229
BUS D03	L	B09M2		1-05 *		TM11-12								TERM HERE?	229
BUS D03													17-2/8		229
BUS D04	L	A01E1		1-01 *	C	TM11-01								CABLE	230
BUS D04	L	A02E1		1-02 *	C	TM11-01								CABLE	230
BUS D04	L	A07K2		1-03 *		TM11-12									230
BUS D04	L	A10N2		1-04 *		TM11-22									230
BUS D04	L	B09K2		1-05 *		TM11-12								TERM HERE?	230
BUS D04													17-2/8		230
BUS D05	L	A01F2		1-01 *	C	TM11-01								CABLE	231
BUS D05	L	A02F2		1-02 *	C	TM11-01								CABLE	231
BUS D05	L	A07H2		1-03 *		TM11-12									231
BUS D05	L	A10P1		1-04 *		TM11-22									231
BUS D05	L	B09H2		1-05 *		TM11-12								TERM HERE?	231
BUS D05													16-6/8		231
BUS D06	L	A01F1		1-01 *	C	TM11-01								CABLE	232
BUS D06	L	A02F1		1-02 *	C	TM11-01								CABLE	232
BUS D06	L	A07E2		1-03 *		TM11-12									232
BUS D06	L	A10P2		1-04 *		TM11-22									232
BUS D06	L	B09E2		1-05 *		TM11-12								TERM HERE?	232
BUS D06													17-0/8		232

TM11.T RUN NAME	A/P	HND288.V22(22) 11/06/73		BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 25 RUN NUMBER
		PIN NAME	ORDER PIN												
BUS D07	L	A0142		1-01 *	C	TM11-01					2			CABLE	233
BUS D07	L	A02H2		1-02 *	C	TM11-01					1			CABLE	233
BUS D07	L	A10H1		1-03 *		TM11-22					2				233
BUS D07	L	A07V1		1-04 *		TM11-12					1			TERM HERE?	233
BUS D07	L	B09C1		1-05 *		TM11-12					1		16-4/8		233
BUS D08	L	A01H1		1-01 *	C	TM11-01					2			CABLE	234
BUS D08	L	A02H1		1-02 *	C	TM11-01					1			CABLE	234
BUS D08	L	A07R1		1-03 *		TM11-13					2				234
BUS D08	L	A10K1		1-04 *							1			TERM HERE?	234
BUS D08	L	B09V1		1-05 *		TM11-13					1		18-4/8		234
BUS D09	L	A01J2		1-01 *	C	TM11-01					2			CABLE	235
BUS D09	L	A02J2		1-02 *	C	TM11-01					1			CABLE	235
BUS D09	L	A07N1		1-03 *		TM11-13					2			TERM HERE?	235
BUS D09	L	B09R1		1-04 *		TM11-13					1		13-2/8		235
BUS D10	L	A01J1		1-01 *	C	TM11-01					2			CABLE	236
BUS D10	L	A02J1		1-02 *	C	TM11-01					1			CABLE	236
BUS D10	L	A07L1		1-03 *		TM11-13					2			TERM HERE?	236
BUS D10	L	B09N1		1-04 *		TM11-13					1		13-4/8		236
BUS D11	L	A01K2		1-01 *	C	TM11-01					2			CABLE	237
BUS D11	L	A02K2		1-02 *	C	TM11-01					1			CABLE	237
BUS D11	L	A07J1		1-03 *		TM11-13					2			TERM HERE?	237
BUS D11	L	B09L1		1-04 *		TM11-13					1		13-2/8		237
BUS D12	L	A01K1		1-01 *	C	TM11-01					2			CABLE	238
BUS D12	L	A02K1		1-02 *	C	TM11-01					1			CABLE	238
BUS D12	L	A07F1		1-03 *		TM11-13					2			TERM HERE?	238
BUS D12	L	B09J1		1-04 *		TM11-13					1		13-6/8		238
BUS D13	L	A01L2		1-01 *	C	TM11-01					2			CABLE	239
BUS D13	L	A02L2		1-02 *	C	TM11-01					1			CABLE	239
BUS D13	L	A07D1		1-03 *		TM11-13					2			TERM HERE?	239
BUS D13	L	B09F1		1-04 *		TM11-13					1		13-4/8		239

TM11.T RUN NAME	A/P	HND288.V22(22) 11/06/73		BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 26 RUN NUMBER
		PIN NAME	ORDER PIN												
BUS D14	L	A01L1		1-01 *	C	TM11-01					2			CABLE	240
BUS D14	L	A02L1		1-02 *	C	TM11-01					1			CABLE	240
BUS D14	L	A07C1		1-03 *		TM11-13					2			TERM HERE?	240
BUS D14	L	B09D1		1-04 *		TM11-13					1		13-4/8		240
BUS D15	L	A01N2		1-01 *	C	TM11-01					2			CABLE	241
BUS D15	L	A02N2		1-02 *	C	TM11-01					1			CABLE	241
BUS D15	L	A07A1		1-03 *		TM11-13					2			TERM HERE?	241
BUS D15	L	B09A1		1-04 *		TM11-13					1		13-4/8		241
BUS DC LO	L	B01F2		1-01 *	C	TM11-01					1			CABLE	242
BUS DC LO	L	B02F2		1-02 *	C	TM11-01					1		2-6/8		242
BUS INIT	L	A01A1		1-01 *	C	TM11-01					2			CABLE	243
BUS INIT	L	A02A1		1-02 *	C	TM11-01					1			CABLE	243
BUS INIT	L	B10C1		1-03 *		TM11-25					1		10-2/8		243
BUS INTR	L	A01B1		1-01 *	C	TM11-01					2			CABLE	244
BUS INTR	L	A02B1		1-02 *	C	TM11-01					1			CABLE	244
BUS INTR	L	A10M1		1-03 *		TM11-22					1		9-4/8	TERM HERE?	244
BUS MSYN	L	A11E1		1-01 *		TM11-24					2			TERM HERE?	245
BUS MSYN	L	A09E1		1-02 *		TM11-21					1			TERM HERE?	245
BUS MSYN	L	B02V1		1-03 *	C	TM11-01					2			CABLE	245
BUS MSYN	L	B01V1		1-04 *	C	TM11-01					1		14-2/8		245
BUS NPG IN	H	A01U1		1-01 *	C	TM11-01					1			CABLE	246
BUS NPG IN	H	A10B1		1-02 *		TM11-23					1		7-6/8	TERM HERE?	246
BUS NPG OUT	H	A02U1		1-01 *	C	TM11-01					1			CABLE	247
BUS NPG OUT	H	A10V2		1-02 *		TM11-23					1		6-6/8	TERM HERE?	247
BUS NPR	L	A01S2		1-01 *	C	TM11-01					2			CABLE	248
BUS NPR	L	A02S2		1-02 *	C	TM11-01					1			CABLE	248
BUS NPR	L	A10U2	A10J1	1-03 *		TM11-23					2			TERM HERE?	248
BUS NPR	L	A10J1		1-04 *							1		12-6/8		248

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TH11-T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 29 RUN NUMBER
CHG TU ENB	L	A17K1		1-01 *							I	1			265
CHG TU ENB	L	A25N2		1-02 *							I	2			265
CHG TU ENB	L	B32P1		1-03 *							I		13-6/8		265
CHG TU ENB				1											265
CINIT		A03P2		1-01 *	C	TM11-02						2		CABLE	266
CINIT		A04P2		1-02 *	C	TM11-02						1		CABLE	266
CINIT		B30V2		1-03 *		TM11-07							19-6/8	TERM HERE?	266
CINIT				1											266
CLK 2	H	A12C1		1-01 *		TM11-19						1			267
CLK 2	H	A29F1		1-02 *		TM11-05							11-2/8		267
CLK 2				1											267
CLK UNIT SEL	L	A18B1		1-01 *							I	2			268
CLK UNIT SEL	L	A18D2		1-02 *							I	1			268
CLK UNIT SEL	L	A18H1		1-03 *							I	2			268
CLK UNIT SEL	L	A23M1		1-04 *							I	1			268
CLK UNIT SEL	L	B31L2		1-05 *							I		18-4/8		268
CLK UNIT SEL				1											268
CLR DATA RQ	H	A11M1				TM11-24								1-PIN RUN	269
CLR DATA RQ	L	A11N1				TM11-24								1-PIN RUN	270
CMA BIT 00	H	A19F1		1-01 *		TM11-25						1			271
CMA BIT 00	H	B22J2		1-02 *		TM11-25							6-0/8		271
CMA BIT 00				1											271
CMA BIT 00	L	A19M1		1-01 *		TM11-25						2			272
CMA BIT 00	L	A25P2		1-02 *		TM11-15						1			272
CMA BIT 00	L	A22J2		1-03 *		TM11-15						2			272
CMA BIT 00	L	B22F2		1-04 *		TM11-25						1			272
CMA BIT 00	L	B22K2		1-05 *		TM11-25							17-2/8		272
CMA BIT 00				1											272
CORE DUMP	H	A27T2		1-01 *		TM11-09						1			273
CORE DUMP	H	A26M2		1-02 *		TM11-15						2			273
CORE DUMP	H	A26U2		1-03 *		TM11-08						1			273
CORE DUMP	H	B16L2		1-04 *		TM11-08							14-2/8		273
CORE DUMP				1											273

TH11-T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 30 RUN NUMBER
CORE DUMP	L	A17U1		1-01 *		TM11-08						1			274
CORE DUMP	L	B16K2		1-02 *		TM11-08						2			274
CORE DUMP	L	B19D1		1-03 *		TM11-07						1			274
CORE DUMP	L	A25P1		1-04 *		TM11-15						2			274
CORE DUMP	L	B29M2		1-05 *		TM11-09						1			274
CORE DUMP	L	B29R2		1-06 *		TM11-09							22-6/8		274
CORE DUMP				1											274
CRCE		A24V1		1-01 *		TM11-17						1		TERM HERE?	275
CRCE		B04S2		1-02 *	C	TM11-02						2		CABLE	275
CRCE		B03S2		1-03 *	C	TM11-02							15-4/8	CABLE	275
CRCE				1											275
CRCE	H	A20N1	A20M1	1-01 *								1			276
CRCE	H	A20M1		1-02 *								2			276
CRCE	H	A23U1		1-03 *		TM11-17							6-6/8		276
CRCE				1											276
CRCS		A05A1		1-01 *		TM11-08						1		TERM HERE?	277
CRCS		B04E2		1-02 *	C	TM11-02						2		CABLE	277
CRCS		B03E2		1-03 *	C	TM11-02							8-4/8	CABLE	277
CRCS				1											277
CRCS	H	A09B1		1-01 *		TM11-08						1			278
CRCS	H	B15P2		1-02 *						R1			9-2/8		278
CRCS				1											278
CRCS + LRCS	H	B26U1		1-01 *						I		1			279
CRCS + LRCS	H	B17F1		1-02 *						I			7-2/8		279
CRCS + LRCS				1											279
CRCS + LRCS	L	B26V4		1-01 *						I		1			280
CRCS + LRCS	L	B17J1		1-02 *						I		2			280
CRCS + LRCS	L	B15S2		1-03 *						I		1			280
CRCS + LRCS	L	A20D1		1-04 *						I		2			280
CRCS + LRCS	L	A22A1		1-05 *						I			22-0/8		280
CRCS + LRCS				1											280
CRE	H	A28C1		1-01 *						R1		1			281
CRE	H	A08E2		1-02 *						R1		2			281
CRE	H	B06D1		1-03 *						R1			17-6/8		281
CRE				1											281
CRE	L	A17C1		1-01 *		TM11-17						1			282
CRE	L	A28H1		1-02 *		TM11-17							8-0/8		282
CRE				1											282

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TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 33
	A/P	PTN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
D HIT 11	L	A07M1		1-01 *							2				299
D HIT 11	L	A08K2		1-02 *							1				299
D HIT 11	L	B12A1		1-03 *							2				299
D HIT 11	L	B13K2		1-04 *											299
D HIT 11													11-6/8		299
D HIT 12	L	A07F2		1-01 *							1				300
D HIT 12	L	A08K1		1-02 *							2				300
D HIT 12	L	B13K1		1-03 *							1				300
D HIT 12	L	B12M2		1-04 *											300
D HIT 12													11-6/8		300
D HIT 13	L	A07E1		1-01 *							2				301
D HIT 13	L	A08F2		1-02 *							1				301
D HIT 13	L	B12H2		1-03 *							2				301
D HIT 13	L	B13F2		1-04 *											301
D HIT 13													12-2/8		301
D HIT 14	L	A08F1		1-01 *							2				302
D HIT 14	L	A07L2		1-02 *							1				302
D HIT 14	L	B13F1		1-03 *							2				302
D HIT 14	L	B12M1		1-04 *											302
D HIT 14													12-2/8		302
D HIT 15	L	A07B1		1-01 *							1				303
D HIT 15	L	A08C1		1-02 *							2				303
D HIT 15	L	B13C1		1-03 *							1				303
D HIT 15	L	B12J1		1-04 *											303
D HIT 15													12-2/8		303
DOU	H	A23R1		1-01 *								R1			304
DOU	H	B23B1		1-02 *								R1			304
DOU	H	B22C1		1-03 *								R1			304
DOU	H	A12N1		1-04 *								R1			304
DOU	H	B09V2		1-05 *								R1			304
DOU													21-0/8		304
DOU	L	A17P2		1-01 *											305
DOU	L	A23S1		1-02 *											305
DOU													5-2/8		305
DO1	H	B09T2		1-01 *											306
DO1	H	A12M1		1-02 *											306
DO1	H	A14J1		1-03 *											306
DO1	H	B23H1		1-04 *											306
DO1	H	B12H1		1-05 *											306
DO1													24-6/8		306

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 34
	A/P	PTN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
DO2	H	A14E2		1-01 *											307
DO2	H	A12M1		1-02 *											307
DO2	H	B09R2		1-03 *											307
DO2	H	B23N1		1-04 *											307
DO2													19-2/8		307
DO3	H	B09H2		1-01 *											308
DO3	H	A12F2		1-02 *											308
DO3	H	A14C1		1-03 *											308
DO3	H	B24B1		1-04 *											308
DO3	H	B32J1		1-05 *											308
DO3													25-0/8		308
DO4	H	B09L2		1-01 *											309
DO4	H	A12T2		1-02 *											309
DO4	H	A21M1		1-03 *											309
DO4	H	B24H1		1-04 *											309
DO4													17-0/8		309
DO5	H	B09J2		1-01 *											310
DO5	H	A12N2		1-02 *											310
DO5	H	A21K1		1-03 *											310
DO5	H	B24N1		1-04 *											310
DO5													18-2/8		310
DO6	H	B09F2		1-01 *											311
DO6	H	A12U1		1-02 *											311
DO6	H	A24J1		1-03 *											311
DO6	H	B25B1		1-04 *											311
DO6													17-6/8		311
DO7	H	A12M2		1-01 *											312
DO7	H	B09D2		1-02 *											312
DO7	H	B25H1		1-03 *											312
DO7													15-0/8		312
DO8	H	A19F2		1-01 *											313
DO8	H	A23P1		1-02 *											313
DO8	H	B23D1		1-03 *											313
DO8	H	B17K1		1-04 *											313
DO8	H	A14T2		1-05 *											313
DO8	H	B12F1		1-06 *											313
DO8	H	B09U1		1-07 *											313
DO8													28-2/8		313

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TM11.1 RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 35 RUN NUMBER
D08	L	A19D2		1-01 *											314
D08	L	A23H1		1-02 *											314
D08													4-2/8		314
D09	H	B23K1		1-01 *											315
D09	H	A23D1		1-02 *											315
D09	H	A19M2		1-03 *											315
D09	H	A14P1		1-04 *											315
D09	H	A12V2		1-05 *											315
D09	H	B09S1		1-06 *											315
D09													24-2/8		315
D09	L	A19K2		1-01 *											316
D09	L	A23E1		1-02 *											316
D09													4-2/8		316
D10	H	B09P1		1-01 *											317
D10	H	B12E2		1-02 *											317
D10	H	A14M2		1-03 *											317
D10	H	A19T2		1-04 *											317
D10	H	A23C1		1-05 *											317
D10	H	B23R1		1-06 *											317
D10													25-6/8		317
D10	L	A19R2		1-01 *											318
D10	L	A23D2		1-02 *											318
D10													5-0/8		318
D11	H	B09M1		1-01 *											319
D11	H	A12U2		1-02 *											319
D11	H	B24D1		1-03 *											319
D11	H	B31T2		1-04 *											319
D11													20-4/8		319
D12	H	B09K1		1-01 *											320
D12	H	B12L2		1-02 *											320
D12	H	A16P2		1-03 *											320
D12	H	B24K1		1-04 *											320
D12													16-6/8		320
D13	H	A24C1		1-01 *						R1					321
D13	H	B24R1		1-02 *						R1					321
D13	H	B12F2		1-03 *						R1					321
D13	H	B09H1		1-04 *						R1					321
D13	H	B21R2		1-05 *						I					321
D13													28-2/8		321

TM11.1 RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 36 RUN NUMBER
D14	H	B22N2		1-01 *											322
D14	H	A24E2		1-02 *						R1					322
D14	H	B24D1		1-03 *						R1					322
D14	H	B12N1		1-04 *						R1					322
D14	H	B09E1		1-05 *						R1					322
D14													25-0/8		322
D15	H	B09B1		1-01 *											323
D15	H	B12H1		1-02 *											323
D15	H	B25K1		1-03 *											323
D15													13-0/8		323
DATA BFR IN HIT 0	H	A21P1		1-01 *											324
DATA BFR IN HIT 0	H	B16J2		1-02 *											324
DATA BFR IN HIT 0													5-4/8		324
DATA BFR IN HIT 1	H	A21D1		1-01 *											325
DATA BFR IN HIT 1	H	B16P1		1-02 *											325
DATA BFR IN HIT 1													7-2/8		325
DATA BFR IN HIT 2	H	A21R1		1-01 *											326
DATA BFR IN HIT 2	H	B16N2		1-02 *											326
DATA BFR IN HIT 2													5-6/8		326
DATA BFR IN HIT 3	H	A21E1		1-01 *											327
DATA BFR IN HIT 3	H	B16S1		1-02 *											327
DATA BFR IN HIT 3													7-4/8		327
DATA BFR IN HIT 4	H	A21U1		1-01 *											328
DATA BFR IN HIT 4	H	B16R2		1-02 *											328
DATA BFR IN HIT 4													5-6/8		328
DATA BFR IN HIT 5	H	A21B1		1-01 *											329
DATA BFR IN HIT 5	H	B16U1		1-02 *											329
DATA BFR IN HIT 5													8-0/8		329
DATA BFR IN HIT 6	H	A21V1		1-01 *											330
DATA BFR IN HIT 6	H	B16T2		1-02 *											330
DATA BFR IN HIT 6													5-6/8		330
DATA BFR IN HIT 7	H	A21A1		1-01 *											331
DATA BFR IN HIT 7	H	B16V2		1-02 *											331
DATA BFR IN HIT 7													8-2/8		331

TM11-T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 37 RUN NUMBER
DATA BFR OUT BIT 0	H	B27S2		1-01 *							I				332
DATA BFR OUT BIT 0	H	A19B1		1-02 *							R1				332
DATA BFR OUT BIT 0	H	A21S2		1-03 *							R1				332
DATA BFR OUT BIT 0	H	B17N1		1-04 *							R1				332
DATA BFR OUT BIT 0	H	A13P1		1-05 *							R1				332
DATA BFR OUT BIT 0				I									24-6/8		332
DATA BFR OUT BIT 1	H	A13L2		1-01 *							R1				333
DATA BFR OUT BIT 1	H	B13L2		1-02 *							R1				333
DATA BFR OUT BIT 1	H	B17E2		1-03 *							R1				333
DATA BFR OUT BIT 1	H	A21M2		1-04 *							R1				333
DATA BFR OUT BIT 1	H	B27R2		1-05 *							I				333
DATA BFR OUT BIT 1				I									21-4/8		333
DATA BFR OUT BIT 2	H	A13L1		1-01 *							R1				334
DATA BFR OUT BIT 2	H	B13L1		1-02 *							R1				334
DATA BFR OUT BIT 2	H	B17L2		1-03 *							R1				334
DATA BFR OUT BIT 2	H	A21T2		1-04 *							R1				334
DATA BFR OUT BIT 2	H	B27P2		1-05 *							I				334
DATA BFR OUT BIT 2				I									21-0/8		334
DATA BFR OUT BIT 3	H	A21L2		1-01 *							R1				335
DATA BFR OUT BIT 3	H	A13H2		1-02 *							R1				335
DATA BFR OUT BIT 3	H	B13H2		1-03 *							R1				335
DATA BFR OUT BIT 3	H	B17S2		1-04 *							R1				335
DATA BFR OUT BIT 3	H	B27N2		1-05 *							I				335
DATA BFR OUT BIT 3				I									24-2/8		335
DATA BFR OUT BIT 4	H	A13H1		1-01 *							R1				336
DATA BFR OUT BIT 4	H	B13H1		1-02 *							R1				336
DATA BFR OUT BIT 4	H	B17R1		1-03 *							R1				336
DATA BFR OUT BIT 4	H	A21U2		1-04 *							R1				336
DATA BFR OUT BIT 4	H	B29L2		1-05 *							R1				336
DATA BFR OUT BIT 4	H	B27M2		1-06 *							I				336
DATA BFR OUT BIT 4				I									26-2/8		336
DATA BFR OUT BIT 5	H	B17H2		1-01 *							R1				337
DATA BFR OUT BIT 5	H	B13D2		1-02 *							R1				337
DATA BFR OUT BIT 5	H	A13D2		1-03 *							R1				337
DATA BFR OUT BIT 5	H	A21E2		1-04 *							R1				337
DATA BFR OUT BIT 5	H	B29P2		1-05 *							R1				337
DATA BFR OUT BIT 5	H	B27L2		1-06 *							I				337
DATA BFR OUT BIT 5				I									27-2/8		337

TM11-T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 38 RUN NUMBER
DATA BFR OUT BIT 6	H	A13D1		1-01 *							R1				338
DATA BFR OUT BIT 6	H	B13D1		1-02 *							R1				338
DATA BFR OUT BIT 6	H	B19P1		1-03 *							R1				338
DATA BFR OUT BIT 6	H	B17N2		1-04 *							R1				338
DATA BFR OUT BIT 6	H	A21V2		1-05 *							R1				338
DATA BFR OUT BIT 6	H	B27K2		1-06 *							I				338
DATA BFR OUT BIT 6				I									25-0/8		338
DATA BFR OUT BIT 7	H	A21D2		1-01 *							R1				339
DATA BFR OUT BIT 7	H	A13A1		1-02 *							R1				339
DATA BFR OUT BIT 7	H	B13A1		1-03 *							R1				339
DATA BFR OUT BIT 7	H	B17U2		1-04 *							R1				339
DATA BFR OUT BIT 7	H	B19P2		1-05 *							R1				339
DATA BFR OUT BIT 7	H	B27J2		1-06 *							I				339
DATA BFR OUT BIT 7				I									27-6/8		339
DATA BFR STB 1	H	A20L1		1-01 *								TM11-15			340
DATA BFR STB 1	H	A21S1		1-02 *								TM11-20			340
DATA BFR STB 1				I									3-2/8		340
DATA BFR STB 2	H	A16F1		1-01 *								TM11-15			341
DATA BFR STB 2	H	A21F2		1-02 *								TM11-20			341
DATA BFR STB 2				I									5-0/8		341
DATA STB 1	H	A11P1		1-01 *								TM11-24			342
DATA STB 1	H	A11R1		1-02 *								TM11-24			342
DATA STB 1	H	A11R2		1-03 *								TM11-24			342
DATA STB 1				I									5-0/8		342
DATA STB 1	L	A11S2										TM11-24		1-PIN RUN	343
DATA STB 2	H	A11M2		1-01 *								TM11-24			344
DATA STB 2	H	A26A1		1-02 *								TM11-15			344
DATA STB 2				I									10-2/8		344
DATA STB 2	L	A11T2		1-01 *								TM11-24			345
DATA STB 2	L	A11L2		1-02 *								TM11-24			345
DATA STB 2	L	A20H1		1-03 *								TM11-15			345
DATA STB 2				I									9-6/8		345
DATA TO BUS	H	A19N1		1-01 *								TM11-25			346
DATA TO BUS	H	A19H1		1-02 *								TM11-25			346
DATA TO BUS	H	A11E2		1-03 *								TM11-24			346
DATA TO BUS				I									9-2/8		346
DATA TO BUS	L	A11F2										TM11-24		1-PIN RUN	347

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TM11.T RUN NAME	A/P	PTN NAME	ORDER PIN	BAY - ORDER	Q	DRAW RV	PG Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 39 RUN NUMBER
DEN 5		A03F1		1-01 *	C	TM11-02			2			CABLE	348
DEN 5		A04F1		1-02 *	C	TM11-02			1			CABLE	348
DEN 5		A26V2		1-03 *		TM11-08						TERM HERE?	348
DEN 5				1							17-0/8		348
DEN 5	H	A24E1		1-01 *		TM11-08			2			TERM HERE?	349
DEN 5	H	A17R1		1-02 *		TM11-08			1				349
DEN 5	H	A08D2		1-03 *		TM11-13			2				349
DEN 5	H	B06L2		1-04 *	C	TM11-03						CABLE	349
DEN 5				1							19-6/8		349
DEN 8		A03E1		1-01 *	C	TM11-02			2			CABLE	350
DEN 8		A04E1		1-02 *	C	TM11-02			1			CABLE	350
DEN 8		A06U1		1-03 *		TM11-08						TERM HERE?	350
DEN 8				1							7-0/8		350
DEN 8	H	A24H2		1-01 *		TM11-08			2			TERM HERE?	351
DEN 8	H	A17P1		1-02 *		TM11-08			1				351
DEN 8	H	A08D1		1-03 *	C	TM11-03			2			CABLE	351
DEN 8	H	B06J2		1-04 *		TM11-13						TERM HERE?	351
DEN 8				1							19-6/8		351
ENB SDWN GO	L	A26R2		1-01 *				R1	1				352
ENB SDWN GO	L	B15F2		1-02 *				R1					352
ENB SDWN GO				1							8-4/8		352
ENB US CLK	H	A17N1		1-01 *				I	1				353
ENB US CLK	H	A27D2		1-02 *				I	2				353
ENB US CLK	H	A25D1		1-03 *				I					353
ENB US CLK				1							11-4/8		353
EOFF	H	B18U1		1-01 *				R1	2				354
EOFF	H	B15L1		1-02 *				R1	1				354
EOFF	H	A08E1		1-03 *				R1	2				354
EOFF	H	B06U2		1-04 *				R2					354
EOFF				1							18-4/8		354
EOFF	L	A29P1		1-01 *				R1	1				355
EOFF	L	A17F1		1-02 *				R1	2				355
EOFF	L	B18S1		1-03 *				I					355
EOFF				1							15-0/8		355
EOT		A05C1		1-01 *		TM11-08			1			TERM HERE?	356
EOT		B04R2		1-02 *	C	TM11-02			2			CABLE	356
EOT		B03R2		1-03 *	C	TM11-02						CABLE	356
EOT				1							9-2/8		356

TM11.T RUN NAME	A/P	PTN NAME	ORDER PIN	BAY - ORDER	Q	DRAW RV	PG Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 40 RUN NUMBER
EOT	H	A17J2		1-01 *		TM11-17			1			TERM HERE?	357
EOT	H	A05D2		1-02 *		TM11-08			2				357
EOT	H	A08M1		1-03 *	C	TM11-03			1			CABLE	357
EOT	H	B06T2		1-04 *		TM11-13						TERM HERE?	357
EOT				1							18-2/8		357
ERR	H	A08A1		1-01 *		TM11-13			2			TERM HERE?	358
ERR	H	B06E1		1-02 *	C	TM11-03			1			CABLE	358
ERR	H	B18V1		1-03 *		TM11-17						TERM HERE?	358
ERR				1							15-2/8		358
ERR	L	A30D2		1-01 *				R1	1				359
ERR	L	B18V2		1-02 *				R1					359
ERR				1							10-2/8		359
EVEN CHAR	H	B22M1				TM11-11						1-PIN RUN	360
EVEN CHAR	L	A27U2		1-01 *		TM11-09			2				361
EVEN CHAR	L	B22K1		1-02 *		TM11-11			1				361
EVEN CHAR	L	B22M1		1-03 *		TM11-11							361
EVEN CHAR				1							8-4/8		361
EVEN CHAR STH	H	B16P2		1-01 *		TM11-09			1				362
EVEN CHAR STH	H	B17P2		1-02 *		TM11-09			2				362
EVEN CHAR STH	H	B17M2		1-03 *		TM11-09			1				362
EVEN CHAR STH	H	B17P1		1-04 *		TM11-09			2				362
EVEN CHAR STH	H	B17T2		1-05 *		TM11-09							362
EVEN CHAR STH				1							11-4/8		362
EVEN CHAR STH	L	A27V2		1-01 *		TM11-09			2				363
EVEN CHAR STH	L	B18C1		1-02 *		TM11-15			1				363
EVEN CHAR STH	L	B17D2		1-03 *		TM11-09			2				363
EVEN CHAR STH	L	B17K2		1-04 *		TM11-09			1				363
EVEN CHAR STH	L	B17R2		1-05 *		TM11-09			2				363
EVEN CHAR STH	L	B17M1		1-06 *		TM11-09			1				363
EVEN CHAR STH	L	B18E2		1-07 *		TM11-09			2				363
EVEN CHAR STH	L	B18C1		1-08 *		TM11-11							363
EVEN CHAR STH				1							26-0/8		363
FMK		A25U2		1-01 *					2			TERM HERE?	364
FMK		A25T2		1-02 *		TM11-17			1				364
FMK		B04B1		1-03 *	C	TM11-02			2			CABLE	364
FMK		B03B1		1-04 *	C	TM11-02						CABLE	364
FMK				1							19-4/8		364

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	ORDER PIN	11/06/73 BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 41 RUN NUMBER
FUNCTION BIT 0	H	A15B1		1-01 *		TM11-07					2			TERM HERE?	365
FUNCTION BIT 0	H	A14L1		1-02 *		TM11-07					1				365
FUNCTION BIT 0	H	B08L2		1-03 *		TM11-12					2				365
FUNCTION BIT 0	H	B06R2		1-04 *	C	TM11-03							13-2/8	CABLE	365
FUNCTION BIT 0				1											365
FUNCTION BIT 1	H	A15C1		1-01 *		TM11-07					2			TERM HERE?	366
FUNCTION BIT 1	H	A14H2		1-02 *		TM11-07					1				366
FUNCTION BIT 1	H	B08L1		1-03 *		TM11-12					2				366
FUNCTION BIT 1	H	B06N2		1-04 *	C	TM11-03							13-0/8	CABLE	366
FUNCTION BIT 1				1											366
FUNCTION BIT 2	H	A15D1		1-01 *		TM11-07					2			TERM HERE?	367
FUNCTION BIT 2	H	A14E1		1-02 *		TM11-07					1				367
FUNCTION BIT 2	H	B08H2		1-03 *		TM11-12					2				367
FUNCTION BIT 2	H	B06S1		1-04 *	C	TM11-03							13-4/8	CABLE	367
FUNCTION BIT 2				1											367
FWD		A03K1		1-01 *	C	TM11-02					2			CABLE	368
FWD		A04K1		1-02 *	C	TM11-02					1			CABLE	368
FWD		B06S1		1-03 *		TM11-07							8-6/8	TERM HERE?	368
FWD				1											368
GND 01		A01B2		1-01 *		TM11-01					1				369
GND 01		A01C2		1-02 *							2				369
GND 01		A01N1		1-03 *		TM11-01					1				369
GND 01		A01R1		1-04 *		TM11-01					2				369
GND 01		A01P1		1-05 *		TM11-01					1				369
GND 01		A01S1		1-06 *		TM11-01					2				369
GND 01		A01T1		1-07 *							1				369
GND 01		A01V2		1-08 *		TM11-01					2				369
GND 01		B01B2		1-09 *		TM11-01					1				369
GND 01		B01D1		1-10 *		TM11-01					2				369
GND 01		B01C2		1-11 *							1				369
GND 01		B01E1		1-12 *		TM11-01					2				369
GND 01		B01T1		1-13 *							1				369
GND 01		B01V2		1-14 *		TM11-01							36-2/8		369
GND 01				1											369

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	ORDER PIN	11/06/73 BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 42 RUN NUMBER
GND 02		A02B2		1-01 *		TM11-01					1				370
GND 02		A02C2		1-02 *							2				370
GND 02		A02N1		1-03 *		TM11-01					1				370
GND 02		A02R1		1-04 *		TM11-01					2				370
GND 02		A02P1		1-05 *		TM11-01					1				370
GND 02		A02S1		1-06 *		TM11-01					2				370
GND 02		A02T1		1-07 *							1				370
GND 02		A02V2		1-08 *		TM11-01					2				370
GND 02		B02B2		1-09 *		TM11-01					1				370
GND 02		B02D1		1-10 *		TM11-01					2				370
GND 02		B02C2		1-11 *							1				370
GND 02		B02E1		1-12 *		TM11-01					2				370
GND 02		B02T1		1-13 *							1				370
GND 02		B02V2		1-14 *		TM11-01							36-2/8		370
GND 02				1											370
GND 03		A03B2		1-01 *		TM11-02					1				371
GND 03		A03C2		1-02 *							2				371
GND 03		A03N1		1-03 *		TM11-02					1				371
GND 03		A03R1		1-04 *		TM11-02					2				371
GND 03		A03P1		1-05 *		TM11-02					1				371
GND 03		A03T1		1-06 *							2				371
GND 03		A03S1		1-07 *		TM11-02					1				371
GND 03		A03V1		1-08 *		TM11-02					2				371
GND 03		A03V2		1-09 *		TM11-02					1				371
GND 03		B03B2		1-10 *		TM11-02					2				371
GND 03		B03D1		1-11 *		TM11-02					1				371
GND 03		B03C2		1-12 *							2				371
GND 03		B03E1		1-13 *		TM11-02					1				371
GND 03		B03T1		1-14 *							2				371
GND 03		B03V2		1-15 *		TM11-02					1		41-2/8		371
GND 03				1											371

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TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 43 RUN NUMBER
	A/P	PTN NAME	ORDER PTN	BAY - ORDER											
GND 04		A0402		1-01 *		TM11-02					1				372
GND 04		A04C2		1-02 *							2				372
GND 04		A04N1		1-03 *		TM11-02					1				372
GND 04		A04R1		1-04 *		TM11-02					2				372
GND 04		A04P1		1-05 *		TM11-02					1				372
GND 04		A04T1		1-06 *							2				372
GND 04		A04S1		1-07 *		TM11-02					1				372
GND 04		A04U1		1-08 *		TM11-02					2				372
GND 04		A04V1		1-09 *		TM11-02					1				372
GND 04		A04V2		1-10 *		TM11-02					2				372
GND 04		B04B2		1-11 *		TM11-02					1				372
GND 04		B04D1		1-12 *		TM11-02					2				372
GND 04		B04C2		1-13 *							1				372
GND 04		B04E1		1-14 *		TM11-02					2				372
GND 04		B04T1		1-15 *							1				372
GND 04		B04V2		1-16 *		TM11-02							41-2/8		372
GND 05		A05C2		1-01 *							1				373
GND 05		A05T1		1-02 *							2				373
GND 05		B05C2		1-03 *							1				373
GND 05		B05T1		1-04 *									11-4/8		373
GND 06		A06C2		1-01 *							1				374
GND 06		A06T1		1-02 *							2				374
GND 06		B06C2		1-03 *							1				374
GND 06		B06T1		1-04 *									11-4/8		374
GND 07		A07C2		1-01 *							1				375
GND 07		A07T1		1-02 *							2				375
GND 07		B07C2		1-03 *							1				375
GND 07		B07T1		1-04 *									11-4/8		375
GND 08		A08C2		1-01 *							2				376
GND 08		A08H1		1-02 *							1				376
GND 08		A08T1		1-03 *							2				376
GND 08		B08C2		1-04 *							1				376
GND 08		B08T1		1-05 *									14-0/8		376

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 44 RUN NUMBER
	A/P	PTN NAME	ORDER PTN	BAY - ORDER											
GND 09		A09A1		1-01 *		TM11-21					1				377
GND 09		A09C2		1-02 *							2				377
GND 09		A09F1		1-03 *		TM11-21					1				377
GND 09		A09H1		1-04 *		TM11-21					2				377
GND 09		A09T1		1-05 *							1				377
GND 09		A09V2		1-06 *		TM11-21					2				377
GND 09		B09C2		1-07 *							1				377
GND 09		B09T1		1-08 *									21-4/8		377
GND 10		A10C2		1-01 *							2				378
GND 10		A10J2		1-02 *		TM11-22					1				378
GND 10		A10R1		1-03 *		TM11-22					2				378
GND 10		A10S1		1-04 *		TM11-22					1				378
GND 10		A10T1		1-05 *							2				378
GND 10		B10A1		1-06 *		TM11-25					1				378
GND 10		B10D1		1-07 *		TM11-25					2				378
GND 10		B10B1		1-08 *		TM11-25					1				378
GND 10		B10C2		1-09 *							2				378
GND 10		B10E1		1-10 *		TM11-25					1				378
GND 10		B10F1		1-11 *		TM11-25					2				378
GND 10		B10L1		1-12 *							1				378
GND 10		B10M1		1-13 *		TM11-25					2				378
GND 10		B10T1		1-14 *									35-6/8		378
GND 11		A11C2		1-01 *							1				379
GND 11		A11H1		1-02 *		TM11-24					2				379
GND 11		A11T1		1-03 *							1				379
GND 11		B11C2		1-04 *							2				379
GND 11		B11T1		1-05 *									14-0/8		379
GND 12		A12C2		1-01 *							1				380
GND 12		A12T1		1-02 *							2				380
GND 12		B12C2		1-03 *							1				380
GND 12		B12T1		1-04 *									11-4/8		380



TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 45 RUN NUMBER
	A/P	PTN NAME	ORDER PIN	BAY - ORDER											
GND 13		A13C2		1-01 *							2				381
GND 13		A13T1		1-02 *							1				381
GND 13		B13C2		1-03 *							2				381
GND 13		B13E2		1-04 *		TM11-14					1				381
GND 13		B13J2		1-05 *		TM11-14					2				381
GND 13		B13M2		1-06 *		TM11-14					1				381
GND 13		B13N1		1-07 *		TM11-14					2				381
GND 13		B13T1		1-08 *							1		21-0/8		381
GND 13															
GND 14		A14C2		1-01 *							1				382
GND 14		A14T1		1-02 *							2				382
GND 14		B14C2		1-03 *							1				382
GND 14		B14F2		1-04 *							2				382
GND 14		B14T1		1-05 *							1				382
GND 14		B14S1		1-06 *		TM11-04							16-4/8		382
GND 14															
GND 15		A15C2		1-01 *							1				383
GND 15		A15E1		1-02 *		TM11-07					2				383
GND 15		A15T1		1-03 *							1				383
GND 15		B15C2		1-04 *							2				383
GND 15		B15T1		1-05 *									14-0/8		383
GND 15															
GND 16		A16C2		1-01 *							1				384
GND 16		A16T1		1-02 *							2				384
GND 16		B16C2		1-03 *							1				384
GND 16		B16T1		1-04 *									11-4/8		384
GND 16															
GND 17		A17C2		1-01 *							1				385
GND 17		A17T1		1-02 *							2				385
GND 17		B17C2		1-03 *							1				385
GND 17		B17T1		1-04 *									11-4/8		385
GND 17															
GND 18		A18C2		1-01 *							2				386
GND 18		A18M2		1-02 *		TM11-06					1				386
GND 18		A18P1		1-03 *		TM11-04					2				386
GND 18		A18T1		1-04 *							1				386
GND 18		A18T2		1-05 *		TM11-06					2				386
GND 18		B18C2		1-06 *							1				386
GND 18		B18P1		1-07 *		TM11-17					2				386
GND 18		B18T1		1-08 *							1				386
GND 18		B18T2		1-09 *		TM11-17							23-0/8		386
GND 18															

TM11.T RUN NAME	HND288.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 46 RUN NUMBER
	A/P	PTN NAME	ORDER PIN	BAY - ORDER											
GND 19		A19C2		1-01 *							1				387
GND 19		A19T1		1-02 *							2				387
GND 19		B19C2		1-03 *							1				387
GND 19		B19T1		1-04 *									11-4/8		387
GND 19															
GND 20		A20C2		1-01 *							1				388
GND 20		A20T1		1-02 *							2				388
GND 20		B20C2		1-03 *							1				388
GND 20		B20T1		1-04 *									11-4/8		388
GND 20															
GND 21		A21C2		1-01 *							2				389
GND 21		A21C1		1-02 *		TM11-20					1				389
GND 21		A21F1		1-03 *		TM11-20					2				389
GND 21		A21T1		1-04 *							1				389
GND 21		B21C2		1-05 *							2				389
GND 21		B21T1		1-06 *									16-2/8		389
GND 21															
GND 22		A22C2		1-01 *							1				390
GND 22		A22T1		1-02 *							2				390
GND 22		B22C2		1-03 *							1				390
GND 22		B22T1		1-04 *									11-4/8		390
GND 22															
GND 23		A23C2		1-01 *							2				391
GND 23		A23T1		1-02 *							1				391
GND 23		B23C2		1-03 *							2				391
GND 23		B23F2		1-04 *		TM11-15					1				391
GND 23		B23M2		1-05 *		TM11-15					2				391
GND 23		B23T2		1-06 *		TM11-15					1				391
GND 23		B23T1		1-07 *									18-0/8		391
GND 23															
GND 24		A24C2		1-01 *							1				392
GND 24		A24T1		1-02 *							2				392
GND 24		B24C2		1-03 *							1				392
GND 24		B24F2		1-04 *		TM11-15					2				392
GND 24		B24T1		1-05 *									14-0/8		392
GND 24															
GND 25		A25C2		1-01 *							1				393
GND 25		A25T1		1-02 *							2				393
GND 25		B25C2		1-03 *							1				393
GND 25		B25T1		1-04 *									11-4/8		393
GND 25															

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TM11.T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 47 RUN NUMBER
GND 26		A26C2		1-01 *							1				396
GND 26		A26T1		1-02 *							2				396
GND 26		B26C2		1-03 *							1				394
GND 26		B26T1		1-04 *											394
GND 26													11-4/8		394
GND 27		A27C2		1-01 *							1				395
GND 27		A27T1		1-02 *							2				395
GND 27		B27C2		1-03 *							1				395
GND 27		B27T1		1-04 *									11-4/8		395
GND 27															395
GND 28		A28C2		1-01 *							1				396
GND 28		A28T1		1-02 *							2				396
GND 28		B28C2		1-03 *							1				396
GND 28		B28T1	B28E1	1-04 *							2				396
GND 28		B28E1		1-05 *									15-2/8		396
GND 28															396
GND 29		A29C2		1-01 *							1				397
GND 29		A29T1		1-02 *							2				397
GND 29		B29C2		1-03 *							1				397
GND 29		B29T1		1-04 *									11-4/8		397
GND 29															397
GND 30		A30C2		1-01 *							1				398
GND 30		A30T1		1-02 *							2				398
GND 30		B30C2		1-03 *							1				398
GND 30		B30T1		1-04 *									11-4/8		398
GND 30															398
GND 31		A31C2		1-01 *							1				399
GND 31		A31T1		1-02 *							2				399
GND 31		B31C2		1-03 *							1				399
GND 31		B31J1		1-04 *							2	TM11-04			399
GND 31		B31T1		1-05 *									13-6/8		399
GND 31															399
GND 32		A32C2		1-01 *							1				400
GND 32		A32T1		1-02 *							2				400
GND 32		B32C2		1-03 *							1				400
GND 32		B32T1		1-04 *									11-4/8		400
GND 32															400

TM11.T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 48 RUN NUMBER
GO BIT	H	A28M1		1-01 *							1				401
GO BIT	H	A29M1		1-02 *							2				401
GO BIT	H	A29R2		1-03 *							1				401
GO BIT	H	B22E1		1-04 *							2				401
GO BIT	H	B08P1		1-05 *							1				401
GO BIT	H	B27B1		1-06 *							2				401
GO BIT	H	A27P1		1-07 *							1				401
GO BIT	H	A1882		1-08 *											401
GO BIT													46-4/8		401
GO STROBE 1	H	A32F1										TM11-04		1-PIN RUN	402
GO STROBE 1	L	A18N1		1-01 *							1				403
GO STROBE 1	L	A32H1		1-02 *							2				403
GO STROBE 1	L	B32D2		1-03 *								R1			403
GO STROBE 1													14-4/8		403
GO STROBE 2	H	A32J1		1-01 *							2	TM11-04			404
GO STROBE 2	H	A17P2		1-02 *							1	TM11-04			404
GO STROBE 2	H	A16L2		1-03 *							2	TM11-11			404
GO STROBE 2	H	B15H2		1-04 *							1	TM11-04			404
GO STROBE 2	H	B15J1		1-05 *								TM11-04			404
GO STROBE 2													20-2/8		404
GO STROBE 2	L	A32K1		1-01 *							2	R1			405
GO STROBE 2	L	A2482		1-02 *							1	R1			405
GO STROBE 2	L	A18L2		1-03 *							2	R1			405
GO STROBE 2	L	B14H1		1-04 *							1	R1			405
GO STROBE 2	L	B14L2		1-05 *							2	R1			405
GO STROBE 2	L	B22L1		1-06 *							1	R1			405
GO STROBE 2	L	B22P1	B29J2	1-07 *							2	I			405
GO STROBE 2	L	B29J2		1-08 *											405
GO STROBE 2													36-0/8		405
GSD	H	A23N2		1-01 *							1	I			406
GSD	H	B13J1		1-02 *								I			406
GSD													8-4/8		406
GSD	L	A29M2		1-01 *							2	R1			407
GSD	L	A26P2		1-02 *							1	R1			407
GSD	L	A20T2		1-03 *							2	R1			407
GSD	L	A23M2		1-04 *							1	R1			407
GSD	L	B21N2		1-05 *								I			407
GSD													19-0/8		407



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TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PIN	BAY - ORDER	Q	DRAN	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 51 RUN NUMBER
INT ENH	H	A29D2		1-01 *							2			TERM HEHEY	420
INT ENH	H	A24L1		1-02 *							1				420
INT ENH	H	B08D1		1-03 *	C						2			CABLE	420
INT ENH	H	B06E2		1-04 *										TERM HEHEY	420
INT ENH													20-0/8		420
INT ENH	L	A3082		1-01 *							1				421
INT ENH	L	A3081		1-02 *							2				421
INT ENH	L	A24M1		1-03 *											421
INT ENH													8-0/8		421
LO DATA BYTE	L	A13U2		1-01 *							1				422
LO DATA BYTE	L	A1981		1-02 *											422
LO DATA BYTE													8-2/8		422
LRC ENH	H	B22R2		1-01 *							1				423
LRC ENH	H	B13E1		1-02 *							1				423
LRC ENH													7-6/8		423
LRC ENH	L	B2282		1-01 *							1				424
LRC ENH	L	B21R1		1-02 *							1				424
LRC ENH													3-0/8		424
LRCCE		A29R2		1-01 *							1			TERM HEHEY	425
LRCCE		B04T2		1-02 *	C						2			CABLE	425
LRCCE		B03T2		1-03 *	C									CABLE	425
LRCCE													18-6/8		425
LRCSS		A06N1		1-01 *							1			TERM HEHEY	426
LRCSS		B04U2		1-02 *	C						2			CABLE	426
LRCSS		B03U2		1-03 *	C									CABLE	426
LRCSS													8-6/8		426
LRCSS	H	R15R2		1-01 *							2				427
LRCSS	H	A32R2		1-07 *							1				427
LRCSS	H	A32R1		1-03 *							2				427
LRCSS	H	B21P1		1-04 *							1				427
LRCSS	H	A06P1		1-05 *											427
LRCSS													34-4/8		427

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PIN	BAY - ORDER	Q	DRAN	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 52 RUN NUMBER
LRCSD	H	A22F2		1-01 *							2				428
LRCSD	H	A16E2		1-02 *							1				428
LRCSD	H	A22E2		1-03 *							2				428
LRCSD	H	A2/J2		1-04 *							1				428
LRCSD	H	A2/M2		1-05 *							2				428
LRCSD	H	A32P1		1-06 *							1				428
LRCSD	H	A25D2		1-07 *											428
LRCSD													29-4/8		428
MAN CLR	H	A16V2		1-01 *							1				429
MAN CLR	H	B14B1		1-02 *											429
MAN CLR													3-4/8		429
MAN CLR	L	A16U2		1-01 *							1				430
MAN CLR	L	B06U1		1-02 *							2				430
MAN CLR	L	B04V1		1-03 *											430
MAN CLR													12-0/8		430
NPR CLEAR BBSY	H	A11P2		1-01 *							2				431
NPR CLEAR BBSY	H	A12A1		1-02 *							1				431
NPR CLEAR BBSY	H	A25J2		1-03 *											431
NPR CLEAR BBSY													13-4/8		431
NPR CLEAR BBSY	L	A29E1		1-01 *							2				432
NPR CLEAR BBSY	L	B22E2		1-02 *							1				432
NPR CLEAR BBSY	L	A11N2		1-03 *											432
NPR CLEAR BBSY													18-2/8		432
NPR ENH	H	A10U1		1-01 *							1				433
NPR ENH	H	A10V1		1-02 *							2				433
NPR ENH	H	B14B1		1-03 *							1				433
NPR ENH	H	B18B2		1-04 *							2				433
NPR ENH	H	A24P1		1-05 *							1				433
NPR ENH	H	A22L2		1-06 *							2				433
NPR ENH	H	A19A1		1-07 *							1				433
NPR ENH	H	B27D2		1-08 *											433
NPR ENH													33-4/8		433
NPR ENH	L	B14F1		1-01 *							1				434
NPR ENH	L	B14E2		1-02 *							2				434
NPR ENH	L	A19C1		1-03 *							1				434
NPR ENH	L	B32A1		1-04 *											434
NPR ENH													18-6/8		434
NPR MASTER	L	A10N1		1-01 *							1				435
NPR MASTER	L	A11N2		1-02 *											435
NPR MASTER													3-2/8		435

TM11.T RUN NAME	HND288,V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8151	PAGE 53
	A/P	PIN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
NPR SET	H	A20B1		1-01 *											436
NPR SET	H	A24N1		1-02 *											436
NPR SET	H	B32S2		1-03 *									12-6/8		436
NXM	H	A11G1		1-01 *										TERM HERET	437
NXM	H	B08B1		1-02 *	C									CABLE	437
NXM	H	B06N1		1-03 *									8-6/8	TERM HERET	437
NXM	L	A11K1		1-01 *											438
NXM	L	B29M1		1-02 *									12-4/8		438
NXM	L	A15F1		1-01 *					R1						439
OFF LINE	L	B30H1		1-02 *					R1						439
OFF LINE	L	B10B1		1-03 *					R1						439
OFF LINE	L	B29E1		1-04 *					I				17-2/8		439
OUT HI	H	A09M2		1-01 *											440
OUT HI	H	B11A1		1-02 *									4-2/8		440
OUT HI	H	A09N1		1-01 *											441
OUT LO	H	B11D1		1-02 *									4-4/8		441
OUT LO	H	A22B1		1-01 *					R1						442
OVERFLOW	H	A24P2		1-02 *					R1						442
OVERFLOW	H	B27U2		1-03 *					I						442
OVERFLOW	H	B19B1		1-04 *					I				17-6/8		442
OVERFLOW	L	A24R2		1-01 *					R1						443
OVERFLOW	L	A20C1	A22L1	1-02 *					R1						443
OVERFLOW	L	A22L1		1-03 *									9-0/8		443
PAE	H	A28K1		1-01 *					R1						444
PAE	H	A08J1		1-02 *					R1						444
PAE BIT	H	B06M1		1-03 *					R1				18-2/8		444
PAE	L	A17E1		1-01 *											445
PAE	L	A28D1		1-02 *									8-0/8		445

TM11.T RUN NAME	HND288,V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8151	PAGE 54
	A/P	PIN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
PAR BIT	H	A19D1		1-01 *											446
PAR BIT	H	B31E1		1-02 *											446
PAR BIT	H	B27H2		1-03 *									13-6/8		446
PEVN		A03T2		1-01 *	C									CABLE	447
PEVN		A04T2		1-02 *	C									CABLE	447
PEVN		A06V2		1-03 *									6-2/8	TERM HERET	447
PEVN	H	A08H2		1-01 *										TERM HERET	448
PEVN	H	B06M2		1-02 *	C									CABLE	448
PEVN	H	B31V2		1-03 *									21-2/8	TERM HERET	448
RD 0		A05U2		1-01 *										TERM HERET	449
RD 0		B04F1		1-02 *	C									CABLE	449
RD 0		B03F1		1-03 *	C								6-6/8	CABLE	449
RD 1		A05S2		1-01 *										TERM HERET	450
RD 1		B04H1		1-02 *	C									CABLE	450
RD 1		B03H1		1-03 *	C								7-2/8	CABLE	450
RD 2		A05V1		1-01 *										TERM HERET	451
RD 2		B04J1		1-02 *	C									CABLE	451
RD 2		B03J1		1-03 *	C								6-6/8	CABLE	451
RD 3		A05P2		1-01 *										TERM HERET	452
RD 3		B04K1		1-02 *	C									CABLE	452
RD 3		B03K1		1-03 *	C								7-6/8	CABLE	452
RD 4		A05R1		1-01 *										TERM HERET	453
RD 4		B04L1		1-02 *	C									CABLE	453
RD 4		B03L1		1-03 *	C								7-4/8	CABLE	453
RD 5		A05M2		1-01 *										TERM HERET	454
RD 5		B04M1		1-02 *	C									CABLE	454
RD 5		B03M1		1-03 *	C								8-2/8	CABLE	454

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TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 55 RUN NUMBER
RD 6		A05M1		1-01 *		TM11-09					1				455
RD 6		B04M1		1-02 *	C	TM11-02					2			TERM HERE?	455
RD 6		B03M1		1-03 *	C	TM11-02							8-0/8	CABLE	455
RD 7		A05K2		1-01 *		TM11-09					1				456
RD 7		B04P1		1-02 *	C	TM11-02					2			TERM HERE?	456
RD 7		B03P1		1-03 *	C	TM11-02							8-6/8	CABLE	456
RDP		A06L1		1-01 *		TM11-09					1				457
RDP		B04R1		1-02 *	C	TM11-02					2			TERM HERE?	457
RDP		B03R1		1-03 *	C	TM11-02							8-6/8	CABLE	457
RDS		A06H2		1-01 *		TM11-08					1				458
RDS		B04A1		1-02 *	C	TM11-02					2			TERM HERE?	458
RDS		B03A1		1-03 *	C	TM11-02							7-6/8	CABLE	458
RDS	H	A06J2		1-01 *						R1	1				459
RDS	H	A17U2		1-02 *						R1	2				459
RDS	H	A22T2	A20P1	1-03 *						R1	1				459
RDS	H	A20P1		1-04 *							2				459
RDS	H	B20M2		1-05 *						R1					459
RDS + WRS	H	B22J1		1-01 *		TM11-11					1				460
RDS + WRS	H	B26E1		1-02 *		TM11-11									460
RDS + WRS				1									4-4/8		460
RDS + WRS	L	B32P2		1-01 *		TM11-11					2				461
RDS + WRS	L	B26D1		1-02 *		TM11-11					1				461
RDS + WRS	L	B15V2		1-03 *		TM11-11									461
RDS + WRS				1									14-2/8		461
READ	H	A11C1		1-01 *		TM11-24					1				462
READ	H	A11J2		1-02 *		TM11-24					2				462
READ	H	A17T2		1-03 *		TM11-11					1				462
READ	H	B26D2		1-04 *		TM11-15									462
READ				1									16-4/8		462

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 56 RUN NUMBER
READ	L	B29E2		1-01 *		TM11-17					1				463
READ	L	B26C1		1-02 *		TM11-11					2				463
READ	L	B19D2		1-03 *							1				463
READ	L	A22K2		1-04 *		TM11-15					2				463
READ	L	A15H1		1-05 *		TM11-07					1				463
READ	L	B05M1		1-06 *		TM11-07									463
READ				1									29-6/8		463
READ + WRITE	H	A22U2		1-01 *							2				464
READ + WRITE	H	B29F2		1-02 *							1				464
READ + WRITE	H	A20R1		1-03 *											464
READ + WRITE				1									14-2/8		464
READ STB	H	A26B1		1-01 *		TM11-15					1				465
READ STB	H	A22C1		1-02 *		TM11-17					2				465
READ STB	H	A16B1		1-03 *		TM11-15					1				465
READ STB	H	B16H1		1-04 *		TM11-11					2				465
READ STB	H	B15T2		1-05 *		TM11-11									465
READ STB				1									19-0/8		465
READ STB	L	B14H2		1-01 *		TM11-15					2				466
READ STB	L	B16F1		1-02 *		TM11-11					1				466
READ STB	L	A17V1		1-03 *		TM11-11					2				466
READ STB	L	B18B1		1-04 *		TM11-15					1				466
READ STB	L	B29P1		1-05 *		TM11-25									466
READ STB				1									18-4/8		466
REV		A03N2		1-01 *	C	TM11-02					2				467
REV		A04N2		1-02 *	C	TM11-02					1			CABLE	467
REV		B05L1		1-03 *		TM11-07								TERM HERE?	467
REV				1									7-6/8		467
REV BOT	L	A17D2		1-01 *						R1	2				468
REV BOT	L	B32R1		1-02 *						R1	1				468
REV BOT	L	B32N2		1-03 *						R1					468
REV BOT				1									14-0/8		468
REWIND	L	A15P1		1-01 *						R1	2				469
REWIND	L	A17L2		1-02 *						R1	1				469
REWIND	L	A29H2		1-03 *						R1	2				469
REWIND	L	B30F1		1-04 *						R1					469
REWIND				1									17-6/8		469
RLE	H	A28H2		1-01 *		TM11-17					1				470
RLE	H	A08N2		1-02 *	C	TM11-03					2			TERM HERE?	470
RLE	H	B06F1		1-03 *		TM11-13								CABLE	470
RLE				1									17-4/8	TERM HERE?	470

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAN	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 57 RUN NUMBER
RLE	L	A17B1		1-01 *						R1	1				471
RLE	L	A17A1		1-02 *						R1	2				471
RLE	L	A28J2		1-03 *						I			11-0/8		471
RLE	L			1											471
RWD		A03L1		1-01 *	C	TM11-02					2			CABLE	472
RWD		A04L1		1-02 *	C	TM11-02					1			CABLE	472
RWD		B30L1		1-03 *		TM11-07							19-2/8	TERM HERE?	472
RWD				1											472
RWS		A05L1		1-01 *		TM11-08					1			TERM HERE?	473
RWS		B04F2		1-02 *	C	TM11-02					2			CABLE	473
RWS		B03F2		1-03 *	C	TM11-02							7-4/8	CABLE	473
RWS				1											473
RWS	H	A25L2		1-01 *						R1	1				474
RWS	H	B32D1		1-02 *						R1	2				474
RWS	H	B26U2		1-03 *						R1	1				474
RWS	H	B06P1		1-04 *						R1	2				474
RWS	H	A05M1		1-05 *						R1	1				474
RWS	H	B08M2		1-06 *						R1			16-4/8		474
RWS				1											474
RWS	L	B26V2		1-01 *		TM11-08					1				475
RWS	L	B31K1		1-02 *		TM11-04							5-0/8		475
RWS	L			1											475
SAME TU	L	B18L1		1-01 *						R1	1				476
SAME TU	L	B15D2		1-02 *						I			4-0/8		476
SAME TU	L			1											476
SDWN		A05J1		1-01 *		TM11-08					1			TERM HERE?	477
SDWN		B04B1		1-02 *	C	TM11-02					2			CABLE	477
SDWN		B03B1		1-03 *		TM11-02							7-2/8	CABLE	477
SDWN				1											477
SDWN	H	A05K1		1-01 *		TM11-08					1			TERM HERE?	478
SDWN	H	B06K2		1-02 *	C	TM11-03					2			CABLE	478
SDWN	H	B08J2		1-03 *		TM11-12					1				478
SDWN	H	B19H1		1-04 *		TM11-04					2				478
SDWN	H	B26S2		1-05 *		TM11-08					1			TERM HERE?	478
SDWN	H	A27H1		1-06 *		TM11-04							29-2/8		478
SDWN				1											478

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAN	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 58 RUN NUMBER
SDWN	L	A17L1		1-01 *						R1	1				479
SDWN	L	B26T2		1-02 *						R1	2				479
SDWN	L	A29L2		1-03 *						R1			15-0/8		479
SDWN	L			1											479
SEL 0		A03A1		1-01 *	C	TM11-02					2			CABLE	480
SEL 0		A04A1		1-02 *	C	TM11-02					1			CABLE	480
SEL 0		B05V2		1-03 *		TM11-10							10-2/8	TERM HERE?	480
SEL 0				1											480
SEL 1		A03B1		1-01 *	C	TM11-02					2			CABLE	481
SEL 1		A04B1		1-02 *	C	TM11-02					1			CABLE	481
SEL 1		B05P2		1-03 *		TM11-10							9-4/8	TERM HERE?	481
SEL 1				1											481
SEL 1 IN	L	A08U2		1-01 *						R1	2				482
SEL 1 IN	L	B11J2		1-02 *						R1	1				482
SEL 1 IN	L	B08U2		1-03 *						R1			9-2/8		482
SEL 1 IN	L			1											482
SEL 1 OUT	L	A27L1		1-01 *						R1	2				483
SEL 1 OUT	L	A27E2		1-02 *						R1	1				483
SEL 1 OUT	L	B15F1		1-03 *						R1			12-6/8		483
SEL 1 OUT	L			1											483
SEL 1 OUT HI	H	B11U1		1-01 *						R1	1				484
SEL 1 OUT HI	H	B15E1		1-02 *						R1	2				484
SEL 1 OUT HI	H	A14L2		1-03 *						R1	1				484
SEL 1 OUT HI	H	A14N1	A16R2	1-04 *						R1	2				484
SEL 1 OUT HI	H	A16R2		1-05 *						R1	1				484
SEL 1 OUT HI	H	A14B2		1-06 *						R1	2				484
SEL 1 OUT HI	H	B18H1		1-07 *						R1	1				484
SEL 1 OUT HI	H	A24B1		1-08 *						R1	2				484
SEL 1 OUT HI	H	A24D2		1-09 *						R1	1				484
SEL 1 OUT HI	H	B31S2		1-10 *						R1			42-0/8		484
SEL 1 OUT HI	H			1											484
SEL 1 OUT LO	H	B11N1		1-01 *						R1	1				485
SEL 1 OUT LO	H	B15D1		1-02 *						R1	2				485
SEL 1 OUT LO	H	B18D2		1-03 *						R1	1				485
SEL 1 OUT LO	H	A14H1		1-04 *						R1	2				485
SEL 1 OUT LO	H	A14D2		1-05 *						R1	1				485
SEL 1 OUT LO	H	A14B1		1-06 *						R1	2				485
SEL 1 OUT LO	H	A24H1		1-07 *						R1	1				485
SEL 1 OUT LO	H	B21H2		1-08 *						R1			33-4/8		485
SEL 1 OUT LO	H			1											485

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TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 59 RUN NUMBER
SEL 2		A03C1		1-01 *	C	TM11-02					2				486
SEL 2		A04C1		1-02 *	C	TM11-02					1			CABLE	486
SEL 2		B05J2		1-03 *		TM11-10								CABLE	486
SEL 2				1									8-6/8	TERM HERE?	486
SEL 2 IN	L	B11K2		1-01 *		TM11-26					1				487
SEL 2 IN	L	B12T2		1-02 *		TM11-19									487
SEL 2 IN				1									3-4/8		487
SFL 2 OUT HI	H	B11S1		1-01 *					R1		1				488
SEL 2 OUT HI	H	B21D1		1-02 *					R1						488
SFL 2 OUT HI				1									8-0/8		488
SEL 2 OUT LO	H	B11R2		1-01 *					R1		1				489
SFL 2 OUT LO	H	B21A1		1-02 *					R1						489
SFL 2 OUT LO				1									7-6/8		489
SEL 3 IN	L	A12D2		1-01 *		TM11-18					1				490
SFL 3 IN	L	B11F1		1-02 *		TM11-26									490
SFL 3 IN				1									5-6/8		490
SEL 3 OUT HI	H	B11P1		1-01 *					R1		1				491
SEL 3 OUT HI	H	B21H1		1-02 *					R1						491
SFL 3 OUT HI				1									7-6/8		491
SEL 3 OUT LO	H	B11L1		1-01 *					R1		1				492
SFL 3 OUT LO	H	B21D2		1-02 *					R1						492
SFL 3 OUT LO				1									8-0/8		492
SEL 4 IN	H	A19J1		1-01 *		TM11-25					1				493
SEL 4 IN	H	A19K1		1-02 *		TM11-25					2				493
SEL 4 IN	H	A19P1		1-03 *		TM11-25					1				493
SEL 4 IN	H	A19R1		1-04 *		TM11-25					2				493
SEL 4 IN	H	A23V2		1-05 *		TM11-25									493
SEL 4 IN				1									12-4/8		493
SEL 4 IN	L	A23U2		1-01 *		TM11-25					1				494
SEL 4 IN	L	B11E1		1-02 *		TM11-26									494
SFL 4 IN				1									9-2/8		494
SEL 4 OUT HI	H	B11U2		1-01 *					R1		1				495
SEL 4 OUT HI	H	A23P2		1-02 *					R1						495
SFL 4 OUT HI				1									9-6/8		495
SEL 4 OUT HI	L	A23R2		1-01 *					R1		1				496
SFL 4 OUT HI	L	B29R1		1-02 *					R1						496
SFL 4 OUT HI				1									6-2/8		496

TM11.T RUN NAME	A/P	HND288.V22(22) PIN NAME	11/06/73 ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8:51 EXCEPTIONS	PAGE 60 RUN NUMBER
SEL 4 OUT LO	H	B21L1		1-01 *							1				497
SEL 4 OUT LO	H	B11J1		1-02 *					R1						497
SFL 4 OUT LO				1									7-4/8		497
SEL 5 IN	L	B13V2		1-01 *		TM11-14					1				498
SFL 5 IN	L	A13V2		1-02 *		TM11-14					2				498
SEL 5 IN	L	B11F2		1-03 *		TM11-26									498
SFL 5 IN				1									9-0/8		498
SEL 5 OUT HI	H	B11S2		1-01 *					R1		1				499
SEL 5 OUT HI	H	B22H2		1-02 *					I		2				499
SEL 5 OUT HI	H	B21P2		1-03 *					I						499
SFL 5 OUT HI				1									11-0/8		499
SEL 5 OUT LO	H	B11K1				TM11-26								1-PIN RUN	500
SEL 6 IN	L	B11F2				TM11-26								1-PIN RUN	501
SEL 6 OUT HI	H	B11N2				TM11-26								1-PIN RUN	502
SFL 6 OUT LO	H	B11M2				TM11-26								1-PIN RUN	503
SEL 7 IN	L	B11D2				TM11-26								1-PIN RUN	504
SEL 7 OUT HI	H	B11P2				TM11-26								1-PIN RUN	505
SEL 7 OUT LO	H	B11L2				TM11-26								1-PIN RUN	506
SEL STATUS IN	L	A08V2		1-01 *		TM11-12					1				507
SEL STATUS IN	L	B08V2		1-02 *		TM11-13					2				507
SEL STATUS IN	L	B11H2		1-03 *		TM11-26									507
SFL STATUS IN				1									9-2/8		507
SEL STATUS OUT HI	H	B11R1				TM11-26								1-PIN RUN	508
SEL STATUS OUT LO	H	B11M1				TM11-26								1-PIN RUN	509
SELR		A05D1		1-01 *		TM11-08					1				510
SELR		B04N2		1-02 *	C	TM11-02					2			TERM HERE?	510
SELR		B03N2		1-03 *	C	TM11-02								CABLE	510
SELR				1									9-0/8	CABLE	510



TM11.T RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 61 RUN NUMBER
SELR	H	A05E1		1-01 *				R1			1				511
SELR	H	B06C1		1-02 *				R1			2				511
SELR	H	B08E1		1-03 *				R1			1				511
SELR	H	B16D1		1-04 *				R1			2				511
SELR	H	A22R1		1-05 *				R1			1				511
SELR	H	A22P1		1-06 *				R1			2				511
SELR	H	A29T2		1-07 *				I			1				511
SELR	L	B29D1		1-01 *				I			2		30-0/8		512
SELR	L	A25M1		1-02 *				I			1				512
SELR	L	A25M2		1-03 *				I			2				512
SELR	L	A27R1		1-04 *				R1			1				512
SELR	L	A27R2		1-05 *				I			2				512
SELR	L	B16E1		1-06 *				R1			1				512
SET		A03R2		1-01 *	C	TM11-02					2		22-6/8		513
SET		A04R2		1-02 *	C	TM11-02					1			CABLE	513
SET		B05E1	B28D2	1-03 *		TM11-04					2			CABLE	513
SET		B28D2		1-04 *							1			TERM HERE?	513
SET BR	L	A29C1		1-01 *	I						1		21-0/8		514
SET BR	L	A30R2		1-02 *							1				514
SET BR	L			1-03 *							1				514
SET CUR	L	A18N2		1-01 *				I			2		4-0/8		515
SET CUR	L	A18U2		1-02 *				I			1				515
SET CUR	L	B15N2		1-03 *				I			1				515
SET CUR	L			1-04 *							1				515
SET ILC	H	A24T2		1-01 *		TM11-16					2		8-0/8		516
SET ILC	H	A22U1		1-02 *		TM11-16					1				516
SET ILC	H	B16J1		1-03 *		TM11-04					1				516
SET ILC	H			1-04 *							1				516
SET INT	L	A30N1		1-01 *							1		9-6/8		517
SET INT	L	B29A1		1-02 *							1				517
SET INT	L			1-03 *							1				517
SLCT 1 OUT LO	H	B26N1		1-01 *				I			1		4-0/8		518
SLCT 1 OUT LO	H	A21K2		1-02 *				I			2				518
SLCT 1 OUT LO	H	A17R2		1-03 *				I			1				518
SLCT 1 OUT LO	H			1-04 *							1		10-6/8		518

TM11.T RUN NAME	A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 62 RUN NUMBER
SLCT 1 OUT LO	L	B21K2		1-01 *				I			2				519
SLCT 1 OUT LO	L	B22B1		1-02 *				I			1				519
SLCT 1 OUT LO	L	B26L1		1-03 *				I			1				519
SLCT 1 OUT LO	L			1-04 *							1				519
SLCT 2 OUT HI	L	B12S1		1-01 *				I			1		8-2/8		520
SLCT 2 OUT HI	L	B21F1		1-02 *				I			1				520
SLCT 2 OUT HI	L			1-03 *							1				520
SLCT 2 OUT LO	L	A12E2		1-01 *				I			1		7-4/8		521
SLCT 2 OUT LO	L	B21C1		1-02 *				I			1				521
SLCT 2 OUT LO	L			1-03 *							1				521
SLCT 3 OUT HI	L	B12R1		1-01 *				I			1		7-6/8		522
SLCT 3 OUT HI	L	B21K1		1-02 *				I			1				522
SLCT 3 OUT HI	L			1-03 *							1				522
SLCT 3 OUT LO	L	B12V2		1-01 *				I			1		7-0/8		523
SLCT 3 OUT LO	L	B21F2		1-02 *				I			1				523
SLCT 3 OUT LO	L			1-03 *							1				523
SLCT 4 OUT LO	L	A16E1		1-01 *				I			2		7-4/8		524
SLCT 4 OUT LO	L	A20K1		1-02 *				I			1				524
SLCT 4 OUT LO	L	A20J1		1-03 *				I			2				524
SLCT 4 OUT LO	L	B21N1		1-04 *				I			1				524
SLCT 4 OUT LO	L			1-05 *							1				524
SPACE	H	A22D2		1-01 *		TM11-05					1		12-6/8		525
SPACE	H	B26A1		1-02 *		TM11-06					2				525
SPACE	H	B19L2		1-03 *		TM11-04					1				525
SPACE	H	B19N1		1-04 *		TM11-04					2				525
SPACE	H	A16R1		1-05 *							1				525
SPACE	L	A16D2		1-01 *		TM11-06					1		19-6/8		526
SPACE	L	B26B1		1-02 *		TM11-06					1				526
SPACE	L			1-03 *							1				526
SPACE FWD	L	A15L1		1-01 *		TM11-07					2		8-2/8		527
SPACE FWD	L	B19L1		1-02 *		TM11-04					1				527
SPACE FWD	L	B05N1		1-03 *		TM11-07					1				527
SPACE FWD	L			1-04 *							1				527
SPACE REV	H	A29J1		1-01 *	2						2		15-4/8		528
SPACE REV	H	B16D2		1-02 *				R1			1				528
SPACE REV	H	B11M2		1-03 *				R1			1				528
SPACE REV	H			1-04 *							1				528

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TM11.T RUN NAME	HND28H.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 63
	A/P	PTN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
SPACE REV	L	A29J2		1-01 #					I		1				529
SPACE REV	L	A17M1		1-02 #					R1		2				529
SPACE REV	L	A17K2		1-03 #					R1		1				529
SPACE REV	L	B19M1		1-04 #					R1		2				529
SPACE REV	L	B16C1		1-05 #					R1		1				529
SPACE REV	L	B05F1		1-06 #									31-6/8		529
SSYN	H	A11A1		1-01 #					R1		1				530
SSYN	H	B10F2		1-02 #					R1		2				530
SSYN	H	A06S2		1-03 #					I				11-0/8		530
SSYN	L	A10C1		1-01 #					I		1				531
SSYN	L	A06T2		1-02 #					I				4-6/8		531
SSYN INH	H	B26L2		1-01 #					I		2				532
SSYN INH	H	B21B1		1-02 #					I		1				532
SSYN INH	H	B21E1		1-03 #					I		2				532
SSYN INH	H	B21E2		1-04 #					I		1				532
SSYN INH	H	B21J1		1-05 #					I		2				532
SSYN INH	H	B21J2		1-06 #					I		1				532
SSYN INH	H	B21M1		1-07 #					I				19-0/8		532
SSYN INH	L	A09B1		1-01 #					R1		1				533
SSYN INH	L	B26K2	B11V2	1-02 #					I		2				533
SSYN INH	L	B11V2		1-03 #									22-6/8		533
START XFER TIMING	L	B11H1												1-PIN RUN	534
TIMER	H	B13B1		1-01 #											535
TIMER	H	B31S1		1-02 #											535
TUR		B03C1		1-01 #					R1		2				536
TUR		B04C1		1-02 #					R1		1				536
TUR		A06P2		1-03 #					R1				7-2/8		536

TM11.T RUN NAME	HND28H.V22(22) 11/06/73				Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74	8:51	PAGE 64
	A/P	PTN NAME	ORDER PIN	BAY - ORDER									LENGTH	EXCEPTIONS	RUN NUMBER
TUR	H	B32M1		1-01 #					R1		2				537
TUR	H	A23J1		1-02 #					R1		1				537
TUR	H	A06R2		1-03 #					R1		2				537
TUR	H	B06R1		1-04 #					R1		1				537
TUR	H	B08R1		1-05 #					R1				27-4/8		537
TUR	L	A25L1		1-01 #					R1		2				538
TUR	L	A23K1		1-02 #					R1		1				538
TUR	L	A17M1		1-03 #					R1				9-0/8		538
UNIT SEL BIT 0	H	A18J1		1-01 #					R1		2				539
UNIT SEL BIT 0	H	A14V2		1-02 #					R1		1				539
UNIT SEL BIT 0	H	B06H1		1-03 #					R1		2				539
UNIT SEL BIT 0	H	A08P1		1-04 #					R1				16-6/8		539
UNIT SEL BIT 1	H	A18E2		1-01 #					R1		1				540
UNIT SEL BIT 1	H	A14S1		1-02 #					R1		2				540
UNIT SEL BIT 1	H	A08L2		1-03 #					R1		1				540
UNIT SEL BIT 1	H	B06H2		1-04 #					R1				15-6/8		540
UNIT SEL BIT 2	H	A18C1		1-01 #					R1		2				541
UNIT SEL BIT 2	H	A14P2		1-02 #					R1		1				541
UNIT SEL BIT 2	H	A08L1		1-03 #					R1		2				541
UNIT SEL BIT 2	H	B06F2		1-04 #					R1				15-4/8		541
UNIT SEL BIT TM 0	H	A18L1		1-01 #					I		1				542
UNIT SEL BIT TM 0	H	A19E2		1-02 #					I				3-2/8		542
UNIT SEL BIT TM 0	L	B05D2		1-01 #					I		1				543
UNIT SEL BIT TM 0	L	A18M1		1-02 #					I		2				543
UNIT SEL BIT TM 0	L	A19H2		1-03 #					I				12-4/8		543
UNIT SEL BIT TM 1	H	A18H2		1-01 #					I		1				544
UNIT SEL BIT TM 1	H	A19L2		1-02 #					I				3-2/8		544
UNIT SEL BIT TM 1	L	B05K2		1-01 #					I		1				545
UNIT SEL BIT TM 1	L	A18J2		1-02 #					I		2				545
UNIT SEL BIT TM 1	L	A19N2		1-03 #					I				13-2/8		545

TM11-T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 65 RUN NUMBER
UNIT SEL BIT TM 2	H	A18E1		1-01 *						I	1				546
UNIT SEL BIT TM 2	H	A19E2		1-02 *						I					546
UNIT SEL BIT TM 2				1									4-0/8		546
UNIT SEL BIT TM 2	L	B05R2		1-01 *						I	1				547
UNIT SEL BIT TM 2	L	A18F1		1-02 *						I	2				547
UNIT SEL BIT TM 2	L	A19U2		1-03 *						I			14-2/8		547
UNIT SEL BIT TM 2				1											547
VPE		A29P2		1-01 *			TM11-17				1			TERM HERE?	548
VPE		B04M2		1-02 *	C		TM11-02				2			CABLE	548
VPE		B03M2		1-03 *	C		TM11-02						18-6/8	CABLE	548
VPE				1											548
WD 0		A04D2		1-01 *	C		TM11-02				2			CABLE	549
WD 0		A04D2		1-02 *	C		TM11-02				1			CABLE	549
WD 0		A06S1		1-03 *			TM11-09						6-6/8	TERM HERE?	549
WD 0				1											549
WD 1		A03E2		1-01 *	C		TM11-02				2			CABLE	550
WD 1		A04E2		1-02 *	C		TM11-02				1			CABLE	550
WD 1		A06N2		1-03 *			TM11-09						6-4/8	TERM HERE?	550
WD 1				1											550
WD 2		A03F2		1-01 *	C		TM11-02				2			CABLE	551
WD 2		A04F2		1-02 *	C		TM11-02				1			CABLE	551
WD 2		A06K1		1-03 *			TM11-09						6-0/8	TERM HERE?	551
WD 2				1											551
WD 3		A03H2		1-01 *	C		TM11-02				2			CABLE	552
WD 3		A04H2		1-02 *	C		TM11-02				1			CABLE	552
WD 3		A06P2		1-03 *			TM11-09						6-2/8	TERM HERE?	552
WD 3				1											552
WD 4		A04J2		1-01 *			TM11-02				2			CABLE	553
WD 4		A04J2		1-02 *			TM11-02				1			CABLE	553
WD 4		A06H1		1-03 *			TM11-09						5-6/8	TERM HERE?	553
WD 4				1											553
WD 5		A03K2		1-01 *	C		TM11-02				2			CABLE	554
WD 5		A04K2		1-02 *	C		TM11-02				1			CABLE	554
WD 5		A06E1		1-03 *			TM11-09						6-0/8	TERM HERE?	554
WD 5				1											554

TM11-T RUN NAME	A/P	PIN NAME	ORDER PTN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	8-JUL-74 LENGTH	8151 EXCEPTIONS	PAGE 66 RUN NUMBER
WD 6		A03L2		1-01 *	C		TM11-02				2			CABLE	555
WD 6		A04L2		1-02 *	C		TM11-02				1			CABLE	555
WD 6		A06D2		1-03 *			TM11-09						6-4/8	TERM HERE?	555
WD 6				1											555
WD 7		A03M2		1-01 *	C		TM11-02				2			CABLE	556
WD 7		A04M2		1-02 *	C		TM11-02				1			CABLE	556
WD 7		A06B1		1-03 *			TM11-09						6-4/8	TERM HERE?	556
WD 7				1											556
WDR		A03S2		1-01 *						R1	2				557
WDR		A04S2		1-02 *						R1	1				557
WDR		B19V2		1-03 *						R1			14-0/8		557
WDR				1											557
WFMK		A04U2		1-01 *	C		TM11-02				2			CABLE	558
WFMK		A04U2		1-02 *	C		TM11-02				1			CABLE	558
WFMK		B30P2		1-03 *			TM11-07						19-0/8	TERM HERE?	558
WFMK				1											558
WRE		A03M1		1-01 *	C		TM11-02				2			CABLE	559
WRE		A04M1		1-02 *	C		TM11-02				1			CABLE	559
WRE		B30E1		1-03 *			TM11-07						19-0/8	TERM HERE?	559
WRE				1											559
WRITE	L	A15J1		1-01 *							2				560
WRITE	L	A16L1		1-02 *			TM11-11				1				560
WRITE	L	A22N2		1-03 *			TM11-07						8-6/8		560
WRITE				1											560
WRITE ENB	H	A27B1		1-01 *			TM11-16				2				561
WRITE ENB	H	A22S2		1-02 *			TM11-07				1				561
WRITE ENB	H	B26R1		1-03 *			TM11-07						11-2/8		561
WRITE ENB				1											561
WRITE ENB	L	B05P1		1-01 *			TM11-07				2				562
WRITE ENB	L	B05R1		1-02 *			TM11-07				1				562
WRITE ENB	L	B26S1		1-03 *			TM11-07				2				562
WRITE ENB	L	B30A1		1-04 *			TM11-07				1				562
WRITE ENB	L	B29D2		1-05 *			TM11-17						23-0/8		562
WRITE ENB				1											562
WRITE EOF	L	A15K1		1-01 *			TM11-07				1				563
WRITE EOF	L	A22P2		1-02 *			TM11-07				2				563
WRITE EOF	L	B30K2		1-03 *			TM11-07				1				563
WRITE EOF	L	B30N1		1-04 *			TM11-07						16-2/8		563
WRITE EOF				1											563

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RUN NAME

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8-JUL-74

8351

PAGE 6/

A/P	PIN NAME	ORDER PIN	BAY - ORDER	Q	DRAW	RV	PG	Y	X	Z	REMARKS	LENGTH	EXCEPTIONS	RUN NUMBER
	WRITE XIRG	L	A15N1	1-01 *							TM11-07			564
	WRITE XIRG	L	A16M1	1-02 *							TM11-11			564
	WRITE XIRG	L	A22R2	1-03 *							TM11-07			564
	WRITE XIRG	L	B30M1	1-04 *							TM11-07			564
	WRITE XIRG			I								15-6/8		564
	WRL		A05H2	1-01 *							TM11-08		TERM HERE?	565
	WRL		B04L2	1-02 *	C						TM11-02		CABLE	565
	WRL		B03L2	1-03 *	C						TM11-02		CABLE	565
	WRL			I								8-4/8		565
	WRL	H	A27A1	1-01 *							TM11-16		TERM HERE?	566
	WRL	H	A05J2	1-02 *							TM11-08			566
	WRL	H	B06J1	1-03 *							TM11-12			566
	WRL	H	B08M1	1-04 *	C						TM11-03		CABLE	566
	WRL			I								22-0/8		566
	WRS		B03D2	1-01 *	C						TM11-02		CABLE	567
	WRS		B04D2	1-02 *	C						TM11-02		CABLE	567
	WRS		B26P2	1-03 *							TM11-08		TERM HERE?	567
	WRS			I								16-4/8		567
	WRS	H	B14J1	1-01 *					R1					568
	WRS	H	B14M2	1-02 *					R1					568
	WRS	H	B15U2	1-03 *					R1					568
	WRS	H	B26R2	1-04 *					R1					568
	WRS	H	B22R1	1-05 *					I					568
	WRS			I								18-6/8		568
	WRT DATA ENB	H	A16N1	1-01 *					R1					569
	WRT DATA ENB	H	A16M2	1-02 *					R1					569
	WRT DATA ENB	H	A23H2	1-03 *					R1					569
	WRT DATA ENB			I								8-4/8		569
	WXG		A03J1	1-01 *	C						TM11-02		CABLE	570
	WXG		A04J1	1-02 *	C						TM11-02		CABLE	570
	WXG		B30S1	1-03 *							TM11-07		TERM HERE?	570
	WXG			I								19-4/8		570

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DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS						
ENGINEERING SPECIFICATION				DATE May 3, 1971		
TITLE TM11 SPECIFICATION						
REVISIONS						
REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A		TM11-00008	FRITZ	6-25-71	M. Fritz	6-30-71
B		TM11-00010	FRITZ	8-31-71	M. Fritz	9-1-71

ENG	Malcolm Fritz	APPD	M. Fritz	SIZE	CODE	NUMBER	REV
				A	SP	TM11- <del>0</del> -25	B

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2.2.11 Record Length Error - RLE							
2.2.12 End of Tape - EOT							
2.2.13 Bus Grant Late - BGL							
2.2.14 Parity Error - PAE							
2.2.15 Cyclical Redundancy Error - CRE							
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1. INTRODUCTION																			
<p>The magnetic tape control unit interfaces the TU10 (positive bus version) to the PDP-11. Figure 1 shows the system block diagram which includes the PDP-11, the control unit, and up to eight TU10 magnetic tape units. One tape unit is referred to as the master, and all others in the system as slaves. Each tape unit, master and slave, consists of the TU10 cabinet, reel and reel motor control, capstan drive and read/write mechanical and electrical components. The master contains in addition, that section of the magnetic tape electronics which is shared by all tape units. This includes electronics for starting and stopping any tape unit, read and write pulses, gapping electronics, and parity generation and checking. Electronics may be shared because only one tape unit at a time may communicate with the processor.</p> <p>The control unit is located in the cabinet of the master. Its modules are contained in the 1943 rack which is mounted below the tape unit. An indicator panel which contains a maintenance module is located below the tape unit. An indicator panel which contains a maintenance module is located below the 1943 rack. The maintenance module contains 28 lights (12 for the command register and 16 for the status register) and a power clear toggle switch.</p> <p>Table 1 shows the interface signals between the control unit and the master. Each signal is accompanied by its appropriate definition.</p> <p>The control unit contains 6 addressable registers which are indicated below along with their respective bus addresses.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">772520</td> <td>STATUS REGISTER (MTS)</td> </tr> <tr> <td>772522</td> <td>COMMAND REGISTER (MTC)</td> </tr> <tr> <td>772524</td> <td>BYTE RECORD COUNTER (MTBRC)</td> </tr> <tr> <td>772526</td> <td>CURRENT MEMORY ADDRESS REGISTER (MTCMA)</td> </tr> <tr> <td>772530</td> <td>DATA BUFFER (MTD)</td> </tr> <tr> <td>772532</td> <td>TU10 READ LINES (MTRD)</td> </tr> </table> <p>In addition, the control unit contains a bus request interrupt whose vector address is 224 and whose bus request level is BR5.</p> <p>1.1 MAGNETIC TAPE FORMAT</p> <p>The control unit services both 9 and 7 channel magnetic tape units. A nine channel tape record is followed by three blank character spaces, a CRC character, three additional blank characters, and an LPC character. A seven channel record is followed by three blank character spaces and an LPC character.</p>								772520	STATUS REGISTER (MTS)	772522	COMMAND REGISTER (MTC)	772524	BYTE RECORD COUNTER (MTBRC)	772526	CURRENT MEMORY ADDRESS REGISTER (MTCMA)	772530	DATA BUFFER (MTD)	772532	TU10 READ LINES (MTRD)
772520	STATUS REGISTER (MTS)																		
772522	COMMAND REGISTER (MTC)																		
772524	BYTE RECORD COUNTER (MTBRC)																		
772526	CURRENT MEMORY ADDRESS REGISTER (MTCMA)																		
772530	DATA BUFFER (MTD)																		
772532	TU10 READ LINES (MTRD)																		

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TITLE TM11 SPECIFICATION																							
2. CONTROL UNIT REGISTERS																							
The six registers used in the MTCU are the following:																							
<ol style="list-style-type: none"> <li>1. COMMAND REGISTER (MTC)</li> <li>2. STATUS REGISTER (MTS)</li> <li>3. BYTE RECORD COUNTER (MTBRC)</li> <li>4. CURRENT MEMORY ADDRESS REGISTER (MTCMA)</li> <li>5. DATA BUFFER (MTD)</li> <li>6. TU10 READ LINES (MTRD)</li> </ol>																							
2.1 COMMAND REGISTER (MTC) AND STATUS REGISTER (MTS)																							
2.1.1 GENERAL																							
<p>The formats for the command and status registers are shown in Figure 3. The three select bits, Unit Sel Bit 0, Unit Sel Bit 1 and Unit Sel Bit 2, are used to select one out of eight possible magnetic tape units. All operations defined in the MTC and all status conditions defined in the MTS pertain to the MTU indicated by the three select bits. Bit 0 of the MTC begins the operation defined by function bits 0, 1 and 2. The eight functions as defined by the three function bits are listed below in the order of function decodes with function bit 0 the least significant bit.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>0</td> <td>OFF LINE</td> </tr> <tr> <td>1</td> <td>READ</td> </tr> <tr> <td>2</td> <td>WRITE</td> </tr> <tr> <td>3</td> <td>WRITE EOF</td> </tr> <tr> <td>4</td> <td>SPACE FORWARD</td> </tr> <tr> <td>5</td> <td>SPACE REVERSE</td> </tr> <tr> <td>6</td> <td>WRITE WITH EXTENDED INTERRECORD GAP</td> </tr> <tr> <td>7</td> <td>REWIND</td> </tr> </table> <p>In the functions read, write, write EOF, and write with extended IRG, the MTU advances in the forward direction one record. The EOF character and its associated LPC character is considered one record. In a space forward operation, the MTU advances in the forward direction a specified number of records, the number determined by the byte record counter. In a space reverse operation, the MTU moves in the reverse direction a specified number of records, the number also determined by the byte record counter. In a rewind operation, the tape reverses at a higher speed than that for the other functions and stops on the BOT marker. The OFF line operation</p>								0	OFF LINE	1	READ	2	WRITE	3	WRITE EOF	4	SPACE FORWARD	5	SPACE REVERSE	6	WRITE WITH EXTENDED INTERRECORD GAP	7	REWIND
0	OFF LINE																						
1	READ																						
2	WRITE																						
3	WRITE EOF																						
4	SPACE FORWARD																						
5	SPACE REVERSE																						
6	WRITE WITH EXTENDED INTERRECORD GAP																						
7	REWIND																						

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Turns the tape unit OFF line and rewinds the tape. While the tape unit is OFF line, the control unit may not write onto nor read from the tape. In addition, the tape unit must be in the OFF line state in order to remove the tape reels. In a write, write EOF, and write with extended IRG, the data portion of the record is transferred from core memory onto the tape. In a write EOF and write with extended IRG, a three inch segment of tape is erased prior to writing the first character. The characters following the data (CRC and LPC for a nine channel tape and LPC for a seven channel tape) are generated and written by the master.

In a read operation, the data portion of the record is transferred into memory; i.e. the CRC and LPC characters are not transferred into memory. Functions rewind, space forward, and space reverse are used for tape positioning only and do not affect the tape or core memory.

2.1.2 OPERATION

Figure 2 shows a timing diagram of the four basic states in a magnetic tape operation, when the processor sets the GO bit. The operation defined by the function bit occurs. In addition, both the CU ready and TUR bits become 0.

For all tape forward commands, the master transmits a CRCS and LPCS at the end of each record for a nine channel tape, and LPCS at the end of each record for a seven channel tape. For write, write EOF, or write with extended IRG operation, the control unit sends the level WDR (WRITE DATA READY) for all characters in the record. After the last WRS pulse, the control unit lowers the level on WDR. The master then writes the CRC character (if required) and the LPC character onto the tape.

The master also transmits the CRCS and LPCS pulses to the control unit when it reads the CRC and LPC characters it had just written.

After the master reads the LPC character, it times through the GAP shutdown period. The purpose of the GAP shutdown period is to ensure a 3/4 inch GAP between records. The master then sends a stop command to the tape unit which then enters its settling down

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period. The SDWN bit becomes a 1 during the settling down period. When the tape unit stops, it enters its idle period and the TUR bit becomes a 1.

In a tape reverse operation (not rewind) the master enters the GAP shutdown period immediately after the first data character passes under the read head. The settling down period then follows the GAP shutdown period.

In a tape forward command of one record (READ, WRITE, WRITE EOF, and WRITE with EXTENDED IRG) the CU READY bit becomes a 1 when the first LPC character is read. In a space forward and space reverse operation, the CU ready bit becomes a 1 at the start of an LPCS time in conjunction with spacing the required number of records. At the start of each SDWN time, the tape unit begins to slow down. Thus, for space forward and space reverse operations, a new GO command is automatically sent to the tape unit at the start of each SDWN time if the required number of records has not yet been spaced.

The master will accept and execute any new command during the SDWN period except if the new command is to the same tape unit as the one issuing SDWN and if the direction implied in the new command is opposite to the present direction. For the above exception, the master will accept the new command only after the tape unit has stopped, i.e.; SDWN a 0 and TUR a 1. The control unit accepts as legal all commands it receives while the CU ready bit is a 1, which includes commands received during the GAP shutdown or tape settling down periods. Thus, commands received during the GAP shutdown or settling down periods are buffered and transmitted to the master at the appropriate time as specified above.

For the operations write EOF and write the extended IRG, a three inch GAP is erased prior to writing the required characters.

For a write EOF command, the master writes an octal 23 followed by an LPC of octal 23 for a 9 channel tape or an octal 17 followed by an LPC of octal 17 for a 7 channel tape. On a 9 channel tape, the data tracks are designated 0-7, with track 0 the least significant and track 7 the most significant; while on a 7 channel tape, the data tracks are designated 0-5 with track 0 the least significant and track 5 the most significant.

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A	SP	TM11-0-25	B

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TITLE TM11 SPECIFICATION

Thus, octal 23 on a 9 channel tape has tracks 0, 1 and 4 marked, while octal 17 on a 7 channel tape has tracks 0, 1, 2 and 3 marked.

An EOF character and its corresponding LPC character constitutes a record. Thus, when a read command is given and an EOF character is read, the tape unit enters the GAP shutdown period after the LPC character following the EOF character is detected. In reading an EOF character, the EOF bit in the MTS and the ERR bit in the MTC becomes a one when the EOF bit is detected. Also, both the EOF character and its corresponding LPC character are loaded into consecutive memory locations, as determined the MTBRC.

During a space forward and space reverse operation, the tape unit begins to stop during the SDWN time following detection of either the EOF character or BOT marker.

When the OFF line command is given, the tape unit goes off line and then rewinds to the BOT marker. At the start of the OFF line command, the CU ready and TUR bits become 0, when the tape unit goes OFF line, the master sets the select remote bit in the MTS to A 0.

A programming restriction is that a read operation should not follow directly after a write operation without at least one intervening tape moving operation. A record which is written on tape may be read after first issuing a space reverse command.

Other programming restrictions occur when using select remote along with tape unit ready. The select remote lines for all tape units which are not addressed are at 0. A tape operation may be performed only on a selected tape unit and one whose SELR line is a 1. Thus, whenever a command is sent to a different tape unit from the one presently indicated by the unit select bits, the SELR line becomes 0 almost immediately (less than one instruction time later) and becomes a 1 about 10microseconds later. Shortly thereafter (less than one instruction time later) the TUR reading on the selected unit is valid. Thus, in programming, the SELR bit may be examined immediately after a command is sent to a different tape unit from the one indicated by the unit select bits. When SELR reads A 1, then TUR may be examined to determine the end of the tape operation. When a command

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is to the same tape unit as the one indicated by the unit select bits, the SELR line remains at a 1. The TUR line becomes a 1 prior to receiving the command, it would remain a 1 for approximately 10microseconds. The CU ready bit, however, goes low immediately after the command is generated by the program. Thus, it may be advisable for the program to utilize both the CU ready and TUR bits to determine when for example to issue a new command in the reverse direction to the same tape unit as the one indicated by the unit select bits.

Any command received during the GAP shutdown time which is to a different tape unit from that of the previous command or is in the same direction as that in the previous command will be transmitted at the start of settle down time. Any command received during the GAP shutdown time which is both to the same tape unit and in the opposite direction as that of the previous command will not be transmitted until the end of settle down time. Any command received during settle down time will not be transmitted until the end of settle down time.

2.1.2.1 BUS REQUEST INTERRUPT - BR

A bus request interrupt occurs under the following conditions:

1. The CU ready bit changes from 0 to 1 when the INT ENB bit is a 1.
2. The ERR bit changes from 0 to 1 when the INT ENB is a 1.
3. The INT ENB bit changes from 0 to 1 if during the command, the GO bit remains at 0.
4. The tape unit indicated by the unit select bit in the MTC completes its rewind operation before a new command to that tape unit has been received.

2.1.2.2 NON-PROCESSOR REQUEST - NPR

The control unit generates an NPR whenever it transfers data between the data buffer and core memory. In a read operation, the direction of transfer is from the data buffer to core memory. The RDS pulse, which

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is used to strobe the data from the tape unit into the data buffer, is used to generate the NPR to the processor. When the request is granted, the control unit performs a DATO and transfers a byte from the data buffer into core memory. In a write, or write with extended IRG, the NPR is generated by the WRS (WRITE STROBE) pulse from the processor. When the request is granted, the control unit performs a DATI and transfers a byte from core memory into the data buffer. For both read and write operations, the address in core memory is determined by the current memory address register (MTCMA).

2.1.2.2 REWIND

When the control unit issues a rewind command to the master, the CU ready bit becomes a 0. When the master detects the GO bit, it places TUR at a 0. As soon as the tape unit begins to rewind, the master sets the RWS bit in the MTS to a 1. The CU ready bit then becomes a 1. The tape unit rewinds at a higher speed than that for a normal tape operation. When the BOT marker is detected, it begins to slow down. It comes to a complete stop at a point well beyond the BOT marker and then moves forward again until the BOT marker is again detected, whereupon, it comes to a final stop. SDWN becomes a 1 as soon as the BOT marker is detected while the tape is moving in the forward direction. When the tape unit comes to its final stop, SDWN becomes a 0 and TUR becomes a 1.

2.1.2.4 INITIALIZE

The control unit and the tape units are initialized by the following means:

1. Reset instruction from the processor.
2. By depressing the processor start switch.
3. By a power fail, either by the processor power supply or by the control unit power supply.

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4. By the clear switch in the maintenance module.
5. By loading a 1 into bit 12 of the MTC.

1 clears all units in the system except the processor. 2 and 3 clear all units in the system including the processor and all peripherals. 4 and 5 clear only the control unit and tape units.

2.2 STATUS REGISTER

2.2.1 BIT CONTROL OF THE MTS

BITS 0-6 and BIT 14 are set and cleared exclusively by the master. BITS 7-13 and 15 are set by the appropriate error condition and cleared by initialize, and by the GO pulse to the tape unit.

2.2.2 TAPE UNIT READY - TUR

The TUR bit is a 1 whenever the SELR bit is a 1 and the tape unit is not in motion.

2.2.3 REWIND STATUS - RWS

The RWS bit becomes a 1 at the start of a rewind operation, and becomes a 0 as soon as BOT is detected while the tape is moving in reverse.

2.2.4 WRITE LOCK - WRL

The WRL bit at a 1 prevents the control unit from writing information on tape.

2.2.5 SETTLE DOWN - SDWN

The SDWN bit is a 1 whenever the tape unit that is on line is slowing down. The exception occurs in a rewind operation in which the tape unit begins its initial stop while moving in the reverse direction.

2.2.6 SEVEN CHANNEL - 7CH

The 7CH bit at a 1 indicates a 7 channel tape unit, and the 7CH bit a 0 indicates a 9 channel tape unit.

2.2.7 BEGINNING OF TAPE - BOT

The BOT bit is a 1 when the BOT marker is read, and a 0 when the BOT marker is not read. BOT at a 1 does not

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B

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TITLE TM11 SPECIFICATION

produce a 1 in the ERR bit.

2.2.8 SELECT REMOTE - SELR

The SELR bit is a 0 when the tape unit addressed does not exist, is off line, or has its power turned off.

2.2.9 NON-EXISTENT MEMORY - NXM

Non-existent memory error occurs in NPR operations when the control unit is bus master, and is performing data transfers into and out from the bus. The error occurs when the control unit does not receive a slave SYNC signal within 10 microseconds after it had issued a master SYNC signal. The ERR bit set simultaneously with NXM, thus terminating the operation. If the NXM occurred during a write or write with extended IRG operation, the control unit does not send the signal WDR to the master, while the master writes the CRC character (if required) and LPC character onto the tape.

2.2.10 BAD TAPE ERROR - BTE

Bad tape error occurs when a character is detected (RDS PULSE) during the gap shutdown or settling down period for all operations except rewind. (In a write, write EOF, or write with extended IRG operation,) both the BTE and ERR bits set immediately upon detection of bad tape. For both a read a space operation, the BTE bit sets immediately upon detection of bad tape. A new GO command is sent to the tape unit and the ERR bit sets upon detection of the next LPC character. If a bad tape error is again found during the GAP shutdown or settle down period, a new GO command is issued. The process of reissuing GO commands is continued until a true GAP is discovered whereupon the tape unit stops.

For a read operation, the MTBRC increments continuously and words are read into memory until the MTBRC overflows. For a space operation, the MTBRC stops incrementing as soon as BTE occurs. When the first true GAP is discovered, the tape unit stops regardless.

It is not possible to artificially generate bad tape. Therefore, for diagnostic purposes, bad tape may be indicated by setting the CU ready bit prematurely, and thereby producing the gap shutdown period while the data is still being read. CU ready sets by a logic 1 on bit 13 of the address indicated by the TUI0 read lines.

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If bit 13 sets during a record for either a read or a write operation, bad tape error is indicated.

2.2.11 RECORD LENGTH ERROR - RLE

Record length error is detected only during a read operation. It occurs for long records only and is indicated as soon as the MTBRC increments beyond 0, at which time both data transfer into memory and incrementing the MTCMA and MTBRC stop. The ERR bit sets when the LPC character is read. CU ready remains at 0 until the LPC character is read.

2.2.12 END OF TAPE - EOT

The EOT bit becomes a 1 as soon as the same EOT marker is read while the tape is moving in the forward direction. The EOT bit becomes a 0 as soon as the same point is read while the tape is moving in the reverse direction. The ERR bit, as a result of the EOT bit at a 1, sets only in the tape forward direction and coincidentally with the reading of an LPC character.

2.2.13 BUS GRANT LATE - BGL

A bus grant late error occurs when the control unit, after issuing a request for the bus, does not receive a bus grant before the control unit receives the bus request for the following tape character. The condition is tested only for NPR (NON-PROCESSOR REQUEST) operations. The error is indicated when an NPR bus request has not been answered before the next WRS pulse for a write operation, or an RDS pulse for a read operation is received by the control unit. The operations which occur when the error is detected are identical to those indicated for the NXM error.

2.2.14 PARITY ERROR - PAE

Parity error is the OR of the lateral and longitudinal parity errors. A lateral parity error is indicated on any character in the record while a longitudinal parity error occurs only when the LPC character is detected. A lateral parity error does not affect the transfer of data; that is, in a write operation, the entire record is transferred to tape and in a read operation, the entire record is written into core memory. Also, for both parity errors, the ERR bit sets only when the LPC character is detected.

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A	SP	TM11-0-25	B



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TITLE TM11 SPECIFICATION

Both lateral and longitudinal parity errors are detected during a read, write, and write with extended IRG operations. The entire record is checked including the CRC and LPC characters. Longitudinal parity error occurs when an odd number of 1's is detected on any track in the record. A lateral parity error occurs when an even number of 1's is detected on any character when PEVN is a 0, or an odd number of 1's is detected on any character when PEVN is a 1.

2.2.15 CYCLICAL REDUNDANCY ERROR - CRE

Cyclical redundancy error is detected during a read or a write operation. It compares the CRC character written on a 9 channel tape during a write or write with extended IRG operation with the CRC character generated during a read operation. If they are not the same, CRE from the tape unit becomes a 1 which forces the CRE bit to a 1, however, the ERR bit does not become a 1 until the LPC character is detected.

2.2.16 END OF FILE - EOF

An EOF character is detected during a read, space forward or space reverse operation. During the read or space forward operation, the EOF bit is set when the LPC character following the EOF character is read. During a space reverse operation, the EOF bit is set when the EOF character following its LPC character is read. The ERR bit sets when the LPC character following the EOF character is detected.

2.2.17 ILLEGAL COMMAND - ILC

1. Any DATO or DATOB to the MTC during the tape operation period (CU ready bit a 0).
  2. A WRITE, WRITE EOF, or WRITE WITH EXTENDED IRG operation when WRL is a 0.
  3. A COMMAND to a tape unit whose SELR bit is a 0.
  4. The SELR bit becoming a 0 during an operation other than in OFF Line Command.
- If error conditions 1 through 4 above, the command is loaded into the MTC, but the GO pulse to the tape unit is not generated. In all 5 of the above error conditions, the ILC and ERR bits occur simultaneously.

2.3 COMMAND REGISTER

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A	SP	TM11-0-25	B

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TITLE TM11 SPECIFICATION

2.3.1 BIT CONTROL

Bits number 1-6, 8-11, 13 and 14 are set on a processor DATO when the corresponding data bit on the bus is a 1, cleared on a processor DATO when the corresponding data bit on the bus is a 0, and cleared on INIT. Bit 0 sets on a processor DATO when data bit 0 on the bus is a 1 and cleared at the time the GO pulse is sent to the tape unit. The normal time duration of bit 0 at a 1 is 3 microseconds. The time may be increased to as long as 10 milliseconds if bit 0 is received during the GAP shutdown or settle down period. Moreover, the time could be several minutes if bit 0 is received for a unit that is rewinding. Bit 0 also clears on the setting of an illegal command and a processor initialize. Bit 7 clears at the start of a tape operation, and sets at the end of a tape operation. In addition, bit 7 sets when ERR becomes a 1 or on INIT. Bit 15 sets as a function of bits 7-15 of the MTS, and clears on the OR of INIT and the GO command to the tape unit. Bit 12 becomes a 1 for 1 microsecond on a processor DATO when the corresponding data bit on the bus is a 1, and is always read by the processor as a 0.

2.3.2 GO PULSE

The GO pulse is a 1 microsecond pulse and is used to perform the functions indicated by the function bits. The control of the GO pulse is defined in section 2.3.1.

2.3.2 FUNCTION BITS

The function bits are defined in section 2.1.1 and in figure 3.

2.3.4 EXTENDED MEMORY BITS - ADRS BIT 16, ADRS BIT 17

Bits 4 and 5 of the MTC correspond to bits 16 and 17 respectively of the bus address. These bits are an extension of the MTCMA, and increment during a tape operation.

2.3.5 INTERRUPT ENABLE - INT ENB

When the INT ENB bit is set, a PR interrupt to vector address 224 occurs whenever either the CU ready bit or the ERR bit change from 0 to 1 or whenever a tape unit that was set into rewind has arrived at the beginning of tape. The latter interrupt occurs only when the unit select lines remain unchanged and when a new command is not stored in the control unit awaiting execution to

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A	SP	TM11-0-25	B

**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE TM11 SPECIFICATION

to the tape unit. An interrupt also occurs on an instruction that changes the INT ENB bit from 0 to 1 and does not set the GO bit.

2.3.6 CONTROL UNIT READY - CU READY

The CU ready bit becomes a 0 at the beginning of all tape operations. It becomes a 1 when the first LPC character is detected for a read, write, write EOF, and write with extended interrecord GAP operations. It becomes a 1 for space forward and space reverse operations when the LPC character is detected in conjunction with spacing the required number of records. It also becomes a 1 when SELR becomes a 0 for an OFF LINE operation and when RWS becomes a 1 for a rewind operation.

2.3.7 UNIT SELECT BITS

The unit select bits are defined in section 2.1.1

2.3.8 EVEN PARITY - PEVN

PEVN is a 1 when the master writes even lateral parity on tape and when the master reads even lateral parity from tape. PEVN is a 0 when the master writes odd lateral parity on tape, and when the master reads odd lateral parity from tape. A search for parity error is made in all tape moving operations except space forward, space reverse, and rewind.

2.3.9 POWER CLEAR - PCLR

Power clear provides the means for the processor to clear the control unit and tape units without clearing any other device in the system. The PCLR bit is always read back by the processor as a 0.

2.3.10 DENSITY DEN 8 AND DEN 5

The combinations of bits DEN 8 and DEN 5 and their definitions are given below:

DEN 8	DEN 5	
0	0	200 BPI 7 CHANNEL
0	1	556 BPI 7 CHANNEL
1	0	800 BPI 7 CHANNEL
1	1	800 BPI 9 CHANNEL

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B

**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE TM11 SPECIFICATION

2.3.11 CORE DUMP

When transferring data between memory and a 7 channel tape when not in core dump mode, one byte in memory corresponds to one tape character. Because one byte contains 8 bits and one tape character contains 6 data bits, two bits within each byte are not utilized. Bits number 6, 7, 14 and 15 within each 16 bit data word are not utilized in the transfer. In a tape read operation, those bits are forced to 0 while in a tape write operation, these bits do not change.

When transferring data between memory and a 7 channel tape when in the core dump mode, one byte in memory corresponds to two characters. Thus, all bits within each byte in memory are used. Bits number 4 and 5, which are the two most significant bits on tape are not utilized.

2.3.12 ERROR - ERR

The ERR bit becomes a 1 if any of the bits 7 through 15 of the MTS become a 1. However, for some types of errors, all of which are indicated below, the ERR bit does not become a 1 until the LPC character is read in order to allow the operation being executed to be completed. All error bits except EOT are cleared by the next GO command or by the initialize signal. The error bits are described in section 2.2.

2.4 BYTE RECORD COUNTER - MTBRC

The MTBRC is a 16 bit binary counter which is used to count bytes in a read, write, or write with extended IRG operation, or records in a space forward or space reverse operation. When used in a write or write with extended IRG operation, the MTBRC is initially set by the program to the 2's complement of the number of bytes to be written on tape. The MTBRC becomes 0 after the last byte of the record has been read from memory. Thus, when the next WRS (WRITE STROBE) signal occurs from the master, the control unit will lower the WDR (WRITE DATA READY) line to the master indicating that there are no more data characters in the record.

When the MTBRC is used in a read operation, it is set to a number equal to or greater than the 2's complement of the number of tape characters to be loaded into memory. A record length error (RLE) occurs for long records only, and is indicated when a read pulse for data (RDS) occurring in th

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B



**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE TM11 SPECIFICATION

absence of CRCS and LPCS) occurs when the MTBRC is 0. Neither the CRC nor the LPC character is read into memory. The MTBRC increments by 1 immediately after each memory access.

When the MTBRC is used in a space forward or space reverse operation, it is set to the 2's complement of the number of records to be spaced. It is incremented by 1 at LPC time, whether the tape is moving in the forward or reverse direction. A new GO pulse is sent to the tape unit during the SDWN time if the MTBRC is not 0 during that time. When the tape unit is moving in reverse, the LPC character is detected before SDWN, but after the entire record has been traversed. Thus, both SDWN and the LPC character appear to be in different positions on tape from those when the tape unit is moving forward.

The MTBRC is available to the processor on a DATI. The bits are set or cleared on a processor DATO. INIT clears all bits in the MTBRC.

**2.5 CURRENT MEMORY ADDRESS REGISTER - MTCMA**

The MTCMA contains 16 of the possible 18 memory address bits. It is used in NPR operations to provide the memory address for data transfers in read, write, and write with extended IRG operations. Prior to issuing a command, the MTCMA is set to the memory address into which the first byte is loaded in a read operation, or from which the first byte is read in a write, or write with extended IRG operation. The MTCMA is incremented by 1 immediately after each memory access. Thus, at any instant of time the MTCMA points to the next higher address than the one which had most recently been accessed. When the entire record has been transferred, the MTCMA contains the address plus 1 of the last character in the record. For the error conditions bus grant late (BGL) and non-existent memory (NXM), the MTCMA contains the address of the location in which the failure occurred. The MTCMA is available to the processor on a DATI. The bits are set or cleared on a processor DATO. INIT clears all bits in the MTCMA.

**2.6 DATA BUFFER - MTD**

The data buffer is a 9 bit register which is used during a read, write, or write with extended IRG operation. In a read operation, the data buffer is a temporary storage register for characters read from tape before being stored into memory. In a processor read, all nine bits are stored into memory. Bits 0 thru 7 in memory correspond to channels 7 through 0 respectively from tape, and bit 8 corresponds to the parity bit. In an NPR operation only the data bits are read into

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B

**ENGINEERING SPECIFICATION** CONTINUATION SHEET

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memory, and are alternately stored into the low and high bytes. In a write or write with extended IRG operation, the data buffer is a temporary storage register for characters read from core memory before they are written on tape. The parity bit is generated by the TUL0 master and not by the control unit. The polarity of the parity bit is determined by the PEVN bit in the MTC.

In a read operation, the LPC character enters the data buffer when bit 14 of the address location for the TUL0 read lines is a 1, and inhibited from doing so when bit 14 is a 0. Thus, after reading a nine channel tape, the data buffer contains the LPC character when bit 14 is a 1 and the CRC character when bit 14 is a 0. After reading a seven channel tape, the data buffer contains the LPC character when bit 14 is a 1 and the last data character when bit 14 is a 0. After reading an EOF character, the data buffer contains all 0's when bit 14 is a 1 and the LPC character when bit 14 is a 0. The MTD is available to the processor on a DATI. Bits 9 thru 15 are read identically to bits 1 thru 7 respectively. Bits 0 thru 8 are set or cleared on a processor DATO. Bits 9 thru 15 are not affected by a processor DATO. INIT clears all bits in the MTD.

**2.7 TUL0 READ LINES - MTRD**

The memory location allocated for the TUL0 read lines are:

1. Bits 0-7 for channels 7-0 respectively.
2. Bit 8 for the parity bit.
3. Bit 12 for the gap shutdown bit.
4. Bit 13 for the BTE error generation.
5. Bit 14 for the CRC, LPC character selector.
6. Bit 15 for the timer.

For correct longitudinal parity, bits 0-8 are 0 after writing a record or reading a record from tape. For a longitudinal parity error, one or more of the bits 0-8 remains at a 1, the bit (s) at a 1 indicating the channel (s) containing the error. Bits 0-8 are set and cleared by the tape unit. Bit 13 is a pulse generated by the processor. Bit 14 is set and cleared by the processor and cleared by INIT. Bits 12 and 15 are read only bits and are not affected by a processor DATO. The MTRD is available to the processor on a DATI except that bit 13 reads back as a 0.

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A	SP	TM11-0-25	B

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TITLE TM11 SPECIFICATION

**2.7.1 TIMER**

TIMER is a 1000 microsecond signal with a 50% duty cycle. The signal is used for diagnostic purposes in measuring the time duration of the tape operations. The timer is read as bit 15 in the memory location reserved for the TUL0 read data lines.

**2.8 ADDITIONS**

When the TM11 receives commands to write either 1, 2, or 3 characters on tape, it will always write three data characters for the normal mode and four data characters for the core dump mode. The reason is that the master must write at least two data characters in a 9 channel mode in order to write the CRC and LPC characters, and three data characters in a 7 channel mode in order to write the LPC character. Likewise, if an NXM or BGL error occurs on the first character when writing a record, three characters are written for both the normal mode and core dump mode.

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B

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TITLE TM11 SPECIFICATION

TABLE 1

SIGNALS FROM MASTER TO CONTROL UNIT

RD0 - RD7	READ DATA SIGNALS FROM MASTER
RDP	READ PARITY BIT
SDWN	TAPE SETTLE DOWN
TUR	TIME BETWEEN STOP COMMAND AND WHEN TAPE UNIT STOPS TAPE UNIT READY
SELR	TUR IS TRUE WHEN THE SELECTED TAPE UNIT IS STOPPED AND WHEN SELECT REMOTE IS TRUE
RWS	SELECT REMOTE - TRUE WHEN UNIT IS SELECTED AND IS ON LINE
7CH	REWIND STATUS - TRUE WHEN SELECTED UNIT IS REWINDING
WRL	TRUE WHEN USING 7 CHANNEL OPERATION
BOT	WRITE LOCK - PREVENTS WRITING ON A TAPE
EOT	BEGINNING OF TAPE
WRS	END OF TAPE
RDS	WRITE STROBE (REQUESTS A CHARACTER FOR WRITING ONTO TAPE.)
FMK	READ STROBE - PRESENT FOR BOTH READ AND WRITE OPERATIONS
CRCS	FILE MARK
LPCS	CRC STROBE - APPEARS WITH CRC CHARACTER
VPE	LPC STROBE - APPEARS WITH LPC CHARACTERS
LPCE	VERTICAL PARITY CHECK ERROR. SAMPLED WITH RDS. LONGITUDINAL PARITY CHECK ERROR. SAMPLED WITH LPCS.

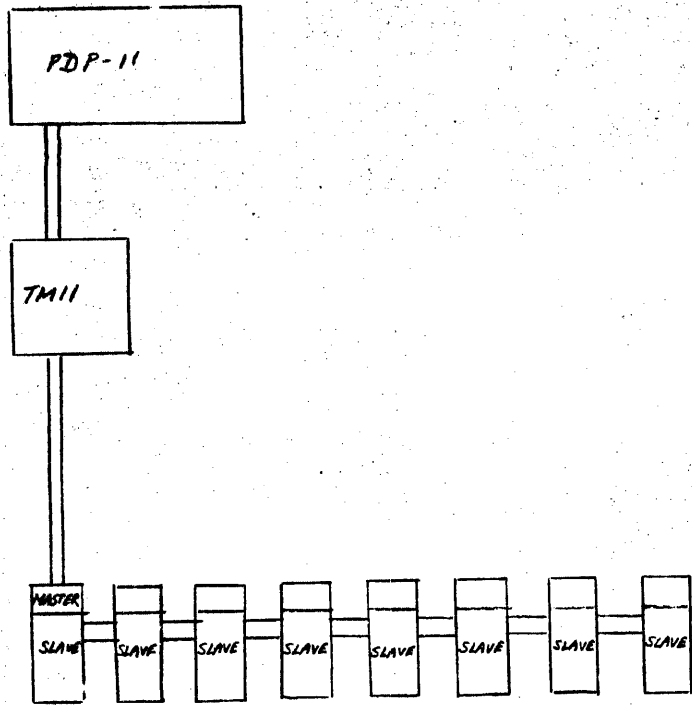
SIGNALS FROM CONTROL UNIT TO MASTER

WD0 - WD7	WRITE DATA LINES TO MASTER
SET	REQUIRED TO START ANY TAPE OPERATION
FWD	TAPE FORWARD
REV	TAPE REVERSE
RWD	REWIND
WRE	WRITE ENABLE
PEVN	EVEN PARITY
DEN 8	TRUE FOR 800 BPI 7 TRACK
DEN 5	TRUE FOR 556 BPI 7 TRACK
WFMK	DEN 8 AND DEN 5 ARE FALSE FOR 200 BPI 7 TRACK
WXG	DEN 8 AND DEN 5 ARE TRUE FOR 800 BPI 9 TRACK
SEL0, SEL1, SEL2	WRITE FILE MARK
WDR	WXG IS TRUE FOR WFMK AND WRITE WITH EXTENDED INTERRECORD GAP FUNCTIONS
CINIT	TAPE UNIT SELECT
	WRITE DATA READY
	INITIALIZE

SIZE	CODE	NUMBER	REV
A	SP	TM11-0-25	B

**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE *TU10 - TM11 SYSTEM CONFIGURATION*



8 TU10 MAGNETIC TAPE UNITS

FIGURE 1

SIZE	CODE	NUMBER	REV
A	SP	TM11-β-25	B

DEC FORM NO 16-1022  
DRA 108

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**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE *STATES IN A TAPE FORWARD OPERATION*

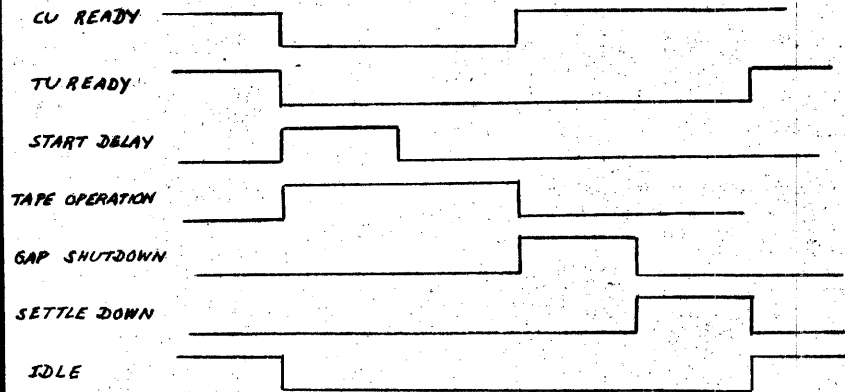


FIGURE 2

SIZE	CODE	NUMBER	REV
A	SP	TM11-β-25	B

DEC FORM NO 16-1022  
DRA 108

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**ENGINEERING SPECIFICATION** CONTINUATION SHEET

TITLE *FORMATS FOR STATUS AND COMMAND REGISTERS*

STATUS REGISTER

I L C	E O F	C R E	P A E	B G L	E O T	R L E	B T E	N X M	S E L R	B O T	7 C H	S D W N	W R L	R N S	T U R
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

COMMAND REGISTER

E P R	D E N B	D E N S	P C L R	P E V N	U N T S E L B B T 2	U N T S E L B B T 7	U N T S E L B B T 0	C U R R E A D Y	I N T E N B	A D D S R T B T 17	A D D S R T B T 16	F U N C T I O N B B T 2	F U N C T I O N B B T 1	F U N C T I O N B B T 0	G O
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

FIGURE 3

SIZE	CODE	NUMBER	REV
A	SP	TM11-β-25	B

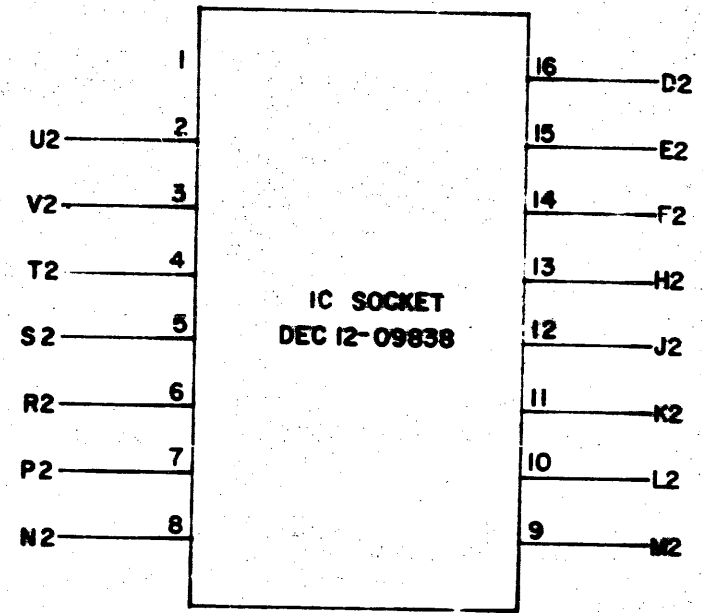
DEC FORM NO 16-1022  
DRA 108

SHEET 23 OF 23



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REV NUMBER 1-0-9829 CS B SIZE CODE 3003 3215



REV	CHG	NO	REV

DRN. <i>George H. Wyatt</i>	DATE <i>8/20/70</i>
CHK'D <i>R. Walden</i>	DATE <i>8/20/70</i>
APP'D <i>P. Sullivan</i>	DATE <i>9/11/70</i>
PROG <i>R. Williams</i>	DATE <i>10/20/70</i>

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA



TITLE <b>JUMPER MODULE G736</b>			
SIZE B	CODE CS	NUMBER G736-0-1	REV.
PRINTED CIRCUIT REV.			A

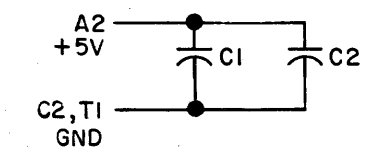
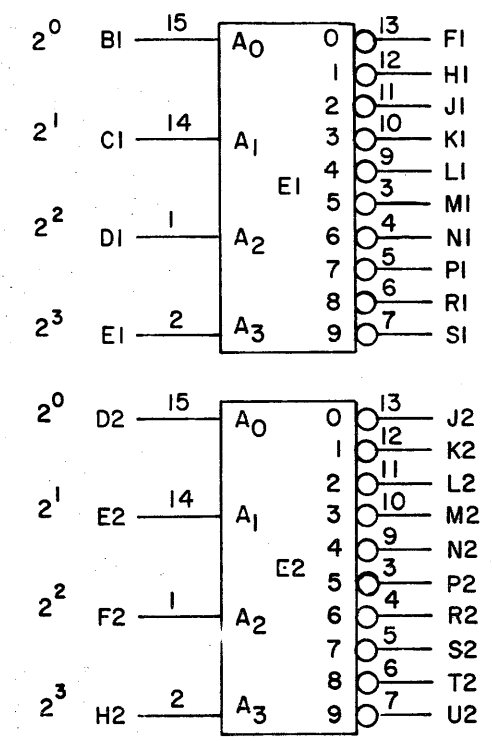
DEC FORM NO DRB 102

DIST: 324, 434, 435 3

PINK

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UNLESS OTHERWISE INDICATED:  
 PIN 8 ON EACH IC = GND  
 PIN 16 ON EACH IC = +5V  
 E1 AND E2 ARE FAIRCHILD 9301  
 CAPACITORS ARE .01MFD

REVISIONS CHG NO REV A	DRN.	DATE	TRANSISTOR & DIODE CONVERSION CHART				<b>digital</b> EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE DUAL BINARY TO DECIMAL DECODER M163			
	CHK'D	DATE	DEC	EIA	DEC	EIA		SIZE B	CODE CS	NUMBER M163-0-1	REV. A
	ENG	DATE									
	PROD.	DATE									
							PRINTED CIRCUIT REV. A				

