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FIELD MAINTENANCE PRINT SET

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TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
KC78Ø-AA
KC78Ø-AB
KC78Ø-AC

KC78Ø

Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MPØØ534

REVISIONS	REV.	CHG. NO.	DATE

USED ON OPTION/MODEL	
11780	

SHEET I OF 1

DRN.	P. BOUDREAU	DATE SEP 77
CHK'D	D. HEALY	DATE NOV 77
PROJ. ENG.		DATE 11.5.77
FIELD SERV.		DATE Nov 77

digital

TITLE: KC78Ø CONSOLE ASSY

SIZE	CODE	NUMBER	REV.
B	TC	KC78Ø-Ø-1	

DIST.

EN-01124-16-N675-(327)

DRB 124

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UNIT VARIATIONS

VAR	TITLE
KC78Ø-AA	KC78Ø CONSOLE ASSY 115V 60 HZ
KC78Ø-AB	KC78Ø CONSOLE ASSY 23ØV 50 HZ
KC78Ø-AC	KC78Ø CONSOLE ASSY 115V 50 HZ

REVISIONS	REV.	A	B
	CHANGE NO.	KC78Ø-1	KC78Ø-2
	CHK		JC

USED ON OPTION/MODEL

11780

SHEET 1 OF 4

DRN. P. BOUDREAU	DATE SEP 77	
CHK'D. D. HEALY	DATE NOV 77	
PROJ. ENG.	DATE	
PROD. Grant Lee	DATE 11/17/77	

TITLE

digital

KC78Ø CONSOLE ASSY

SIZE	CODE	NUMBER	REV
B	DD	KC78Ø-Ø	B

DIST.

DRB 106A

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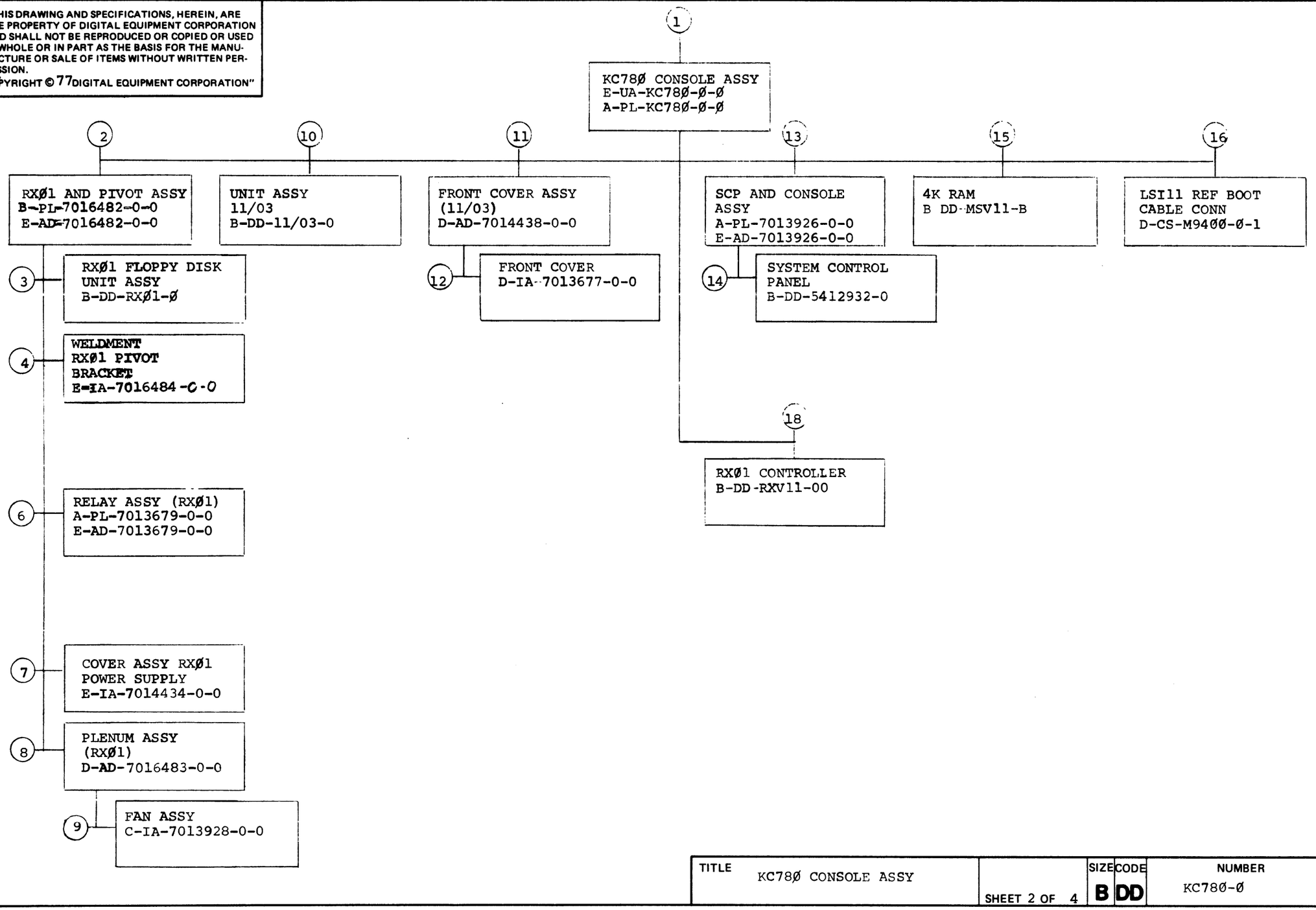


TITLE			SIZE	CODE	NUMBER	REV
KC78Ø CONSOLE ASSY	SHEET 2 OF 4		B	DD	KC78Ø-Ø	B

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	MPØØ534	KC78Ø CONSOLE ASSY (MP)	-
	B-TC-KC78Ø-Ø-1	KC78Ø CONSOLE ASSY (TC)	-
	E-UA-KC78Ø-Ø-Ø	KC78Ø CONSOLE ASSY	E/M
	A-PL-KC78Ø-Ø-Ø	KC78Ø CONSOLE ASSY (PL)	E/M
	C-IA-7014242-0-0	POWER CONTROL CABLE	E/M
	C-IA-7014243-0-0	FLOPPY RELAY SCP POWER CABLE	E/M
	B-MD-7414928-0-0	PIN, PIVOT	M
	D-UA-BCØ5L-Ø-Ø	CABLE, JUMPER	E/M
2	E-AD-7016482-0-0	RXØ1 AND PIVOT ASSY	M
	B-PL-7016482-0-0	RXØ1 AND PIVOT ASSY (PL)	M
	D-MD-7417863-0-0	COVER, RELAY (RXØ1)	M
	B-MD-7418129-0-0	ARM, LOCKING (RXØ1)	M
	C-MD-7418150-0-0	HANDLE (RXØ1)	M
3	B-DD-RXØ1-Ø	RXØ1 FLOPPY DISK UNIT ASSY	E/M
4	E-IA-7016484-0-0	WELDMENT RXØ1 PIVOT BRACKET	M
	B-MD-7417959-0-0	SLEEVE	M
	D-IA-7422403-0-0	BRACKET, RXØ1 SUPPORT	M
	D-IA-7422404-0-0	BRACKET, RXØ1 PIVOT ENCLOSURE	M
6	E-AD-7013679-0-0	RELAY ASSY (RXØ1)	E/M
	A-PL-7013679-0-0	RELAY ASSY (RXØ1) (PL)	E/M
	D-IA-7013858-0-0	BACK PLATE	M
	B-IA-7014449-0-0	CABLE, RELAY CONTROL	E/M
7	E-IA-7014434-0-0	COVER ASSY RXØ1 POWER SUPPLY	M
	E-MD-7418113-0-0	COVER, RXØ1 POWER SUPPLY	M
	C-MD-7419283-0-0	SCREEN, POWER SUPPLY COVER	M
8	D-AD-7016483-0-0	PLENUM ASSY (RXØ1)	M
	D-IA-7422398-0-0	PLENUM (RXØ1)	M
	B-MD-7422399-0-0	TRAY PLENUM FILTER	M
	D-IA-7422400-0-0	BRACKET, FAN AND PLENUM MTG.	M
9	C-IA-7013928-0-0	FAN ASSY	E/M
	C-IA-7014951-0-0	POWER CORD, FAN	E/M
10	B-DD-11/03-0	UNIT ASSY 11/03	E/M
11	D-AD-7014438-0-0	FRONT COVER ASSY (11/03)	M
12	D-IA-7013677-0-0	FRONT COVER	M
	D-MD-7418959-0-0	COVER, FRONT	M
	C-MD-7418960-0-0	RETAINER, FILTER	M
13	E-AD-7013926-0-0	SCP AND CONSOLE ASSY	M
	A-PL-7013926-0-0	SCP AND CONSOLE ASSY (PL)	M
	D-MD-7418102-0-0	COVER PROTECTIVE (COMPONENT BOARD)	M

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE	SHEET	SIZE	CODE	NUMBER	REV
KC78Ø CONSOLE ASSY	3 OF 4	B	DD	KC78Ø-Ø	B

DRB 108A

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	C-IA-7418969-0-0	STRIKE PLATE (TOP FRONT)	M
	E-MD-7418167-0-0	FRONT PANEL REWORK	M
14	B-DD-5412932-0	SYSTEM CONTROL PANEL	E/M
15	B-DD-MSV11-B	4K RAM	E/M
16	D-CS-M94ØØ-Ø-1	LSI11 REF BOOT CABLE CONN.	E/M
18	B-DD-RXV11-Ø0	RXØ1 CONTROLLER	E/M

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

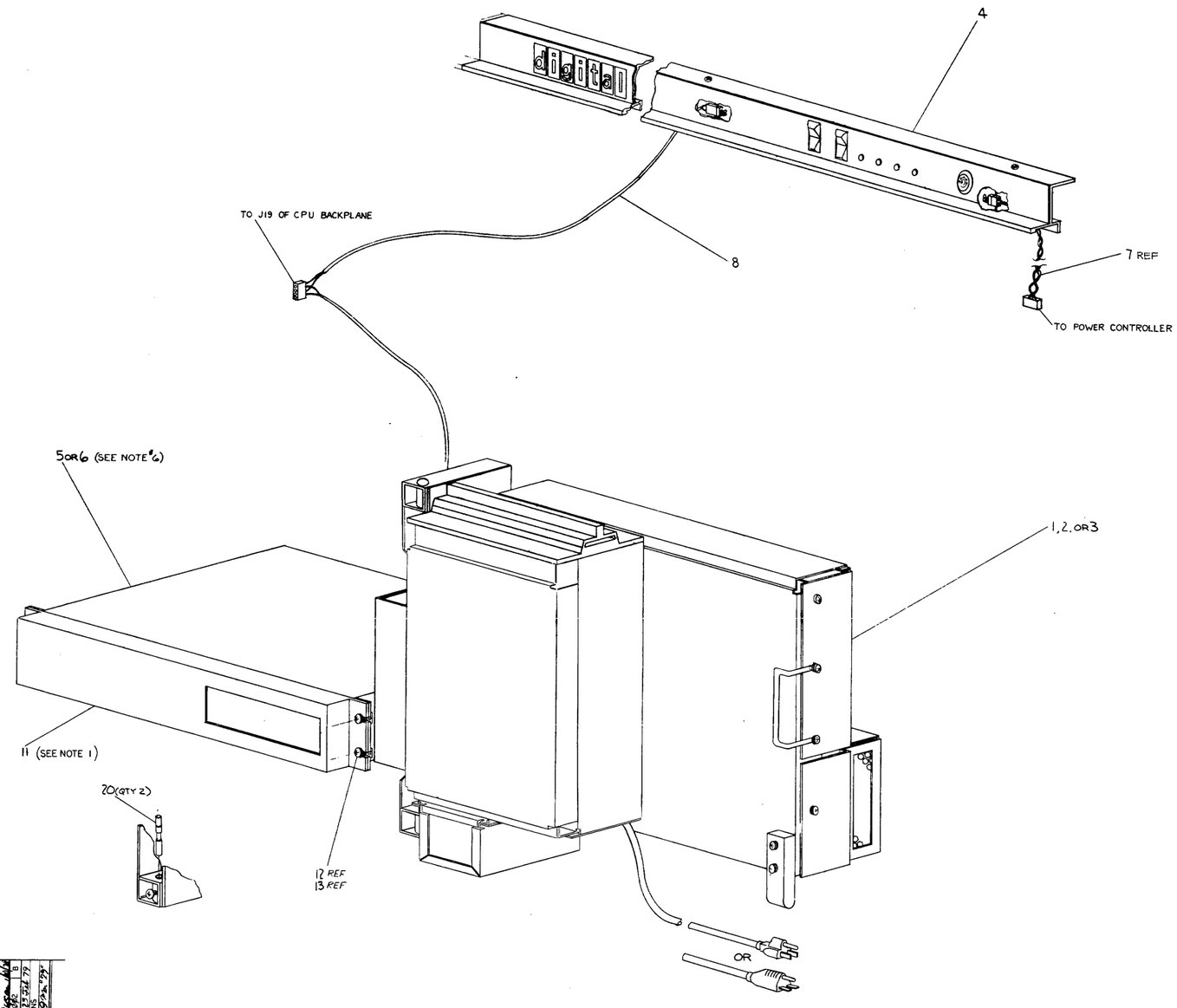
TITLE	SHEET	SIZE	CODE	NUMBER	REV
KC78Ø CONSOLE ASSY	4 OF 4	B	DD	KC78Ø-Ø	B

DRB 108A

LEGEND	
PART NO.	DESCRIPTION
KC-780AA	115 V, 60 HZ
KC-780AB	115 V, 50 HZ
KC-780AC	230V 50 HZ

NOTES:

1) REMOVE EXISTING FRONT COVER FROM ITEM 5 OR 6 AND REPLACE WITH ITEM 11.
2) FOR SYSTEM INTERCONNECTION SEE D-IC-11780-0-3.
3) FOR SYSTEM CABLE INTERCONNECTION SEE D-IC-11780-0-2.
4) FOR SYSTEM A/C INTERCONNECTION SEE D-IC-11780-0-1.
5) ITEMS 12,13, AND 14 FOR SHIPPING PURPOSE ONLY.
6 FOR ITEMS 15 & 16, SEE SHEET 3, MODULE UTILIZATION 11/03.



FOR PARTS LIST SEE A-PL-KC78Ø-Ø

REVISIONS			
ZONE	DWG NO.	REV	
	KC78Ø-000Ø1	A	K. DUGGAN 19 JAN 78
	KC78Ø-IWS	B	K. DUGGAN 22 FEB 79
			S. JENKINS 9 JUL 79

	DESCRIPTION	DWG./PART NO.	ITEM NO.
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		

ANGLES ±0° 30'	VALUE OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES				
		OVER 0 TO 2	OVER 2 TO 4.8	OVER 4.8 TO 12	OVER 12 TO 48	OVER 48 TO 120
SURFACE QUALITY ✓	±	±.02	±.03	±.06	±.12	±.25
MEDIUM ☐		±.004	±.005	±.012	±.025	±.05
MICROINCHES PREFERRED ☐		±.012	±.015	±.025	±.04	±.062

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

DRAWN K. Duggan 19 JAN 78
CHK'D [illegible] 2-9-79
ENGR [illegible] 2-9-79
PROJ. ENG. [illegible] 2/9/79
PROD. [illegible] 2/9/79
NEXT HIGHER ASSY.
B-DD-KC78Ø-Ø
SCALE 1/4
SHEET 1 OF 3

FIRST USED ON VAX 11780

TITLE KC-78Ø CONSOLE ASS'Y

SIZE	CODE	NUMBER	REV.
E	UA	KC 780-0-0	B

DIST.

REV B
DRAWING CODE E UA KC-780-0-0

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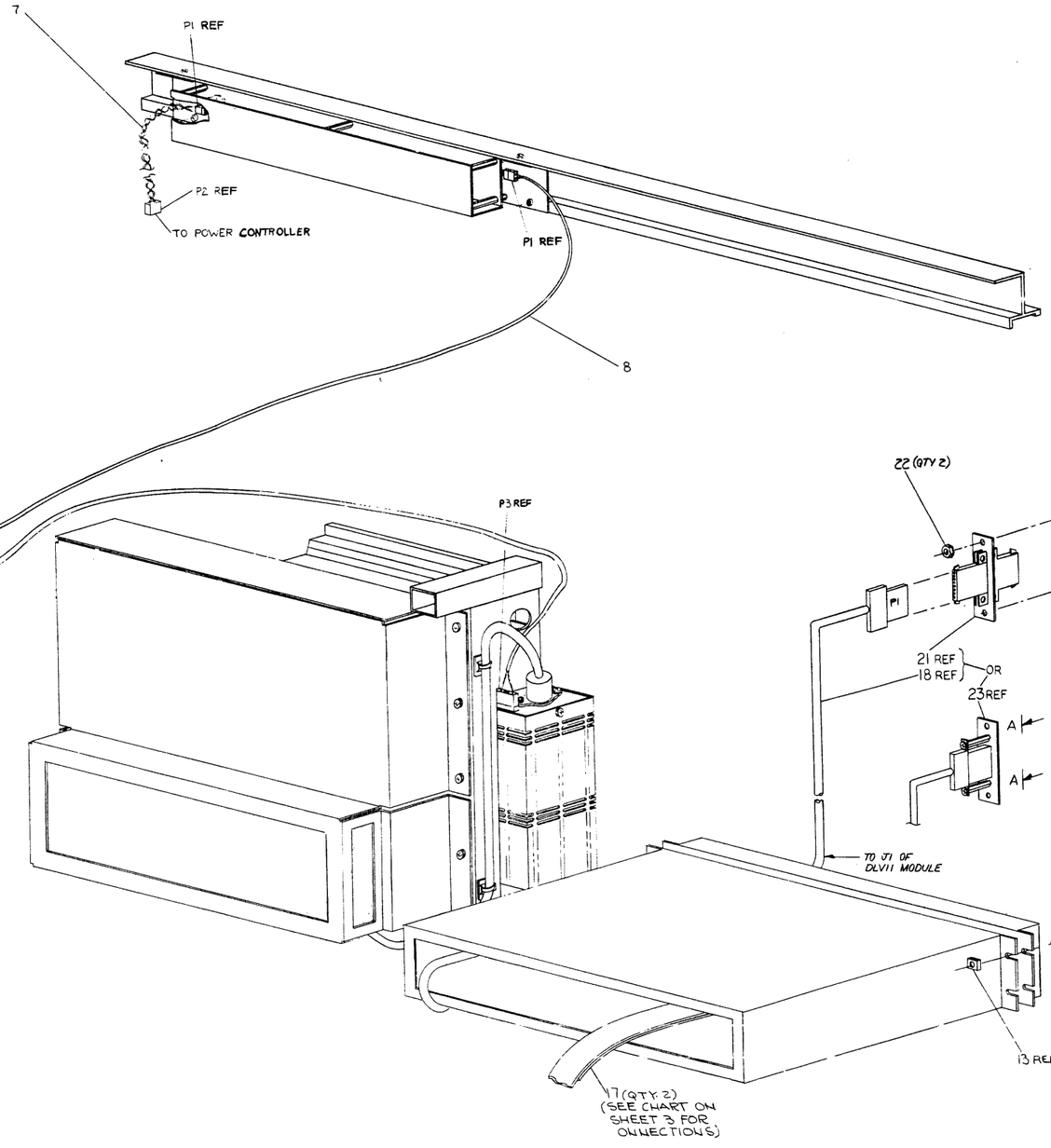

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	KC 780 CONSOLE ASSY	SIZE	CODE	NUMBER	REV.
		E	UA	KC780-0-2	B
SCALE	1/2	SHEET	2 OF 3	DIST.	

DEC FORM NO. CKR 156

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NOTES:
1. FOR MORE DETAIL OF OPTION CONFIGURATION, CONSULT INDIVIDUAL OPTION MANUALS.

* LSI11

RESULT
RESIDENT MEMORY AT BANK Ø
LTC INTERRUPT ENABLED
MEMORY REFRESH ENABLED

POWER UP AT 173000

DISABLES RESIDENT MEMORY BRPLY L
DISABLES RESIDENT MEMORY BRPLY L DURING REFRESH
ENABLES ON BOARD MEMORY SELECT

* MSV11

MEMORY BANK SELECT 1 (20000-37776)
ENABLE MEMORY BRPLY L DURING REFRESH

* DLV11

ADDRESS JUMPERS SET TO DECODE AT 177560-177566
VECTOR JUMPERS SET TO DECODE AT 60-64
NO PARITY
1 STOP BIT
8 DATA BITS
NO HALT ON FRAMING ERROR
SELECT 300 BAUD
20 ma CURRENT LOOP
ACTIVE ON TRANSMIT AND RECEIVE OR EIA OPERATION

* RXV11

SHOULD BE PRE-CONFIGURED FOR:
ADRS; 177170-177172
VECTOR; 264
THE RIBBON CABLE FROM THE RXØ1 SHOULD BE INSTALLED WITH THE RED STRIPE TOWARD THE CENTER OF THE MODULE

* M9400-YE (LSI REF BOOT CABLE CONN)

J1 - CONNECTS TO CPU BACKPANEL J7
J2 - CONNECTS TO CPU BACKPANEL J8
THE BC05L-10 CABLES SHOULD BE INSTALLED WITH THE RED STRIPE TOWARDS THE CENTER OF THE MODULE

KC78Ø SUBSYSTEM CONFIGURATION

* SEE NOTE 1

REVISIONS		
ENG	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KC780 CONSOLE ASSY	E	UA	KC78Ø-Ø-Ø	B
SCALE	SHEET 3 OF 3	DIST. 1W		

KC78Ø-Ø-Ø B

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY	P. BOUDREAU	CHECKED	R.J. RILEY	SECTION 1
DATE	3-AUG-77	DATE	9-12-77	
ENG	K. DUGGAN	PROD	R. GIRARD	ISSUED SECTION 1
DATE	10-NOV-77	DATE	11-4-77	

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION KC78Ø-AA	KC78Ø-AB	KC78Ø-AC	NOTES: / REF DESIGNATION
1	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø1	RXØ1 AND PIVOT ASSY	1	-	-	
2	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø2	RXØ1 AND PIVOT ASSY	-	1	-	
3	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø3	RXØ1 AND PIVOT ASSY	-	-	1	
4	E-AD-7Ø13926-Ø-Ø		SCP AND CONSOLE ASSY	1	1	1	
5	E-UA-11Ø3-Ø-Ø	11Ø3-AA	UNIT ASSY 11Ø3	1	-	1	
6	E-UA-11Ø3-Ø-Ø	11Ø3-AB	UNIT ASSY 11Ø3	-	1	-	
7	C-IA-7Ø14242-Ø-Ø	7Ø14242-Ø8	POWER CONTROL HARNESS	1	1	1	
8	C-IA-7Ø14243-Ø-Ø	7Ø14243-21	FLOPPY RELAY SCP POWER HARNESS	1	1	1	
9	E-UA-M8236-Ø-Ø		C.I.B.	REF	REF	REF	
1Ø	E-IA-7Ø13628-Ø-Ø		BACKPLANE ASSY	REF	REF	REF	
11	D-AD-7Ø14438-Ø-Ø		FRONT COVER ASSY	1	1	1	
12		9ØØ97ØØ-ØØ	SCREW SEMS P.H. TRUSS 10-32x.5Ø	REF	REF	REF	
13		9ØØ7786-ØØ	RETAINER "U" NUT #10-32	REF	REF	REF	
14		9ØØ97Ø1-ØØ	SCREW SEMS P.H. HD. 6-32x.31	2	2	2	
15	B-DD-MSV11-Ø		4K RAM	1	1	1	
16	E-UA-M94ØØ-YE-Ø		LSI REF BOOT CABLE CONN.	1	1	1	
17	D-UA-BCØ5L-Ø-Ø	BCØ5L-1Ø	CABLE BCØ5L	2	2	2	
18	D-IA-7Ø165Ø3-Ø-Ø	7Ø165Ø3-Ø4	TERMINAL ADAPTER CABLE (H7ØØ5)	REF	REF	REF	
19	B-DD-RXV11-ØØ		RXØ1 CONTROLLER	1	1	1	
2Ø	B-MD-7414928-Ø-Ø		PIN, PIVOT	2	2	2	

E.C.O. NO. TWØØ2

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
KC78Ø CONSOLE ASSY	E-UA-KC78Ø-Ø-Ø	B	PL	KC78Ø-Ø-Ø	B
	SHEET 1 OF 2	INSERTION PARTS LIST DATA BASE REV			

DRB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY	P. BOUDREAU	CHECKED	R.J. RILEY	SECTION 1
DATE	3-AUG-77	DATE	9-12-77	
ENG	K. DUGGAN	PROD	R. GIRARD	ISSUED SECTION 1
DATE	10-NOV-77	DATE	11-4-77	

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION KC78Ø-AA	KC78Ø-AB	KC78Ø-AC	NOTES: / REF DESIGNATION
21	A-PL-H7ØØ5-Ø-Ø		H7ØØ5 FILTER CONNECTOR	REF	REF	REF	
22		9ØØ656Ø-ØØ	NUT, KEPS #6-32	2	2	2	
23	D-UA-BCØ3L-Ø-Ø	BCØ3L-Ø5	FILTERED CABLE ASSY BCØ3L	REF	REF	REF	

E.C.O. NO.

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
KC78Ø CONSOLE ASSY	E-UA-KC78Ø-Ø-Ø	B	PL	KC78Ø-Ø-Ø	B
	SHEET 2 OF 2	INSERTION PARTS LIST DATA BASE REV			

DRB 125

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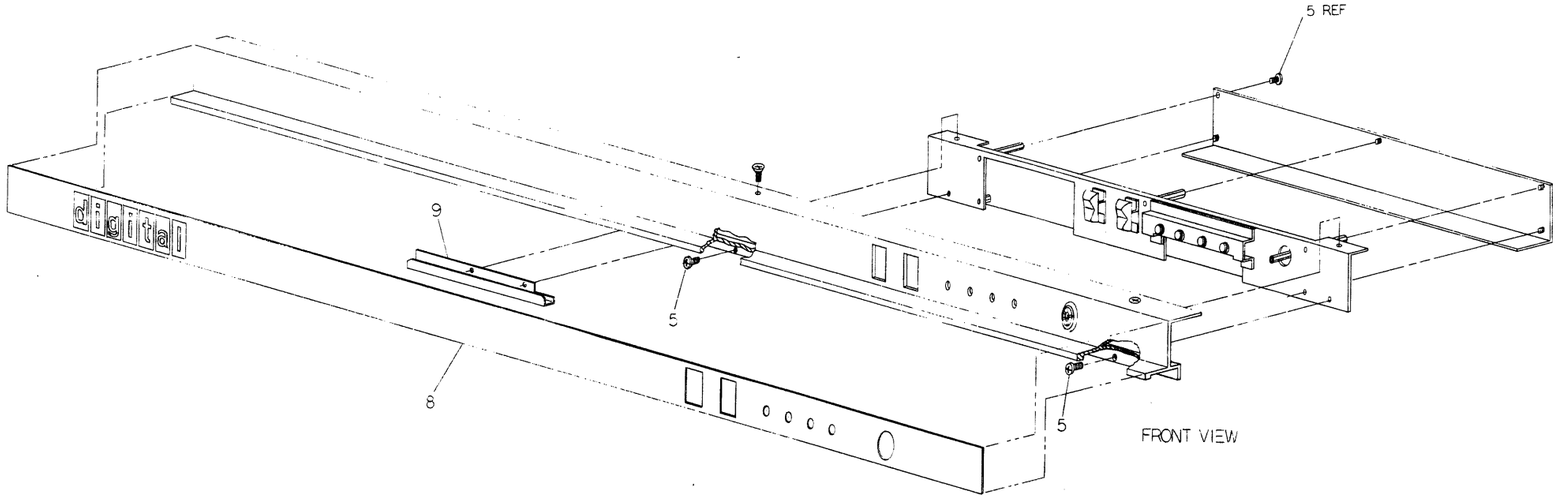
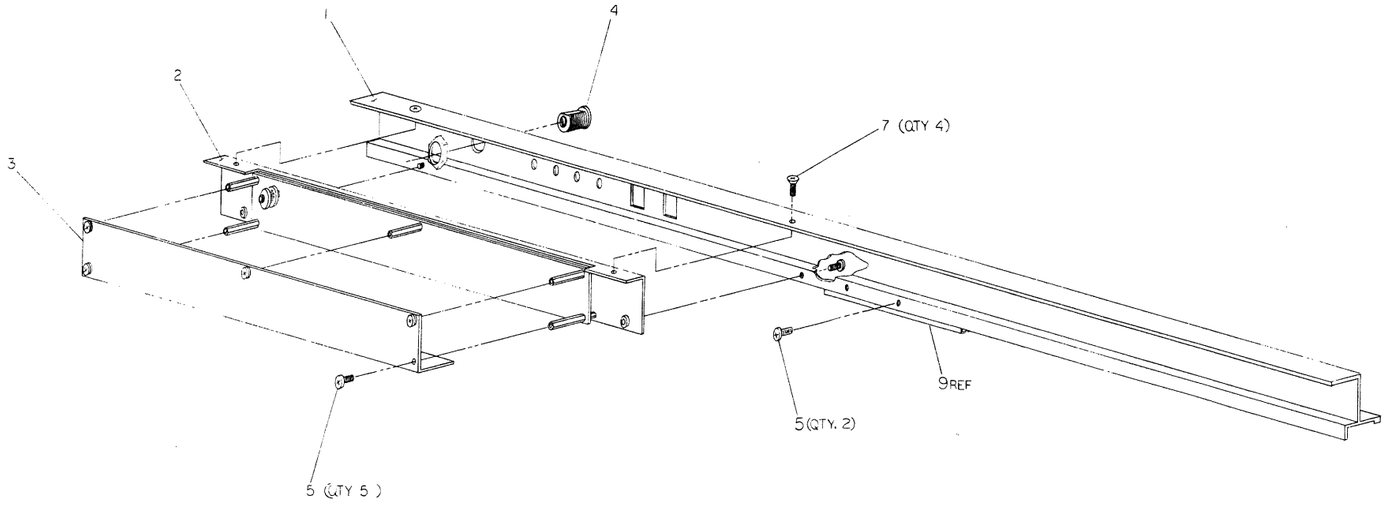
NOTES :
1. REMOVE PEEL-OFF LINER OF ITEM # 8 AND ASSEMBLE TO ITEM # 1 AFTER # 4 & 2 HAVE BEEN ASSEMBLED TO ITEM # 1.





REAR VIEW

FOR PARTS LIST SEE A PL 7013926 0 0

REVISIONS			
REV.	CHANGE NO.	DSN.	DATE

DESCRIPTION									DWG./PART NO.		ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES											
ANGLES ±0° 30'		CLASS OF ACCURACY		NOMINAL DIMENSION RANGE INCHES							
				OVER 0 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0			
SURFACE QUALITY IN		CHECK ONE		OVER 0 TO 6.3	OVER 6.3 TO 19	OVER 19 TO 75	OVER 75 TO 300	OVER 300 TO 1250			
		MICHES	☐	±.004	±.008	±.012	±.016	±.02*	±.04		
		MILLIMETERS	PREFERRED ☐	±.012	±.018	±.025	±.04	±.13	±0.1		
QUANTITY & VARIATION		DRN. G. PAGE		8-5-77		FIRST USED ON					
THIRD ANGLE PROJECTION		CHK'D		9-8-77		VAX 11/780					
		ENG.		10-18-77		TITLE					
REMOVE BURRS AND BREAK SHARP CORNERS		PROJ. ENGR.		10-18-77		SCP AND CONSOLE ASSY.					
		PROD.		10/27/77							
DO NOT SCALE DWG		NEXT HIGHER ASSY.									
MATERIAL SEE PARTS LIST		E-UA-KC780-0									
FINISH		SCALE 1/2				SIZE E	CODE AI	NUMBER 7013926-0-0		REV. 0-0	
		SHEET 1 OF 1				DIST.					

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY E. TAYLOR DATE 3 AUG 77	CHECKED DATE 9-13-77	SECTION
ENG DATE 10-18-77	PROD DATE 10/18/77	ISSUED SECT.

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY VARIATION 7013926-0-0
1	E-MD-7418167-0-0	FRONT PANEL REWORK	1
2	D-UA-5412932-0-0	SYSTEM CONTROL PANEL	1
3	D-MD-7418102-0-0	COVER, PROTECTIVE (COMPONENT BOARD)	1
4	1213283-0-0	KEY LOCKS 5 POSITION	1
5	9009701-00	SCR, PAN HD. PHL. SEMS #6 - 32 x 5/16	9
7	9006021-02	SCR. FLAT COUNTERSUNK HD. PH.6-32 x .31	2
8	3614611-0-0	DECAL	1
9	C-IA-7418969-0-0	STRIKE PLATE	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	FCO NO.
SCP AND CONSOLE ASSEMBLY	E-AD-7013926-0-0	A	PL	7013926-0-0		
	SHEET 1 OF 1	DIST				

DEC FORM
DRA 110

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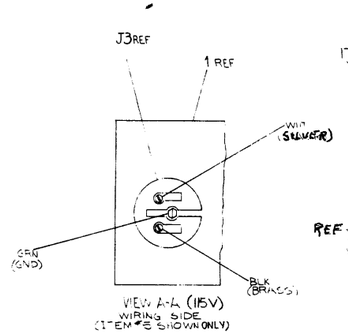
WIRE TABLE 115V & 230V

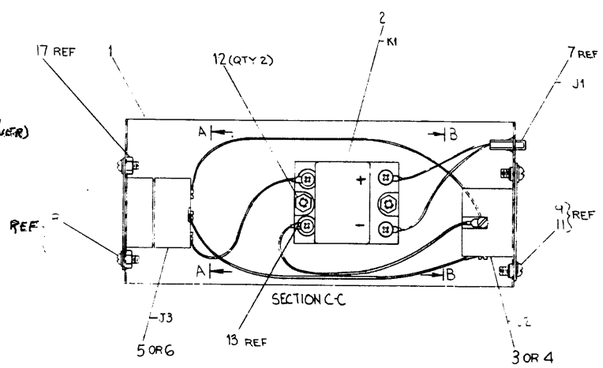
ITEM NO	DESCRIPTION AWG	COLOR	FROM CONN	FROM WITH	TO CONN	TO WITH
14	18	BLK	J3-BLU	ITEM #13	K1 TOP	ITEM #18
15	↑	GRN	J3-GRN-YEL	↑	J2-GRN	↑
16		WHT	J3-BRN		J2-WHT	
14		BLK	K1 BOTTOM	ITEM #13	J2-BLK	ITEM #13
7	18	BLK	J1-1	—	K1(-)	—
		WHT	J1-3	—	K1(+)	—

NOTE: WIRING INFO SAME FOR 115V & 230V

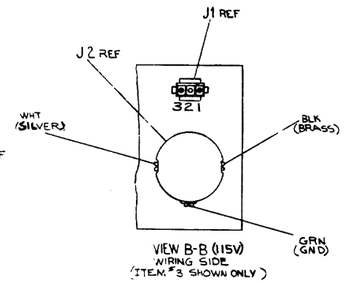
LEGEND		
ASSY. NUMBER	VARIATION	REMARKS
7013679-00	USING ITEMS 3 & 5	115V OPERATION
7013679-01	USING ITEMS 4 & 6	230V OPERATION



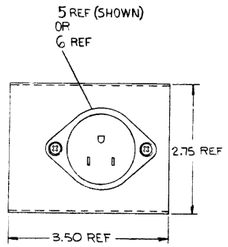
VIEW A-A (115V)
WIRING SIDE
(ITEM #3 SHOWN ONLY)

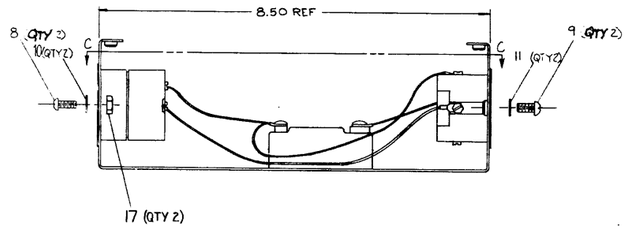


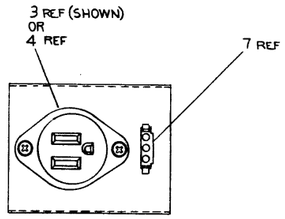
SECTION C-C



VIEW B-B (115V)
WIRING SIDE
(ITEM #3 SHOWN ONLY)







FOR PARTS LIST SEE A-PL-7013679-0-0

REV	DATE	CHANGE NO.	DRAWN
A	29 MAR 77	7013679-00001	B HALL

DESCRIPTION	DWG./PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		

ANGLES	CLASS OF ACCURACY	NOMINAL DIMENSION RANGE INCHES					
		0 TO 6	6 TO 30	30 TO 120	120 TO 315	315 TO 1000	1000 TO 2000
SURFACE QUALITY	SCRATCH, DENT	1/64	1/32	1/16	1/8	1/16	1/32
MACHINED	PREFERRED	.002	.005	.010	.015	.030	.060

QUANTITY & VARIATION	DRAWN	NO. 77 JUN 77	FIRST USED ON VAX 11780
THIRD ANGLE PROJECTION	CHK'D		
REMOVE BURRS AND BREAK SHARP CORNERS	ENGR. APPR.		
DO NOT SCALE DWG.	PROD. ENGR.		
MATERIAL SEE PARTS LIST	PROD. SERV.	6-4-77	
FINISH	NEXT HIGHER ASSY.	E-AD-7013708-0	
	SCALE 1/1	SHEET 1 OF 1	

TITLE: RELAY ASS'Y 115V AND 230V

SIZE E | CODE TA | NUMBER 7013679-0-0 | REV. A | DIST.

REVISIONS: A | 7013679-0-0 | TA | B

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY MARK CHOINIERE	CHECKED D. HEALY	SECTION 1
DATE 11 JUNE 77	DATE 13 JUNE 77	
ENG Kenneth J. Duggan	PROD R. Bird	ISSUED SECT. 1
DATE 7/21/77	DATE 8-4-77	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY VARIATION 7013679-00	7013679-01
1	D-IA-7417858-0-0	BACK PLATE (RELAY ASSY)	1	1
2	1214417-00	RELAY, SOLID STATE	1	1
3	1210203-00	RECEP., PWR 15A, 125V AC/DC FEMALE	1	–
4	1210202-00	RECEP., PWR 15A, 250V AC/DC FEMALE	–	1
5	1209983-00	CONN. POWER 15A, 125V AC/DC MALE	1	–
6	9008854-00	CONN. POWER 15A, 250V AC/DC MALE	–	1
7	B-IA-7014449-0-0	CABLE, RELAY CONTROL	1	1
8	9006022-01	SCREW, PHL, HD. PAN, #6 - 32 x .38	2	2
9	9006037-01	SCREW, PHL, HD. PAN #8 - 32 x .38	2	2
10	9006633-00	WASHER, INT. TOOTH LOCK #6	2	2
11	9006634-00	WASHER, INT. TOOTH LOCK #8	2	2
12	9006560-00	NUT, KEPS #6 - 32	2	2
13	9007929-00	RING TERMINAL, RED #22-16 WIRE	8	8
14	9107360-66	WIRE, STRND, 18 AWG (BLU)	A/R	A/R
15	9107410-54	WIRE, STRND, 18 AWG (GRN-YEL)	A/R	A/R
16	9107360-11	WIRE, STRND, 18 AWG (BRN)	A/R	A/R
17	9006558	NUT, HEX	2	2

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO.
RELAY ASSY 115V & 230V	E-IA-7013679-0-0	A	PL	7013679-0-0	A	7013679-000001
	SHEET 1 OF 1	DIST				

DEC FORM
DRA 110

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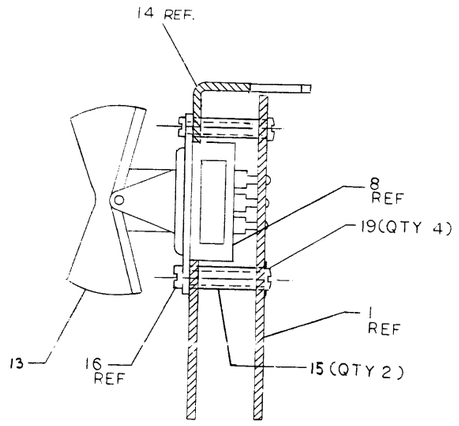
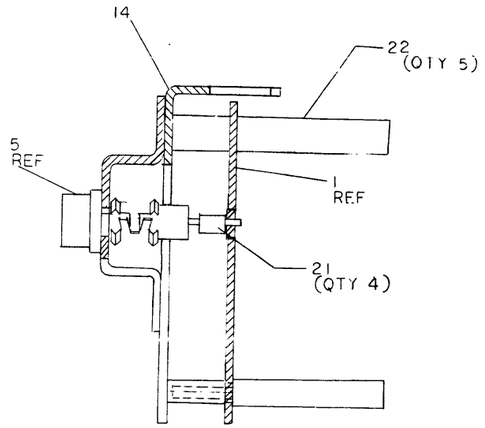


SECTION A-A
SCALE: 2/1

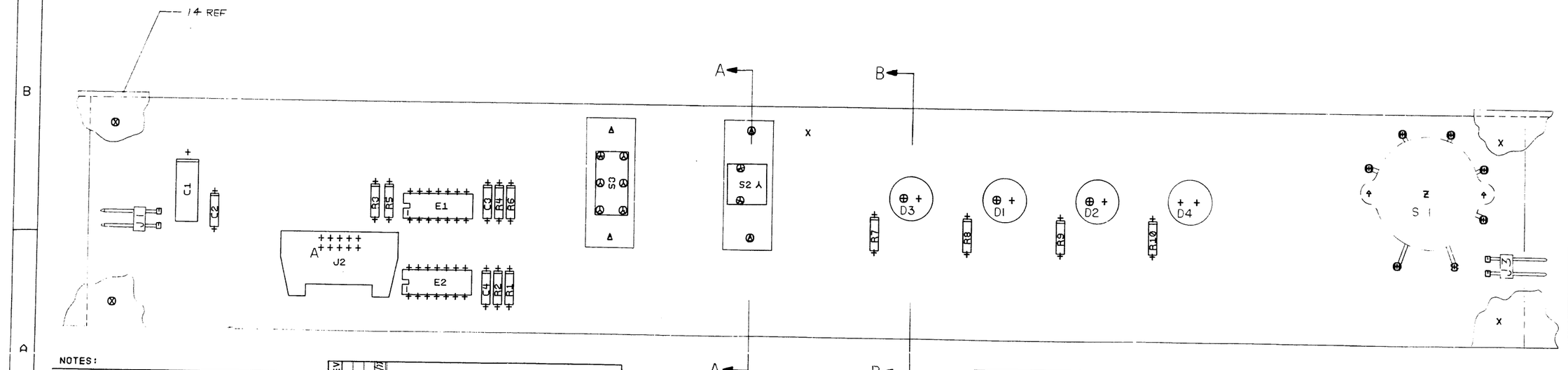


SECTION B-B
SCALE: 2/1

COMPONENT SIDE VIEW

SCP ASSEMBLY NOTES

1. ASSEMBLE ITEMS 2,3,6,9,10,11,12, AND 20 IN THEIR APPROPRIATE LOCATIONS TO ITEM 1.
2. ASSEMBLE ITEM 21 TO THE SHORT LEAD OF ITEMS 4 AND 5. REMOVE CLIP NUTS FROM DIODES.
3. ASSEMBLE ITEMS 15 TO ITEMS 1 USING ITEM 16 (SEE SECTION A-A) FOUR PLACES.
4. INSERT L.E.D.'S THROUGH ITEM 14 WITH RED LED AT BOTH OUTSIDE POSITIONS. THE L.E.D.'S WILL BE INSTALLED IN THE P.C. BOARD WITH THE SHORT SOCKETED LEAD TO THE RIGHT AS VIEWED FROM THE COMPONENT SIDE OF THE BOARD. REPLACE THE CLIP NUTS, MAKE SNUG AGAINST ITEM 14
5. INSERT ITEMS 7 AND 8 THROUGH ITEM 14. MAKE ALIGMENT TO P.T.H.'S AND THEN TO ITEM 15.FASTEN ITEMS 7 AND 8 USING ITEM 16.
6. FROM P.C. BOARD SIDE, FASTEN ITEMS 22 TO ITEMS 14 THROUGH ITEM 1.
7. SOLDER ALL L.E.D.'S AND ROCKER SWITCHES.



NOTES:

CHK	CHANGE NO	REV
	5412932-1	B

K. DUGGAN

ETCH REV. 6
P.C. DESIGN DATA BASE REV. 6

SIGNATURES	DATE
DRN.	2/1/77
CHK'D	2/1/77
ENG.	7/8/77
PROJ.ENG.	7/8/77
PROD.	10/5/77
SCALE 2-1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. B DD 54 12932 00	

digital

TITLE SYSTEM CONTROL PANEL

SIZE	CODE	NUMBER	REV
D	UA	54-12932-00	B

MS#

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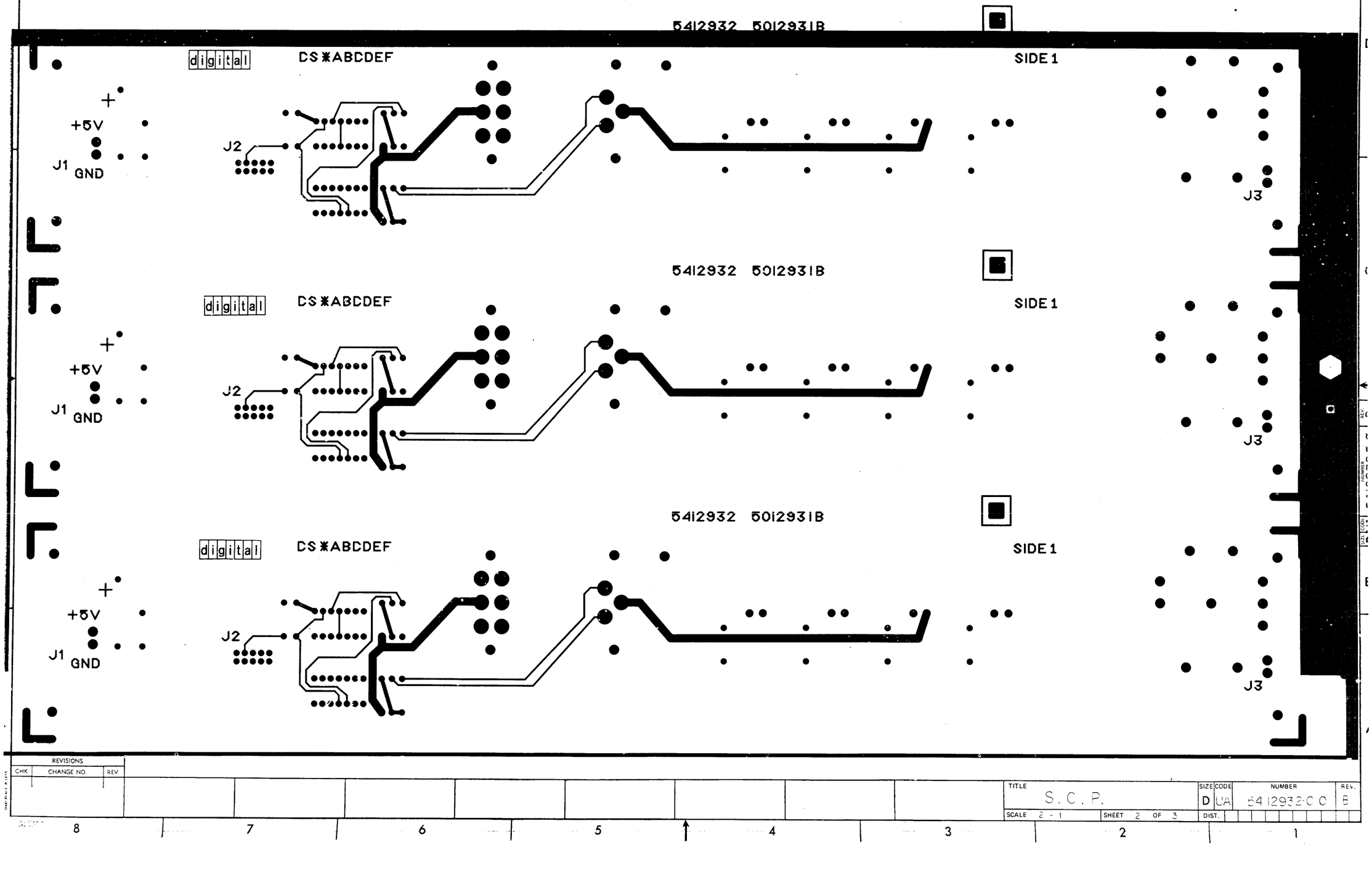

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	S.C.P.		
SIZE	CODE	NUMBER	REV.
D	UA	5412932-00	B
SCALE 2-1	SHEET 2 OF 3	DIST.	

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SYSTEM CONTROL PANEL 5412932
5012931B SIDE 2

SYSTEM CONTROL PANEL 5412932
5012931B SIDE 2

SYSTEM CONTROL PANEL 5412932
5012931B SIDE 2

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
S . C . P.	D	UA	5412932-0-0	B
SCALE 2 - 1 SHEET 3 OF 3	DIST			

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY M. FUNARO DATE 26 APR 77	CHECKED G. GIDDINGS DATE 6 MAY 77	SECTION
ENG Kenneth J. DeSisto DATE 5/30/77	PROD Mike Tirella 10/5/77 DATE	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION 5412932-0-0	NOTES: / REF DESIGNATION
1	D-MD-5012931-0-0	5012931	ETCH BOARD		
2		10-12784-00	CAPACITOR, .047uf, 50V	3	C2,C3,C4
3		10-12084-01	CAPACITOR, 8uf,25V	1	C1
4		12-12749-01	LED GREEN	2	D1,D2
5		12-12749-00	LED RED	2	D3,D4
6		13-00365-00	RESISTOR, 1K,1/4W,5%	6	R1-R6
7		12-11485	SWITCH, SLIDE, DPDT	1	S3
8		12-05375	SWITCH, SLIDE, SPDT	1	S2
9		12-14476	SWITCH, ROTARY, 5 POS.	1	S1
10		12-09941-05	HEADER, RT ANGLE, 10 PIN	1	J2
11		12-12204-00	HEADER, 2 PIN	2	J1,J3
12		19-12746-00	I.C. DEC 74S37	2	E1,E2
13		12-05317-08	ROCKER SWITCH OFF WHITE	2	
14	E-IA-7014437-0-0	7014437-00	COMP. MTG. BRK'T. WELD.	1	
15		90-06843-00	SPACER, THRD #4-40 x 3/8 LG.	4	
16		90-08032-01	SCR, PHL HD PAN #4-40 x 3/16 LG.	8	
17		90-06022-01	SCR, PHL HD PAN #6-32 x 3/8 LG.	5	
18		90-06707-00	WASHER, NYLON #6	5	
19		90-06706-00	WASHER NYLON #4	4	
20		13-00250-00	RESISTOR 150, 1/4W, 5%	4	R7—R10

E.C.O. NO. 30001

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
SYSTEM CONTROL PANEL	D-UA-5412932-0-0	B	PL	5412932-0-0	B
	SHEET 1 OF 2			INSERTION PARTS LIST DATA BASE REV A	

DRB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY M. FUNARO DATE 26 APR 77	CHECKED G. GIDDINGS DATE 6 MAY 77	SECTION
ENG Kenneth J. Desjardins DATE 7/30/77	PROD Mike Tenilla DATE 10-5-77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION	REF DESIGNATION
21		1214819-00	SOCKET, LEAD	4	D1,D2,D3,D4 short lead
22		9000001-06	SPACER, #6 - 32 M/F x 1 3/8	5	

NOTES:

E.C.O. NO.

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
SYSTEM CONTROL PANEL	D-UA-5412932-0-0	B	PL	5412932-0-0	B
	SHEET 2 OF 2	INSERTION PARTS LIST DATA BASE REV			

DRB 125

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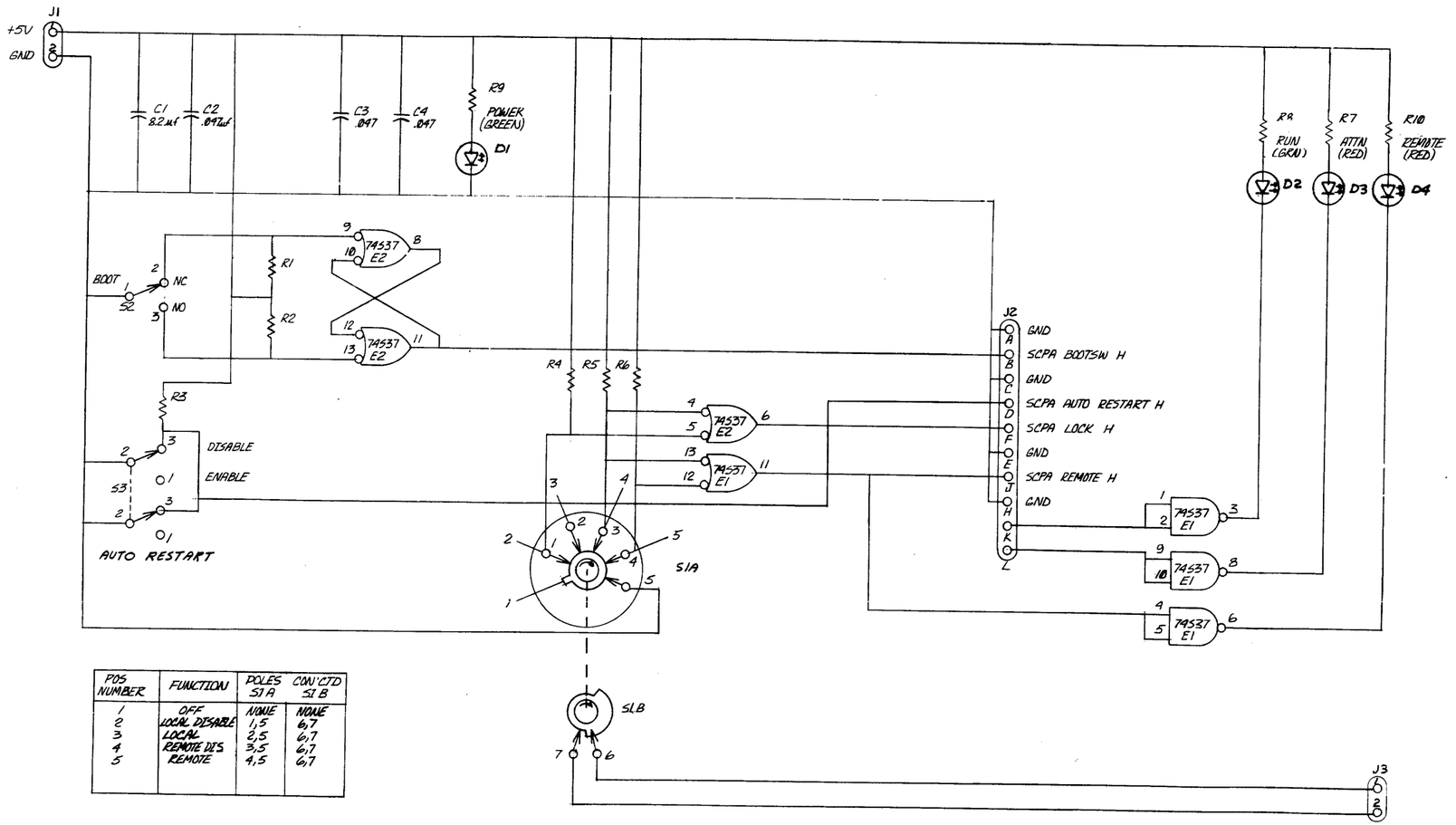

POS NUMBER	FUNCTION	POLES S1A	CON'CTD S1B
1	OFF	NONE	NONE
2	LOCAL DISABLE	1,5	6,7
3	LOCAL	2,5	6,7
4	REMOTE DIS	3,5	6,7
5	REMOTE	4,5	6,7

NOTES:
1. ALL RESISTORS ARE 1K 1/4W 5% CC. EXCEPT THOSE WITH LED INDICATORS WHICH ARE 150, 1/4W, 5%

REVISIONS	CHANGE NO.	CHK	REV.

DRN. E. Thelen	8-5-77	FIRST USED ON
CHK'D	8-5-77	digital
ENG.	8/11/77	TITLE SYSTEM CONTROL PANEL
PROJ/ENG.	8/11/77	
PROD.	8/9/77	
NEXT HIGHER ASSY.		
SCALE		SIZE D / CODE CS / NUMBER 5412932-0-1 / REV. A
SHEET 1 OF 1		DIST.

DEC FORM NO. 0410 1402-0

REV. A
SIZE D CODE CS NUMBER 5412932-0-1

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NOTES: 1. W4 IS A CUSTOMER OPTION NOT TO BE INSERTED

B1.1 RAM -5V

C3 .22μf, C5 .22μf, C13 .22μf, C24 .22μf, C31 .22μf

B12, B11 +5V

C40 6.8μf, C1 .01μf, C2 .01μf, C4 .01μf, C7 THRU C10 .01μf, C12 .22μf, C15 THRU C18 .01μf, C20 .22μf, C21 THRU C23 .01μf, C27 .22μf, C28 THRU C30 .01μf, C34 .01μf, C35 .01μf, C37 .22μf, C50 .22μf

A12, A11, A10, A9, A8, B12, B11, B10, B9, B8

A02, B02 +12V

C39 6.8μf, C48 6.8μf, C6 .22μf, C11 .22μf, C14 .22μf, C19 .22μf, C25 .22μf, C26 .22μf, C32 .22μf, C33 .47μf, C36 .22μf

4K RAM	16	9	8			
I.C. NH0026C	3		6			
I.C. DEC 75107	7	14		13		
I.C. DEC 7412S	8	16				
I.C. DEC 8641	2	16				
I.C. DEC 745257	8	16				
I.C. DEC 7475	12	5				
IC TYPE	GND	+5V	+12	-5	-9	-5 RAM
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE						
IC PIN LOCATIONS						

DEC FORM NO. DRD 139.0

SEE OFF SHEET PARTS LIST

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
		PARTS LIST		

FIRST USED ON OPTION MODEL: LSI 11

ETCH BOARD REV. C

REVISIONS			
REV.	CHANGE NO.	CHK	DATE
J	M7944-00007	D. Bennett	2 NOV 77

D. BENNETT 30 NOV 77

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. [illegible] DATE 3 NOV 77
CHK'D. [illegible] DATE 12-15-77
ENG. [illegible] DATE 30 NOV 77
PROJ. ENG. Dick Bennett DATE 30 NOV 77
PROD. [illegible] DATE 30 NOV 77

NEXT HIGHER ASSY: MSV11-B

SCALE: NONE

SHEET 1 OF 4

digital

TITLE: 4K RAM

SIZE	CODE	NUMBER	REV.
D	CS	M7944-0-1	J

DIST.

DN

REV. J | NUMBER M7944-0-1 | SIZE D | CODE CS

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SIZE D | CODE DCS | NUMBER M7944-0-1 | REV J

SEE NOTE 1

+5V R3 1K W4 S REF L

RPLY H → 74S00 E15 → 8641 E7 → AH2 BDIN L, DIN H, AE2 BDOUT L, DOUT H, AJ2 BSYNC L, SYNC H, AF2 BRPLY L

SYNC L → 7400 E16 → SYNC L

+5V R13 1K W1 DAL 15 H → 8242 E28 → BS H

+5V R14 1K W2 DAL 14 H → 8242 E28

+5V R18 1K W3 DAL 13 H → 8242 E28

+5V R19 1K

7475 E17: REF H → D0; R0(1) → S REF H; R0(0) → S REF L; D1; R1(1); R1(0); BS H → D2; R2(1) → LBS H; R2(0) → LBS L; DAL 0 H → D3; R3(1) → SA0 H; R3(0) → SA0 L; ENB1 ENB0 ← SYNC L

7400 E16: WTBT H, DOUT H → W0 L

7400 E16: LBS H → 74S10 E8 → W0 L

7400 E16: DOUT H → 74S10 E8 → W1 L

8641 E2: AK2 BWTBT L, WTBT H, AR1 BREF L, REF H, BA1 BDCOK H, DCOK L

+3V → 8641 E2 → AF1 RAS L

R21 47

LBS L, S REF L → 7400 E16; SYNC H, BS OR REF H → 74S140 E9

74S05 E21 → R4 909, R5 6.8K → 75107 E3 → -5V

+5V AK1 → AL1 → R6 133, C50 .22µf, R7 38.3

+3V → 75107 E3 → AMX L

C42 220pf, R8 133

C3 .22µf → -5V

+5V R1 3.3K, +3V R2 5.6K

PCAS H, BS OR REF H → 74S140 E9 → AE1 CAS L

R22 47

74S05 E21 → R9 1.2K, R20 → C91 220pf

DIN H, PCAS H, DOUT H → 74LS132 E15 → DRIVE L, RPLY H

30 NS, 2 µs

+5V R11 20K, C43 220pf, +3V → 74123 E1 → FLOP (1) L

8641 E2 → +3V

+5V R12 20K, C44 100pf, FLOP(1)L → 74123 E1 → FLIP (1) L

74S05 E21 → +5V R16 470 → MH-000026C E33 → C45 .47µf, D2 D664, D3 D664, D1 D664, C46 .47µf, R17 330 -5V, D4 IN751A, R10 680 BK1 → BL1 -5 RAM, D5 IN757A, C47 .47µf

+5V R15 470 → MH-000026C E33

AR2 BOMG1L → AS2 BOMG0L

AM2 BIAK1L → AN2 BIAK0L

(TIMING GENERATOR & CHARGE PUMP)

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 138

TITLE: 4K RAM
SIZE D | CODE CS | NUMBER M7944-0-1 | REV J
SCALE — | SHEET 2 OF 4 | DIST.

PN 1

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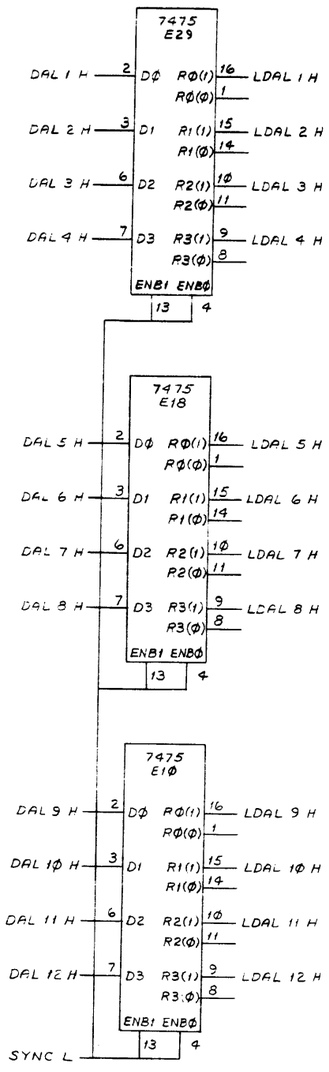

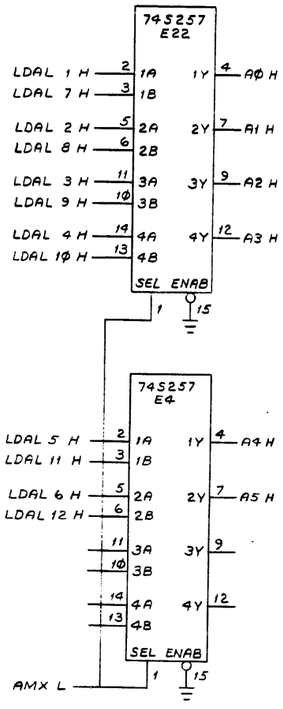

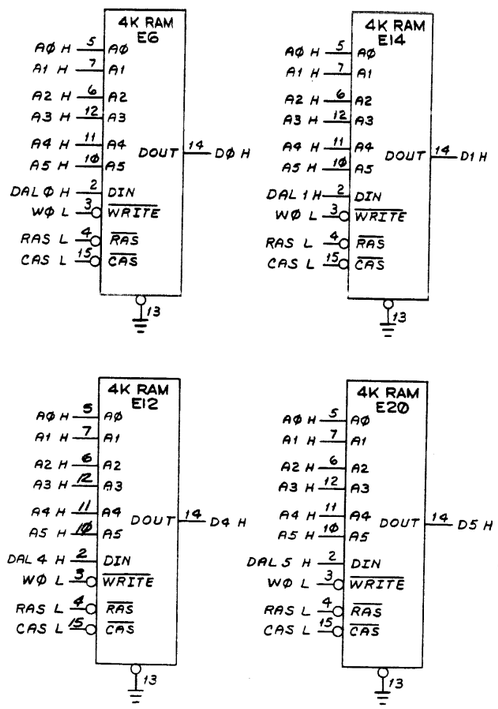

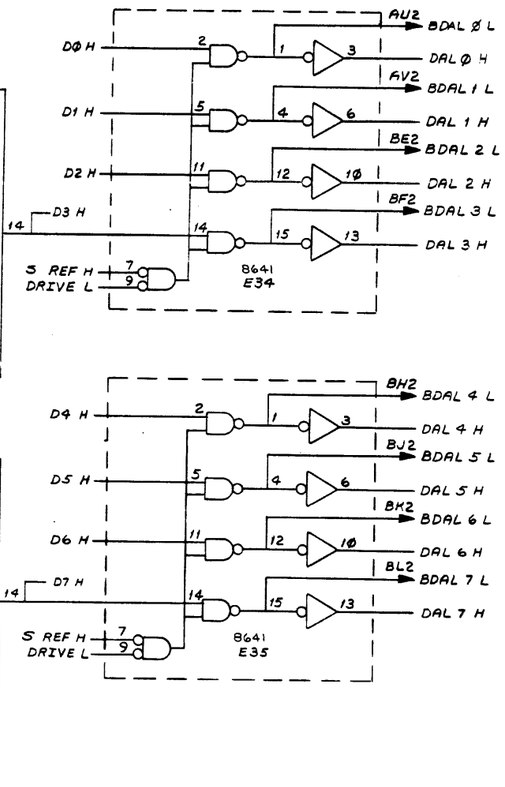

JUMPERED ADDRESS SELECTION				
W1	W2	W3	4K RANGE	ADDRESS RANGE
IN	IN	IN	Ø-4K	000000 - 017776
IN	IN	OUT	4-8K	020000 - 037776
IN	OUT	IN	8-12K	040000 - 057776
IN	OUT	OUT	12-16K	060000 - 077776
OUT	IN	IN	16-20K	100000 - 117776
OUT	IN	OUT	2Ø-24K	120000 - 137776
OUT	OUT	IN	24-28K	140000 - 157776
OUT	OUT	OUT	28-32K	160000 - 177776

(RAM & DRIVER)

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 138

TITLE	SIZE	CODE	NUMBER	REV.
4K RAM	D	CS	M7944-Ø-1	J
SCALE —	SHEET 3 OF 4	DIST.		

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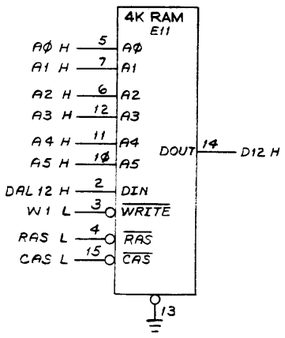

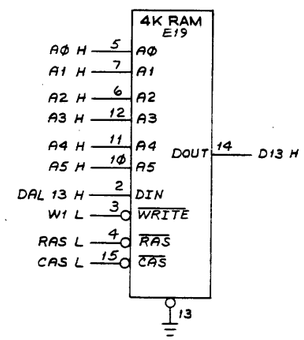

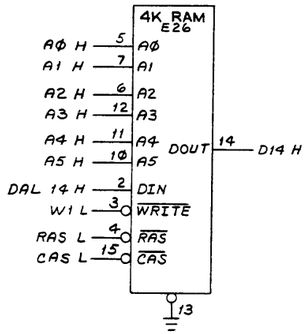

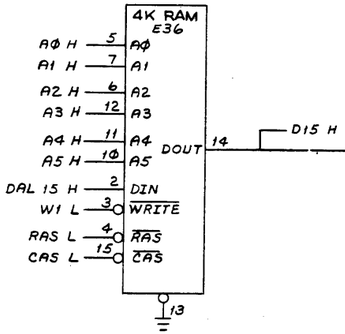

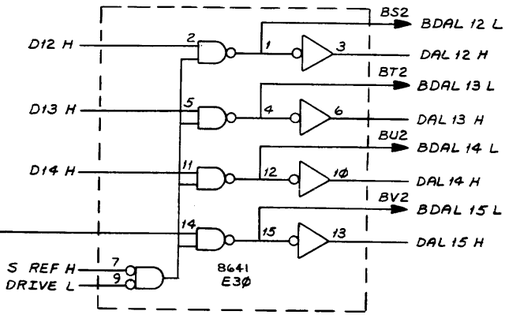

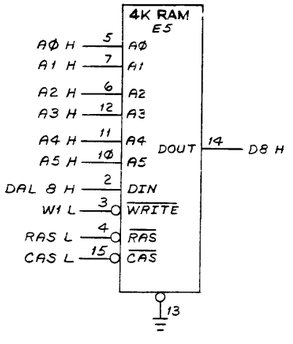

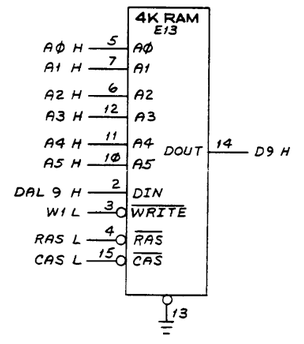

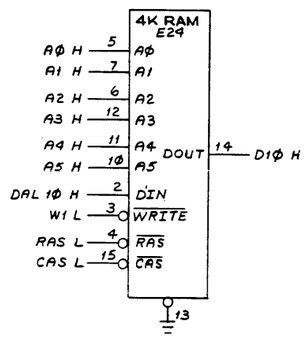

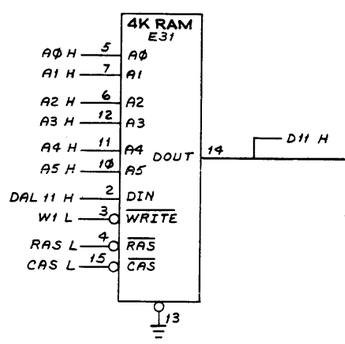

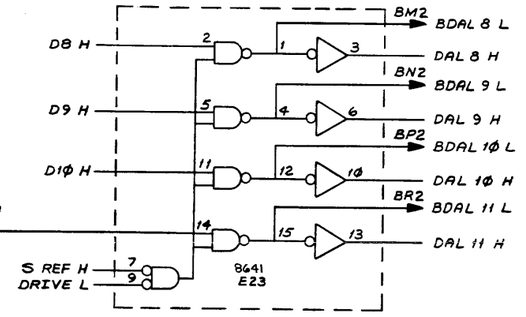

(RAM & DRIVER)

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
4K RAM	D	CS	M7944-Ø-1	J

SCALE -- SHEET 4 OF 4 DIST.

DEC FORM NO. DRD 138

PN

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NOTES:

1. BD INIT L AND INIT H ARE SIGNALS GENERATED BY THIS MODULE THAT ARE USED ON THIS MODULE.
2. A STANDARD ROM STARTING LOCATION FOR THE FOLLOWING BOOTSTRAPS HAS BEEN ESTABLISHED. ALL FUTURE REV 11-X'S THAT INCLUOR ANY OF THESE BOOTSTRAPS SHOULD USE THE SAME STARTING LOCATIONS. IF A NEW BOOTSTRAP IS ESTABLISHED, PLEASE ECO THIS NOTE TO INCLUDE THE DEVICE AND STARTING LOCATION.

* PERTAINS TO REV11-AC AND J ONLY.
** PERTAINS TO REV 11-HK AND L ONLY.
*** PERTAINS TO REV 11-N ONLY.

BOOTSTRAP	STARTING LOCATION
*. RX01	165242
*. ABSOLUTE LOADER	165406
*. RK05	165650
*. CPU DIAGNOSTIC (MEMORY ADDIFYING)	173302
*. CPU DIAGNOSTIC (NON-MEMORY MODIFYING)	173000
* MEMORY DIAGNOSTIC	173626
*. ODT	
**. REMOTE-11	173000
**. REMOTE-11 SECONDARY DOWNLINE LOAD	173006
**. RX01	173700
***. RX02	173000

3. ADJUST R16 SO THAT THE DMA REFRESH FREQUENCY MEASURED AT E15 PIN8 IS AS FOLLOWS:
   MAX. FREQUENCY SETTING; 33.6 KHZ (29.76 µs)
   NOM. FREQUENCY SETTING; 33.3 KHZ (30.03 µs)
   MIN. FREQUENCY SETTING; 33.0 KHZ (30.30 µs)
   THIS FREQUENCY IS PRE-SET AT THE FACTORY AND SHOULD NOT BE ALTERED.

4. FOR -YN VARIATION SUBSTITUTE THE FOLLOWING I. C.'S :
   E19, P/N 23871A9-00
   E22, P/N 23872A9-00
   E25, P/N 23873A9-00
   E29, P/N 23874A9-00

IC 5264	8	16
IC 8136	8	16
IC 74174	8	16
IC 8556	8	16
IC 8641	8	16
IC TYPE	GND	+5V

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

IC PIN LOCATIONS

REV.	CHANGE NO.	CHK	DRN.	CHK'D.	ENG.	PROJ. ENG.	PROD.	DATE
K	M9400-0000B&BA		D. Douglas					3/13/78
L	M9400-ABIOI		J. CURTIS		D. A. Bennett	D. A. Bennett		3-30-78
			F. L. Curtis		R. Bennett	R. Bennett		12-APR-78
			DICK BENNET		D. Douglas	R. Bennett		12-APR-78
			D. Douglas			Chatterjee		4-25-78

REVISIONS

FIRST USED ON OPTION MODEL

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV. D-P1

NEXT HIGHER ASSY

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

digital

TITLE LSI REF. BOOT CONN.

SIZE D | CODE CS | NUMBER M9400-0-1 | REV. L

SCALE 1/1 | SHEET 1 OF 5 | DIST.

DEC FORM NO. DDD 135-B

PN 1

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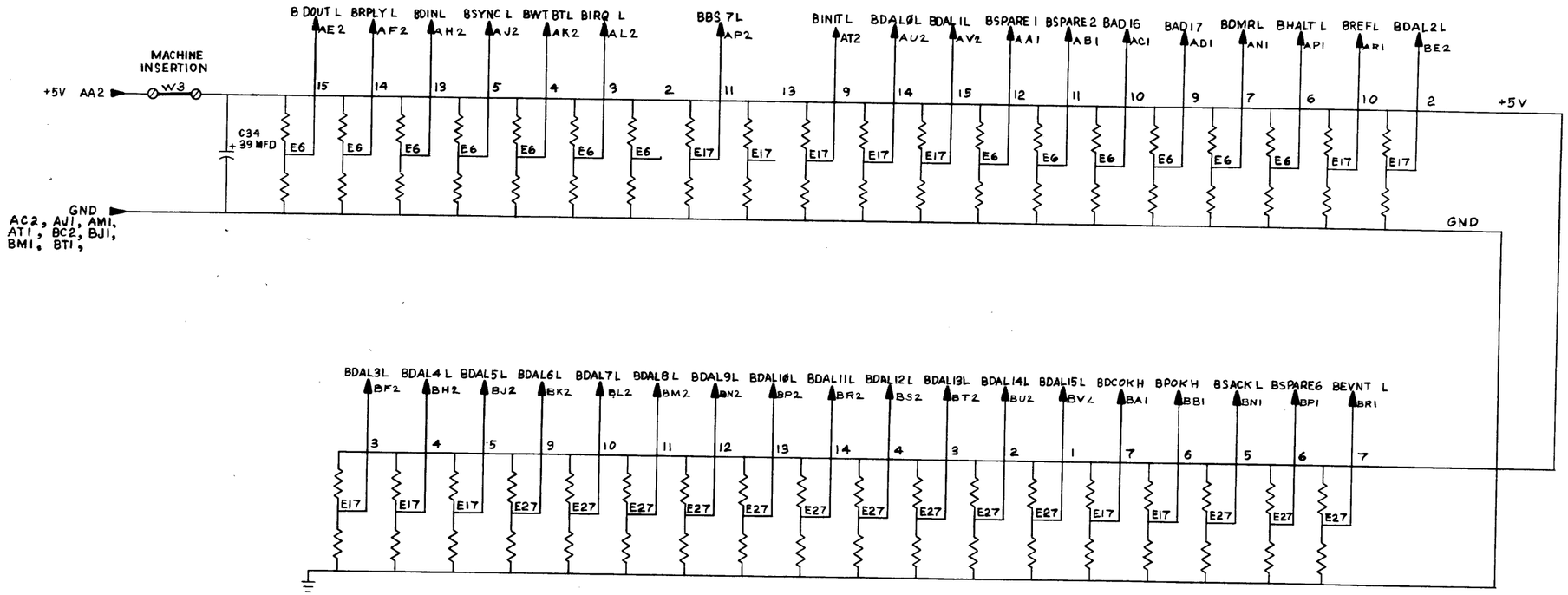

NOTE:
GROUND IS ON PIN 8
+5V IS ON PIN 16 OF EACH RESISTOR PACK.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D	CS	M9400-Ø-1	L
SCALE — SHEET 2 OF 5	DIST.			

DEC FORM NO. DRD 138

PN 1

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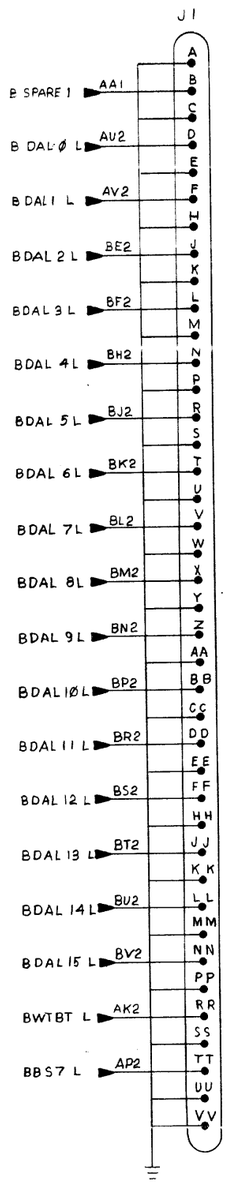

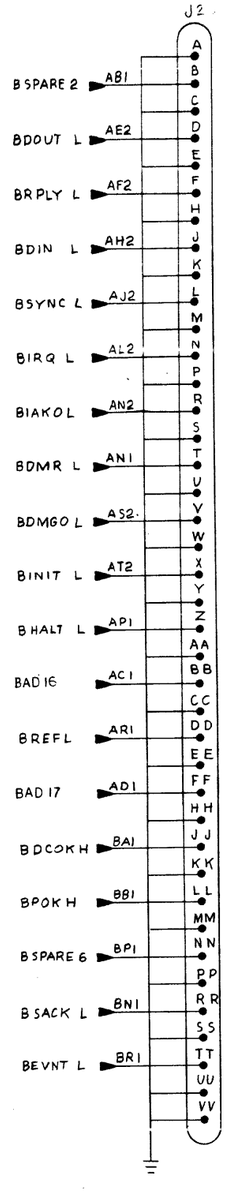

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOTCABLE CONN	D	CS	M9400-Ø-1	L
SCALE -/-/-	SHEET 3 OF 5	DIST.		

DEC FORM NO. DRD 138

AN 1

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MACHINE INSERTION
+5V
R10 1K
W2
GRAB BUS L
7427 E11
REQ H
+3V
7474 E9
8881 E1
10 AN1 BDMR L
R PENDING (1) H
BD INIT H
7402 E14
MINE (1) H
MASTER (1) H
7474 E3
DMGR H
MINE (Ø) H
R CLR L
BNI B SACK L
8641 E12
7404 E16
R9 75Ω
C31 680 PF
7408 E9
DMGR H
MINE (Ø) H
DMG DLYD H
8881 E1
1 AS2 BDMGO L
7400 E30
DMG DLYD H
7474 E26
MASTER (1) H
MASTER (Ø) H
R CLR L
R PENDING (1) H
DONE (Ø) H
7427 E11
MSPAREA MSPAREA
AK1 AL1
4024 E15
C32 22 PF
SCLK H
+5V
R16 50KΩ
R17 4.7K
R18 5.6K
C33 .01 uF
MSPAREB MSPAREB
BK1 BL1
GRAB BUS H
GRAB BUS L
B (Ø) H
DONE (Ø) H
MASTER SYNC (1) H
MASTER (1) H
AR1 BREF L
AJ2 BSYNC L
SYNC H
8641 E12
BD INIT H
A (Ø) H
7400 E4
RPLY (Ø) H
MASTER SYNC (1) H
B (Ø) H
7474 E10
A (1) H
A (Ø) H
SCLK H
MASTER (1) H
B (1) H
RPLY (1) H
B (1) H
A (1) H
SCLK H
BD INIT L
+3V
MASTER (1) H
MASTER SYNC (1) H
7474 E5
SCLK H
BD INIT L
+3V
RPLY H
RPLY (1) H
SCLK H
RPLY (Ø) H
PRE SYNC H
A (Ø) H
B (Ø) H
BD INIT L
7408 E9
MASTER SYNC (1) H
8881 E1
AJ2 B SYNC L
MASTER (1) H
7402 E14
MY ENABLE L
GRAB BUS H
GRAB BUS L
MY BANK H
DIN H
7408 E9
A (1) H
B (1) H
8641 E7
+5V
R8 330Ω
R7 680Ω
AR2 BDMG1 L
DMGR H
BA1 BDCOK (H)
BD INIT H
AF2 BRPLY L
RPLY H
AH2 BDIN L
DIN H
7404 E16
BD INIT L
+5V
R13 330Ω
R11 390Ω
+3V
R14 680Ω
R12 680Ω
MASTER (Ø) H
DM8556 E23
I/O D
I/O C
I/O B
I/O A
OD
CLK
LOAD
CE
RESET
REF 6 H
REF 5 H
BD INIT H
MAX COUNT
DM8556 E20
REF 4 H
REF 3 H
REF 2 H
REF 1 H
BD INIT H
MASTER (1) H
RPLY (1) H
7400 E30
+3V
RPLY (1) H
RPLY (Ø) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REV BOOT CABLE CONN	D	DCS	M9400-Ø-1	L
SCALE —	SHEET 4 OF 5	DIST.		

DEC FORM NO. DRD 138

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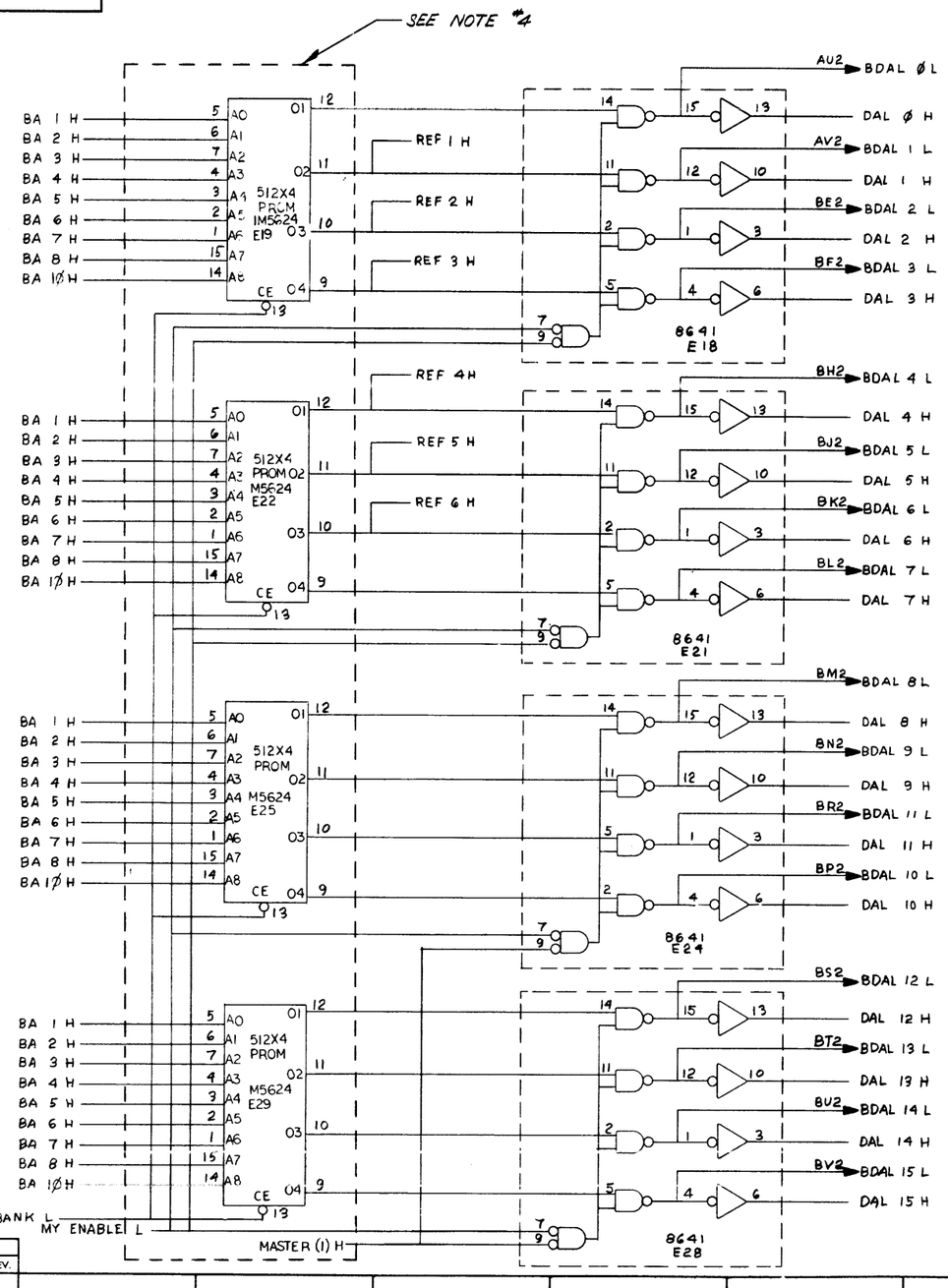

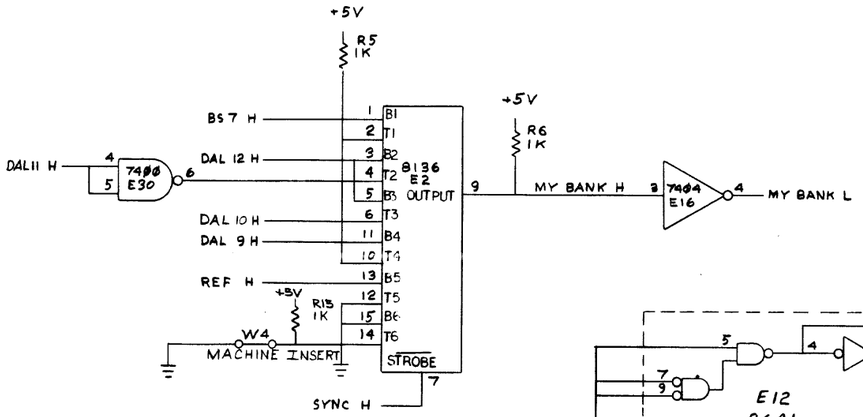

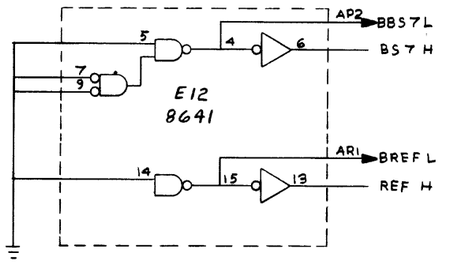

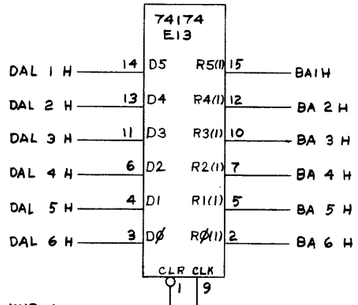

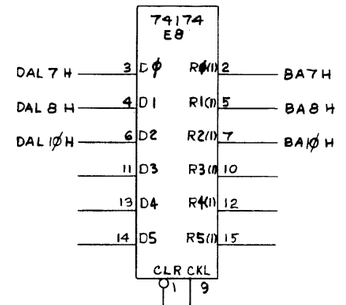

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D	CS	M9400-0-1	L
SCALE	SHEET 5 OF 5		DIST.	

DEC FORM NO. DRD 138

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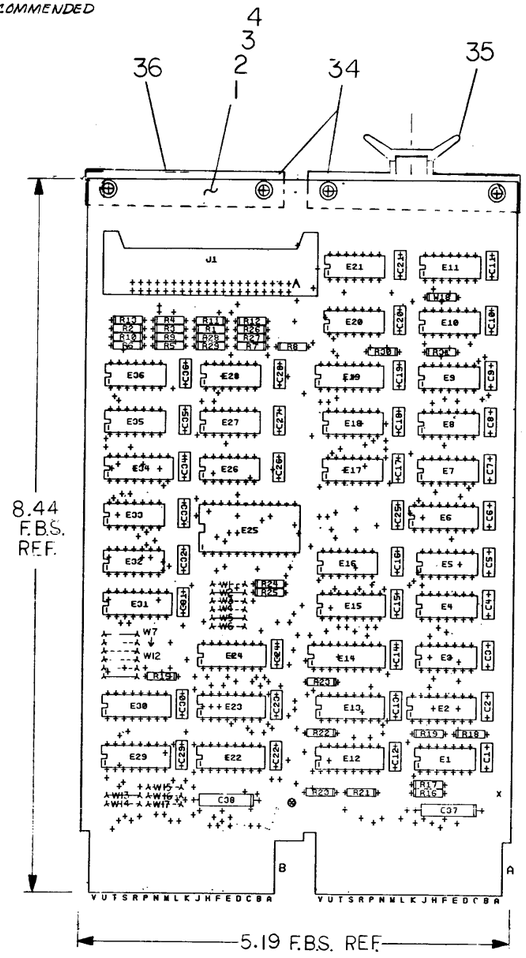
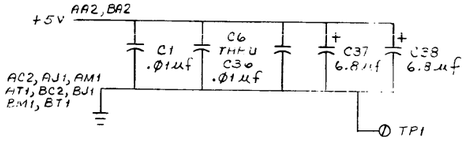
NOTES:

1.) JUMPER REMOVED EQUALS ASSERTION.
2.) REFERENCE DESIGNATIONS C2-C5 AND E2-E5 ARE NOT USED.
3.) JUMPERS ARE TO BE IMPLEMENTED USING 30 AWG WIRE-WRAP WIRE. SEE THE LOGIC HANDBOOK FOR RECOMMENDED TOOLS.





REF			
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7946-Ø-4
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7946-Ø-5
REF		MODULE ECO HISTORY	B-MH-M7946-Ø-6
1		ETCHED CIRCUIT BOARD	5011791
32	C1,C6 THRU C36	CAPACITOR, .01, 100V, 20%	1001610
2	C37,C38	CAPACITOR, 6.8, 35V, 10%	1005306
1	J1	CONNECTOR, BERG, 40 PIN	1209941-02
2	R16,R18	RESISTOR, 330 OHM, 1/4W, 5%	1300295
9	R2,R4,R6,R8,R10,R12,R27, R29,R31	RESISTOR, 390 OHM, 1/4W, 5%	1300309
9	R1,R3,R5,R7,R9,R11,R26,R28, R30	RESISTOR, 180 OHM, 1/4W, 5%	1301322
2	R17,R19	RESISTOR, 680 OHM, 1/4W, 5%	1301424
7	R15,R20,R21,R22,R23,R24, R25	RESISTOR, 1K OHM, 1/4W, 5%	1300365
1	E31	RESISTOR, DPR	1311003-02
1	R13	RESISTOR, 120 OHM, 1/4W, 5%	1300247
1	E9	I.C. DEC 7474	1905547
2	E10,E11	I.C. DEC 7400	1905575
2	E8,E26	I.C. DEC 7402	1909004
1	E21	I.C. DEC 74H11	1909267
1	E35	I.C. DEC 8281	1909490
2	E17,E28	I.C. DEC 7404	1909686
2	E18,E20	I.C. DEC 7450	1905580
1	E27	I.C. DEC 8881	1909705
3	E7,E16,E33	I C DEC 7409	1910155
1	E19	I.C DEC 74H106	1910408
1	E6	I.C. DEC 74175	1910651
3	E12,E15,E24	I.C DEC 74157	1910655
1	E25	I.C. DEC 74199	1910842
3	E1,E32,E36	I C DEC 8640	1911469
4	E13,E22,E23,E34	I.C. DEC 8641	1911579
2	E29,E30	I.C. DEC 8136	1912395
1	E14	I.C. DEC DC003	1912730
1	TP1	SPLIT LUG	9006735
1	W18	JUMPERS	9009185
4		EYELETS	9006732
1		HANDLE, FLIP-CHIP MAGENTA	9008337-6
1		SPACER MAGENTA	9009781
34		PINS, STAKING	90-09149
A/R	W2,W5,W7,W12,W13	WIRE-WRAP WIRE	91-05740-55

I.C. DEC DCØØ3	9	18
I.C. DEC 74139	12	24
I.C. DEC 74H106	13	5
I.C. DEC 74175	8	16
I.C. DEC 8640	1	8
I.C. DEC 8641	8	16
IC TYPE	GND	+5V

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

IC PIN LOCATIONS

DEC FORM NO. DRD 135.B

ALTERNATE PARTS LIST

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
32	C1,C6 THRU C36	CAP. .01uf	10016.0-01	5A

FIRST USED ON OPTION MODEL

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV. C

REV.	CHANGE NO.	CHK	REVISIONS
B	M7946-00001	M. LEWANDOWSKI	Per ECO M7946-00001
C	M7946-00002	M. LEWANDOWSKI	Per ECO M7946-00002
D	M7946-000003	D. SWICKER	Per ECO M7946-000003

DEC NO. | EIA NO. | DEC NO. | EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN.	J. Vincent	DATE 10-31-75
CHK'D.		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE
NEXT HIGHER ASSY		
SCALE		
SHEET	1 OF 3	

digital

TITLE
RXV11
LSI 11 INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M7946-Ø-1	D

DIST.

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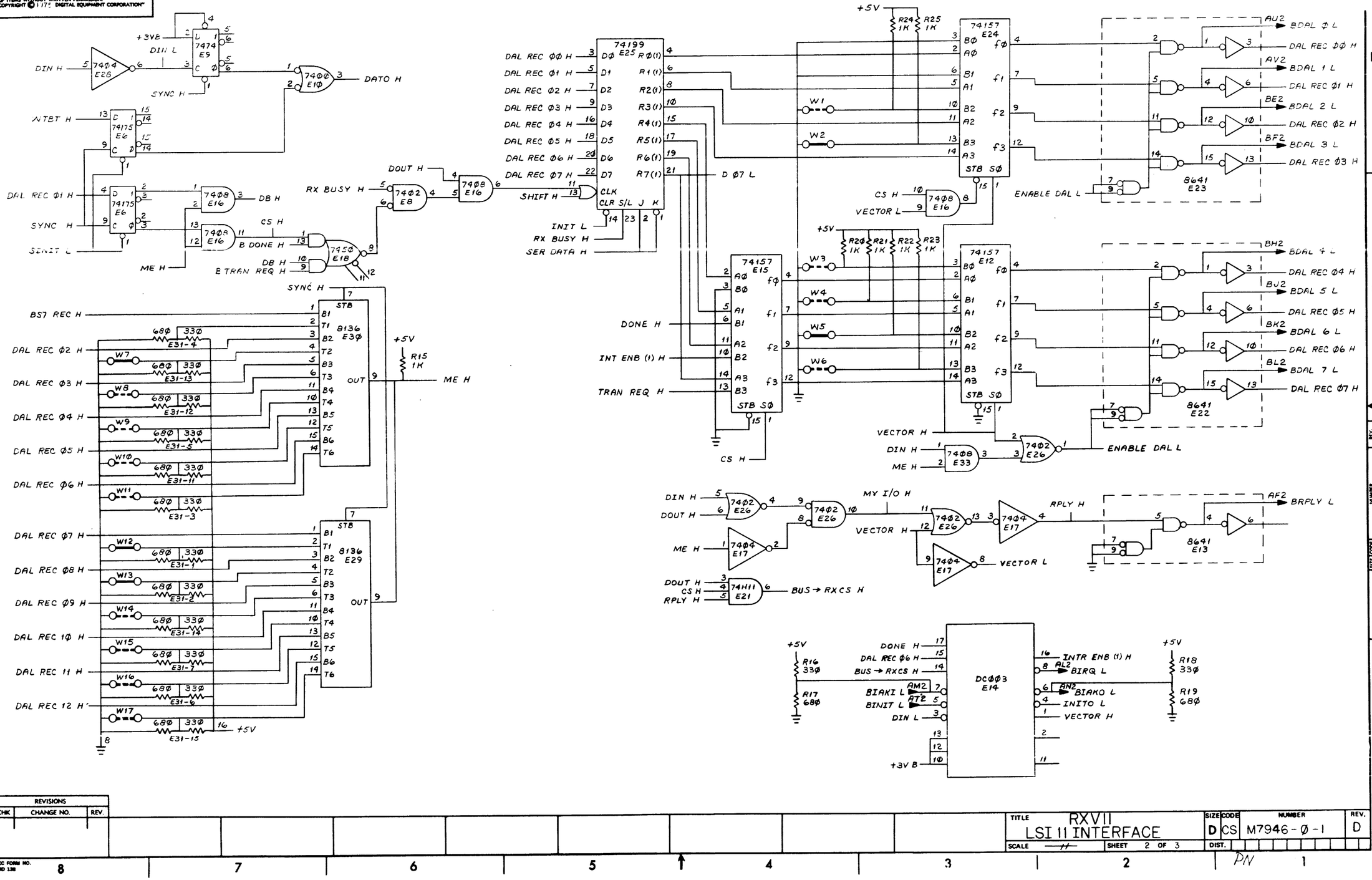

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
RXVII LSI 11 INTERFACE	D	DCS	M7946-Ø-1	D
SCALE — SHEET 2 OF 3	DIST.			

DEC FORM NO. DRD 138

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J1 BB — RX DATA L — R1 180Ω — R2 330Ω — 8640 E36 — SER DATA H

J1 LL — RX SHIFT L — R9 180Ω — R10 330Ω — SHIFT H — 7404 E28 — B SHIFT L

J1 T — RX TRANS REQ L — R11 180Ω — R12 330Ω — BTRAN REQ H — RUN (Ø) H — 7408 E7 — TRAN REQ H — 7402 E8 — RX BUSY H — 8641 E34

J1 X — RX DONE L — R3 180Ω — R4 330Ω — 8640 E36 — B DONE H — 7404 E28 — BDONE L — RUN (Ø) H — 7408 E33 — DONE H

J1 RR — RX OUT L — R5 180Ω — R6 330Ω — 8640 E36 — FROM RXØ1 H — 7404 E28 — TO RXØ1 H

J1 J — RX ERROR L — R7 180Ω — R8 330Ω — 8640 E36 — CS H — DIN H — 7408 E33 — 8881 E27 — BV2 — BDAL 15 L

BSYNC L — AJ2 — 8640 E1 — SYNC H

BDOUT L — AE2 — 8640 E1 — DOUT H

BDIN L — AH2 — 3640 E1 — DIN H

BWTBT L — AK2 — 8640 E1 — WTBT H

BV2 — 8641 E34 — BDAL 14 L

BUS → RXCS H — 7450 E18 — INIT L — 7404 E17 — INIT H — 8641 E34 — RX INIT L — J1 N

INITO L — 7400 E10 — SINIT L — W18 — 7404 E17

8281 E35 — D3 D2 D1 DØ — R3(1) R2(1) R1(1) RØ(1) — CLR LD CLKØ CLK1

INIT H — RUN (1) H — 7402 E8 — +3V A — BSHIFT L

D Ø7 L — 7450 E20 — 7404 E28 — TO RXØ1 H — 8881 E27 — RX DATA L — J1 BB

74H106 E19 — J 1 — C — PARITY X Ø — +3V A

B DAL 9 L — BN2 — 8640 E32 — DAL REC Ø9 H

B DAL 10 L — BP2 — 8640 E32 — DAL REC 10 H

B DAL 11 L — BR2 — 8640 E32 — DAL REC 11 H

B DAL 12 L — BS2 — 8640 E32 — DAL REC 12 H

DATO H — TO RXØ1 H — 7400 E11 — FROM RXØ1 H — 7400 E11 — 7400 E11

DATO H — DAL REC ØØ H — 7408 E7

BDONE L — BDONE H — 7400 E10 — 7400 E10

DB H — CS H — 7450 E20

MY I/O H — RUN (Ø) H — INIT H — RX BUSY H — 7408 E7 — 7402 E8 — D 7474 E9 C RUN Ø — RUN (1) H — 8881 E27 — RUN (Ø) H

+5V — R28 180Ω — R29 330Ω — +3V A

+5V — R30 180Ω — R31 330Ω — +3V B

AR2 — AS2

+5V — R26 180Ω — R27 330Ω — RX RUN L — J1 D

+5V — R13 120Ω — 8641 E34

8641 E34 — BDAL 14 L

8641 E13 — DAL REC Ø9 H — DAL REC 10 H

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 138

TITLE	SIZE	CODE	NUMBER	REV.
RXVII LSI 11 INTERFACE	D	CS	M7946-Ø-1	D
SCALE —	SHEET 3 OF 3	DIST.		

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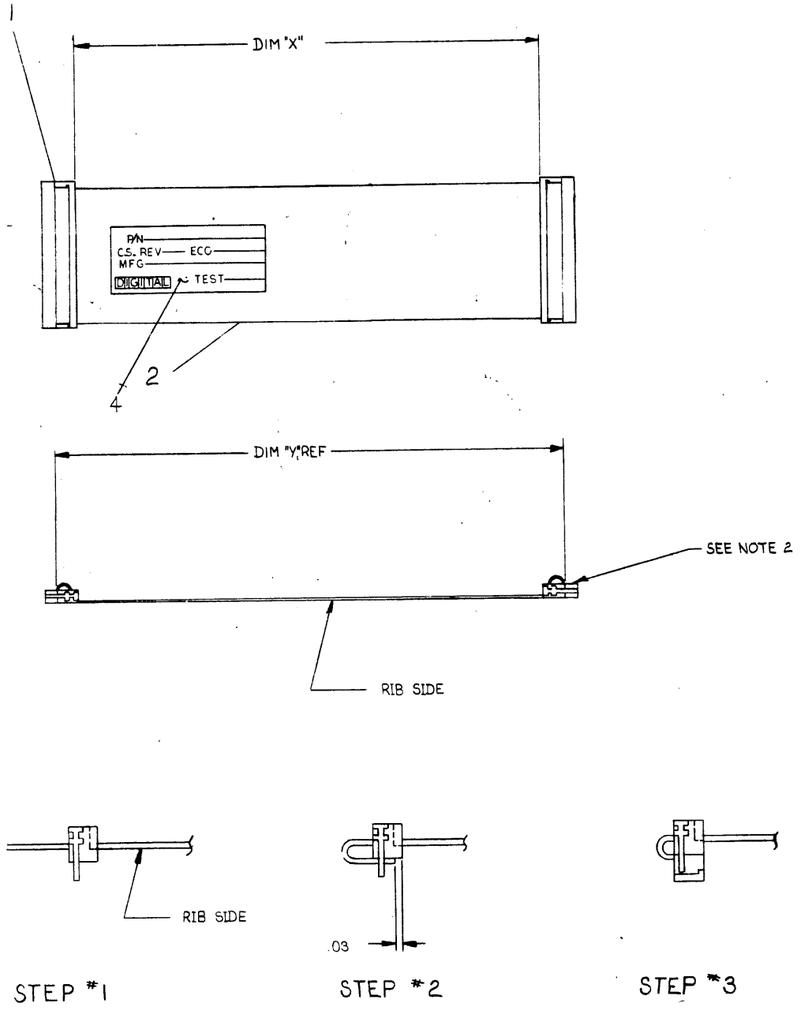
WIRE TABLE	
FROM	TO
P1-A	P2-VV
P1-B	P2-UU
P1-C	P2-TT
P1-D	P2-SS
P1-E	P2-RR
P1-F	P2-PP
P1-H	P2-NN
P1-J	P2-MM
P1-K	P2-LL
P1-L	P2-KK
P1-M	P2-JJ
P1-N	P2-HH
P1-P	P2-FF
P1-R	P2-EE
P1-S	P2-DD
P1-T	P2-CC
P1-U	P2-BB
P1-V	P2-AA
P1-W	P2-Z
P1-X	P2-Y
P1-Y	P2-X
P1-Z	P2-W
P1-AA	P2-V
P1-BB	P2-U
P1-CC	P2-T
P1-DD	P2-S
P1-EE	P2-R
P1-FF	P2-P
P1-HH	P2-N
P1-JJ	P2-M
P1-KK	P2-L
P1-LL	P2-K
P1-MM	P2-J
P1-NN	P2-H
P1-PP	P2-F
P1-RR	P2-E
P1-SS	P2-D
P1-TT	P2-C
P1-UU	P2-B
P1-VV	P2-A



LEGEND

NUMBER	DIM "X" VARIATION	DIM "Y" (PRECUT) REF
BCØ5L-ØC	3IN. ± Ø.8IN.	4.2 IN.
BCØ5L-1C	15 IN. ± Ø.5 IN.	16.2 IN.
BCØ5L-1J	20IN. ± 1.ØIN.	21.3 IN.
BCØ5L-2	2FT. ± Ø.5IN.	2.4 FT.
BCØ5L-3	3FT. ± Ø.5IN.	3FT, 1.2 IN.
BCØ5L-4	4FT. ± Ø.5IN.	4 FT., 1.2 IN.
BCØ5L-5	5FT. ± Ø.5IN.	5 FT., 1.2 IN.
BCØ5L-6	6FT. ± Ø.5IN.	6 FT., 1.2 IN.
BCØ5L-7	7FT. ± 1.ØIN.	7 FT., 1.2 IN.
BCØ5L-8	8FT. ± 1.ØIN.	8 FT., 1.2 IN.
BCØ5L-9	9FT. ± 1.ØIN.	9 FT., 1.2 IN.
BCØ5L-1Ø	1ØFT. ± 2.ØIN.	1Ø.5 FT.
BCØ5L-11	11FT. ± 2.ØIN.	11 FT., 1.2 IN.
BCØ5L-12	12FT. ± 2.ØIN.	12 FT., 1.2 IN.
BCØ5L-13	13FT. ± 2.ØIN.	13 FT., 1.2 IN.
BCØ5L-14	14FT. ± 2.ØIN.	14 FT., 1.2 IN.
BCØ5L-15	15FT. ± Ø.5IN.	15 FT., 1.2 IN.
BCØ5L-16	16FT. ± 1.ØIN.	16 FT., 1.2 IN.
BCØ5L-ØE	5 IN. ± Ø.5 IN.	6.2 IN.

NOTES

1. ASSY OF ITEM "1 (CONNECTOR) TO ITEM "2 (CABLE) IS AS FOLLOWS:
   A CABLE TO BE CUT SQUARE AT BOTH ENDS.
   STEP 1: INSERT CABLE THRU SLOT IN TOP HALF OF CONNECTOR. NOTE POSITION OF CABLE RELIEF SHOW AS DOTTED LINE. RIBS ON CABLE MUST BE LOCATED DOWN.
   STEP 2. BEND CABLE DOWN AND UNDER AND SECURE AGAINST ADHESIVE. NOTE DIMENSION SHOWN.
   STEP 3: POSITION LOWER HALF OF CONNECTOR ON LOCKING PINS AND PRESS TWO HALVES TOGETHER. PULL CABLE THRU SLOT, THEN BEND CABLE TO POSITION CONNECTOR AS SHOWN IN FINAL ASSY.
2. PHYSICAL APPEARANCE OF CONNECTOR MAY BE DIFFERENT, DEPENDING ON VENDER PART USED FOR DETAILED DESCRIPTION, REFER TO SPEC. *A-PS-12112Ø6-Ø-Ø, LATEST REVISION.

REVISIONS			
CHK	CHANGE NO	REV.	
PM	BC05L-000201	A	J. HESS 10-29-73
PM	REVISED & REDRAWN		J. HESS 10-29-73
PM	BC05L-00003	C	J. HESS 10-29-73
	DWG NO WAS DUA-BC05L-ØCC		J. HESS 10-29-73
PM	BCØ5L-00002	B	J. HESS 10-29-73
E. ALain	9-21-73		J. HESS
	MULTINANSKY 11/6/75		
PM	BC05L-00004	D	R. SAMPSON 4-7-75
PM	BC05L-00005	E	M. LEWANDOWSKI 1-29-76
PM	BC05L-00006	F	J. KALLAGHER 5-16-75
PM	BC05L-00007	H	H. DRAB 12 DEC 76
PM	BC05L-00008	J	H. DRAB 2 FEB 77
PM	BC05L-00009	K	H. DRAB 3 FEB 77
PM	BC05L-00010	L	D. BENNETT 15 SEPT 77
PM	BC05L-00011	M	D. BENNETT 15 SEPT 77
			D. ZWICKER 27 OCT 77
			D. RICHMOND 2 NOV 77

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3009155	LABEL, IDENTIFICATION	4
~~2~~	~~3011567~~	~~LABEL - THIS SIDE UP~~	~~3~~
2	1211206	CONN. 40 PIN	2
A/R	9107747-01	CABLE, FLAT, 40 COND.	1

PARTS LIST

FIRST USED ON OPTION/MODEL	
TU6Ø	

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN.	DATE	11-16-72
CHK'D	DATE	11-21-72
ENG.	DATE	11-24-72
PROJ. ENG.	DATE	11-24-72
PROD. Bob DeSorgo	DATE	11-27-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: CABLE, JUMPER

NEXT HIGHER ASSY.: D-UA-TU6Ø-Ø-Ø

SCALE: 1/1

SHEET 1 OF 1

SIZE	CODE	NUMBER	REV.
D	UA	BCØ5L-Ø-Ø	M

DIST.

BRKNRNG 40.107 15968

DEC FORM NO DRD 100-A

SIZE D CODE UA NUMBER BCØ5L-Ø-Ø REV M

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

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CUSTOMER PRINT SET INDEX

SEQUENCE		SEQUENCE	
RXØ1 FLOPPY DISK DRIVE	B-DD-RXØ1-Ø		
FLOPPY DISK CONTROL BOARD	D-CS-M7726-Ø-1		
RXØ1 FIRMWARE LISTING	K-SP-RXØ1-Q-2		
READ/WRITE CONTROL BOARD	D-CS-M7727-Ø-1		
H771 POWER SUPPLY	B-DD-H771-Ø		
PLENUM/FAN ASSY. (OLD STYLE)	B-DD-7Ø135Ø3-Ø		
PLENUM/FAN ASSY. (NEW STYLE)	B-DD-7015622-Ø		

THIS IS PRINT SET ☐☐☐☐

UNIT VARIATIONS

VAR	TITLE	PRINT SET 1
RXØ1-AA	SINGLE FLOPPY DISK, 115V,6Ø HZ	X
RXØ1-AC	SINGLE FLOPPY DISK, LOW V, 5ØHZ	X
RXØ1-AD	SINGLE FLOPPY DISK, HIGH V, 5ØHZ	X
RXØ1-BA	DUAL FLOPPY DISK, 115V, 6Ø HZ	X
RXØ1-BC	DUAL FLOPPY DISK, LOW V, 5ØHZ	X
RXØ1-BD	DUAL FLOPPY DISK, HIGH V, 5ØHZ	X
RXØ1-CA	ONE REPLACE DRIVE, 6Ø HZ	X
RXØ1-CC	ONE REPLACE DRIVE, 5Ø HZ	X
RXØ1-DA	RXØ1-BA W/O BEZEL ASSY	X
RXØ1-DC	RXØ1-BC W/O BEZEL ASSY	X
RXØ1-DD	RXØ1-BD W/O BEZEL ASSY	X
RXØ1-FA	RXØ1-AA W/O PLENUM ASSY	X
RXØ1-FC	RXØ1-AC W/O PLENUM ASSY	X
RXØ1-FD	RXØ1-AD W/O PLENUM ASSY	X
RXØ1-HA	RXØ1-BA W/O PLENUM ASSY	X
RXØ1-HC	RXØ1-BC W/O PLENUM ASSY	X
RXØ1-HD	RXØ1-BD W/O PLENUM ASSY	X
RXØ1-JA	RXØ1-DA W/O PLENUM ASSY	X
RXØ1-JC	RXØ1-DC W/O PLENUM ASSY	X
RXØ1-JD	RXØ1-DD W/O PLENUM ASSY	X
RXO1-LA	RXO1-BA FOR VX78(BC8OD)	X
RXO1-LC	RXO1-BC FOR VX78(BC80D)	X
RXO1-LD	RXO1-BD FOR VX78(BC80D)	X
RX01-VA	RX01 SINGLE FOR KC780 115, 60HZ	X
RX01-VC	RX01 SINGLE FOR KC780 LOW V,50HZ	X
RX01-VD	RX01 SINGLE FOR KC780 HIGH V,50HZ	X

REVISIONS		
DATE	CHG. NO.	REV
6-76	RXØ1-2	A
7-76	RXØ1-3	B
12-76	RXØ1-6	C
5-77	RXØ1-8	D
12-77	RXØ1-12	E
6-78	RXØ1-13	F
7-78	RXØ1-ML13	H

USED ON OPTION/MODEL	
RX8	
RX11	
LSI11	

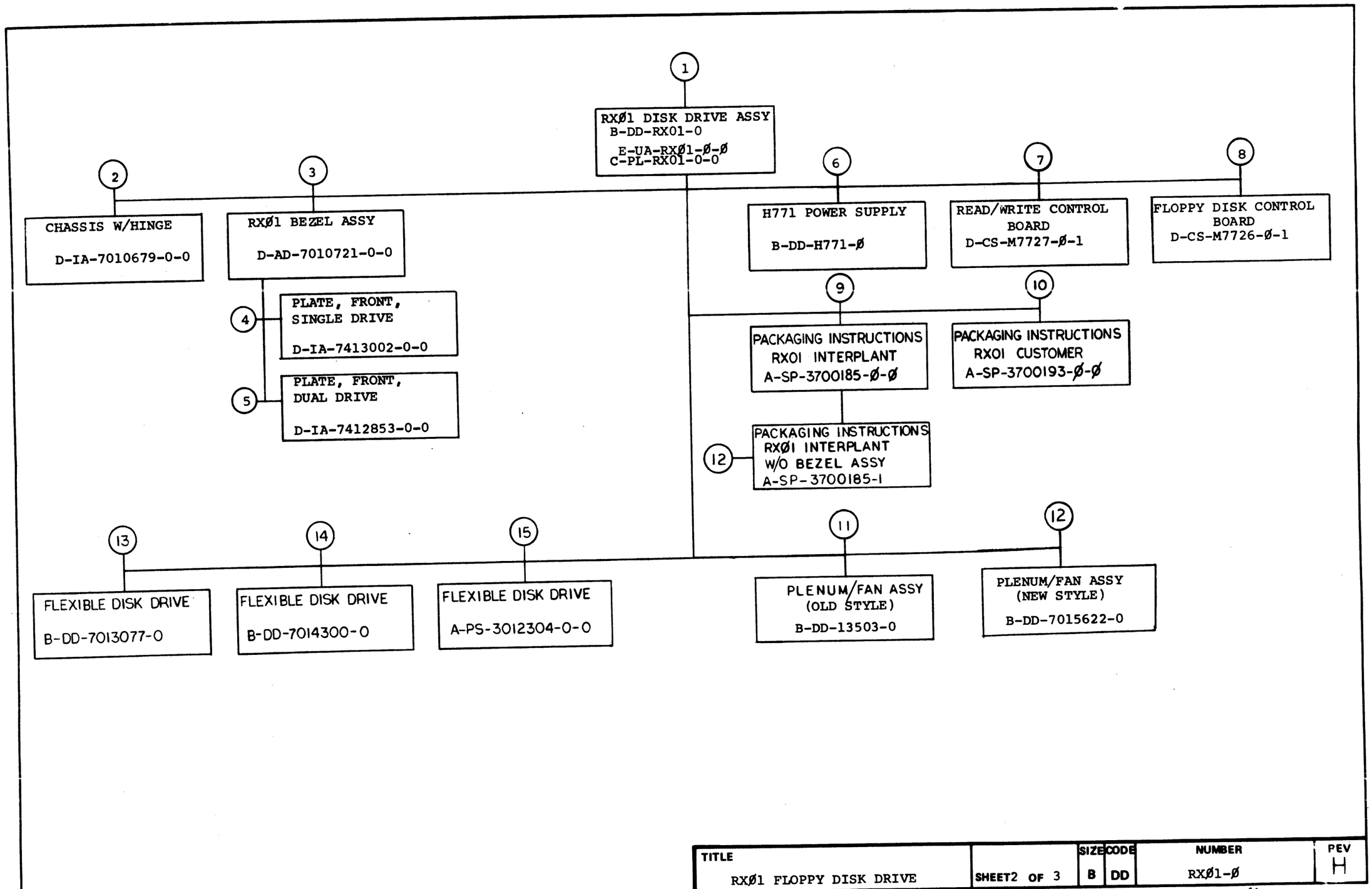
SHEET 1 OF 3

DRN. W. McCarthy	DATE 2/3/75	TITLE: RXØ1 FLOPPY DISK DRIVE
CHK'D. McCarthy	DATE 5/29/75	
PROJ ENG.	DATE	
PROD.	DATE 6/13/75	SIZE B · CODE DD · NUMBER RXØ1-Ø · REV H
FIELD SERV.	DATE 6/13/75	DIST.

DEC 19-12351-1962-1-RN-6172

DRB 106

MC.



TITLE		SIZE	CODE	NUMBER	REV
RXØ1 FLOPPY DISK DRIVE	SHEET 2 OF 3	B	DD	RXØ1-Ø	H

MC

MECHANICAL

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
		1	E-UA-RXØ1-Ø-Ø		5	RXØ1 FLOPPY DISK DRIVE ASSY	
			B-PL-RXØ1-Ø-Ø			RXØ1 FLOPPY DISK DRIVE ASSY(PL)	
			E-IA-7412666-0-0		1	COVER, TOP	
			D-IA-7010646-0-0		1	CABLE, EXTENSION, RXØ1	
			C-IA-7008612-0-0		1	CABLE, KEYBOARD	
			D-UA-BCØ5L-Ø-Ø		1	CABLE, JUMPER	
			D-IA-7010696-0-0		1	HARNESS, VOLTAGE VARIATION	
					1	BRACKET, SHIPPING, RXØ1	
			C-MD-7409479-0-0		1	PLATE, PRESSURE	
			C-MD-5509081-0-0		1	PANEL, LIGHT (RXØ1)	
		2	D-IA-7010679-0-0		1	CHASSIS W/HINGE	
			E-IA-7412665-0-0		1	CHASSIS, FLEXIBLE DISK DRIVE	
			C-MD-7413236-0-0		1	HINGE, LOGIC	
		3	D-AD-7010721-0-0		1	RXØ1 BEZEL ASSY	
			E-MD-7414506-0-0		1	BEZEL, RXØ1	
			A-PS-3612317-0-0		1	LOGO, RXØ1	
		4	D-IA-7413002-0-0		1	PLATE, FRONT, SINGLE DRIVE	
			C-SS-7413002-0-1		1	SILK SCREEN, SINGLE DRIVE	
		5	D-IA-7412853-0-0		1	PLATE, FRONT, DUAL DRIVESS	
			C-SS-7412853-0-1		1	SILK SCREEN, DUAL DRIVE	
C		6	B-DD-H771-Ø	*	3	H771 POWER SUPPLY	
			C-MD-7413350-0-0				
X		11	B-DD-7013503-0-0		3	PLENUM/FAN ASSY (OLD STYLE)	
		13	B-DD-7013077-0		3	FLEXIBLE DISK DRIVE	
		14	B DD 7014300-0		3	FLEXIBLE DISK DRIVE	
		15	A-PS-3012304-0-0		14	FLEXIBLE DISK DRIVE	
		16	B-DD-7015622-0-0		2	PLENUM/FAN ASSY NEW STYLE	

ELECTRICAL

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	B-DD-RXØ1-Ø	#	3	RXØ1 FLOPPY DISK DRIVE	
		1	C-MD-7413350-0-0		1	SHIPPING BRACKET	
			A-SP-RXØ1-Ø-1		34	RXØ1 ENGINEERING SPECIFICATION	
C			K-SP-RXØ1-Ø-2			RXØ1 FIRMWARE LISTING	
		12	A SP-3700185-1			PACK INSTR W/O BEZEL	
			A-PS-9905183			LAMINATED BUILDUP	
			A-PS-9905710-0-0			REGULAR SLOTTED CARTON	
			A-PS-9905712-0-0			PLYWOOD SUPPORT FIXTURE	
			A-PS-9905713-0-0			SCORED SHEET	
			A-PS 9905729-0-0			CARTON SEALING TAPE	
X		7	D-CS-M7727-Ø-1	*	6	READ/WRITE CONTROL BOARD	
			D-IA-5011370-0-0		1	ETCHED CIRCUIT BOARD (M7727)	
X		8	D-CS-M7726-Ø-1	#	9	FLOPPY DISK CONTROL BOARD	
			A-SP-M7726-Ø-7		3	ACCEPTANCE TEST PROCEDURE	
		9	A-SP-3700185-0-0			PACKAGING INST. INTERPLANT	
			A-PS-9905710-0-0			REGULAR SLOTTED CARTON	
			A-PS-9905711-0-0			ONE PIECE FOLDER	
			A-PS-9905712-0-0			PLYWOOD SUPPORT FIXTURE	
			A-PS-9905713-0-0			SCORED SHEET	
			A-PS-9905729-0-0			CARTON SEALING TAPE	
		10	A-SP-3700193-0-0			PACKAGING INST. CUSTOMER	
			A-PS-9905741-0-0			FULL TELESCOPE CAP	
			A-PS-9905740-0-0			FOAM PAD	
			A-PS-9905739-0-0			LAMINATED BUILDUP	
			A-PS-9905734-0-0			PLASTIC STRAPPING	

CUSTOMER PRINT SET CODES

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

TITLE	SHEET	SIZE	CODE	NUMBER	REV
RXØ1 FLOPPY DISK DRIVE	3 OF 3	B	DD	RXØ1-Ø	H

DRB 108

DEC 16-(325)-1062-2D-R872

MC

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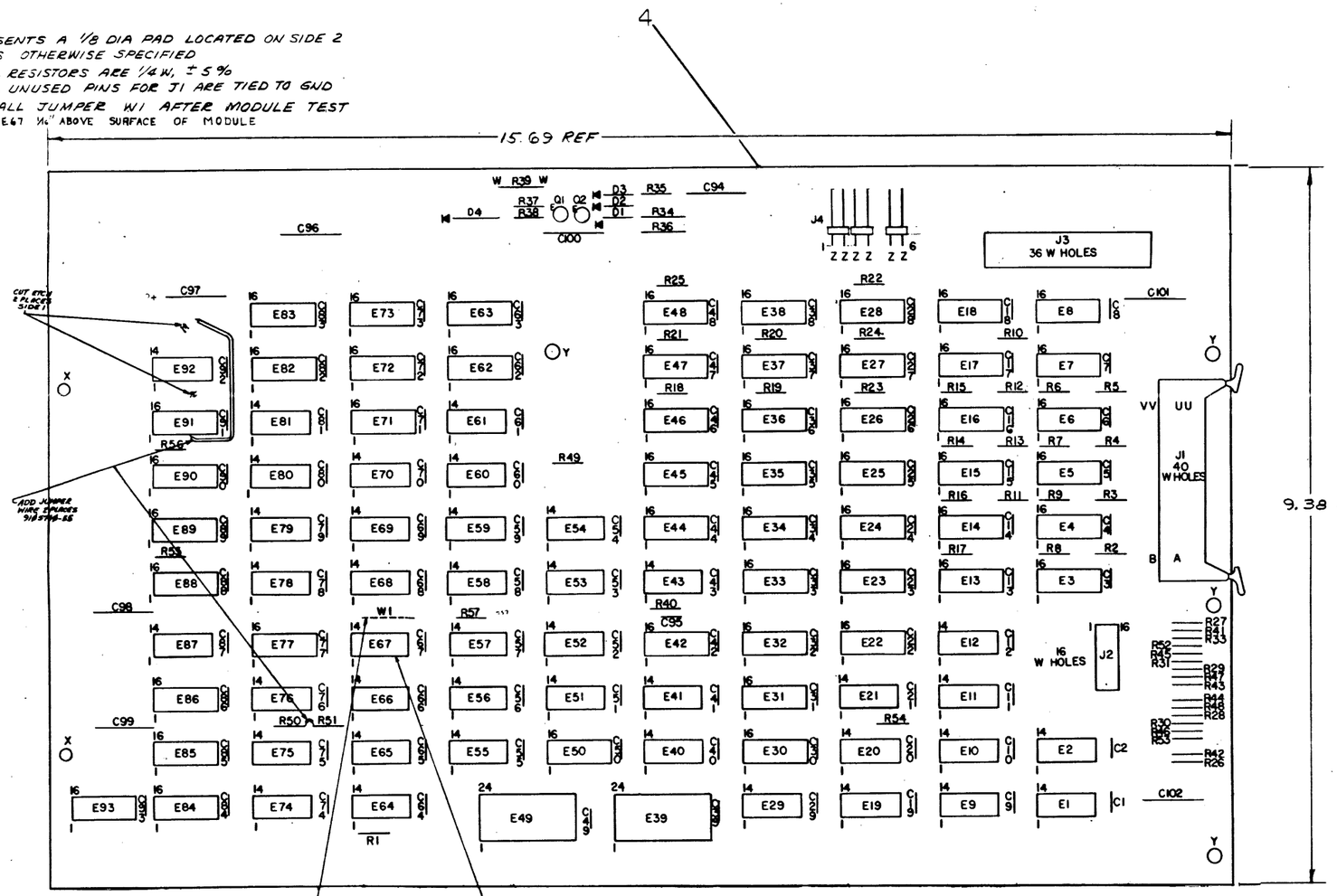
NOTES:

1. ◉ REPRESENTS A 1/8 DIA PAD LOCATED ON SIDE 2
2. UNLESS OTHERWISE SPECIFIED
   A. ALL RESISTORS ARE 1/4 W, ± 5 %
   B. ALL UNUSED PINS FOR J1 ARE TIED TO GND
3. INSTALL JUMPER W1 AFTER MODULE TEST
4. MOUNT E67 1/4" ABOVE SURFACE OF MODULE



23-XXXA2	8	16
2102	9	10
8640	1	8
74175	8	16
74174	8	16
74161	8	16
74194	8	16
74123	8	16
74H103	11	4
74H106	13	5
7489	8	16
74150	12	24
7442	8	16
8266	8	16
74193	8	16
74154	12	24
IC TYPE	GND	+5V

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

IC PIN LOCATIONS

REV.	CHANGE NO.	CHK	REVISIONS
J	M7726-00007		H. DRAB 11-COT-74
H	M7726-00006		H. DRAB 29 MAR 77
F	M7726-00005		C. YOUSE 4/9/75
E	M7726-00004		CHARLES YOUSE 12-15-75
D	M7726-00003		C. YOUSE 3-10-75
B	M7726-00001		P. KOTSCHENTHER 4-15-75
C	M7726-00002		P. KOTSCHENTHER 5-5-75

FIRST USED ON OPTION MODEL	QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
M7726					

PARTS LIST

ETCH BOARD REV. B

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DSN.	Hank Metzger	DATE 11/12/74
LOG.		DATE 1/9/75
ENG.		DATE 11/21/75
PROJ. ENG.		DATE 11/24/75
PROD.		DATE 1/7/76

NEXT HIGHER ASSY

SCALE

SHEET 1 OF 9

digital

TITLE FLOPPY DISK CONTROLLER

SIZE	CODE	NUMBER	REV.
D	CS	M7726-Ø-1	J

DIST.

SIZE D CODE CS NUMBER M7726-Ø-1 REV J

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PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7726-Ø-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7726-Ø-5	2
REF		MODULE ECO HISTORY	B-MH-M7726-Ø-6	3
1		ETCHED CIRCUIT BOARD	5011390	4
1	J3	RECEP 36 PIN (REWORK)	B-MD-5509 071-1	5
1	J2,	I.C SOCKET, 16 PIN GOLD, LOW PROFILE	12118/3-02	6
1	R37	RES 10K ¼W 5% CC	1300479-00	7
8	C 94, C96 – C1Ø2	CAP 6.8 µF 35V 10% S.TANT	1005306-00	8
93	C1 - C93	CAP .Ø1 µF 50V AXIAL CER	1001610-00	9
1	C95	CAP 12 PF 100V 5%	1002087-00	10
3	D1 - D3	DIODE IN4ØØ4	1105796-00	11
1	D4	DIODE IN746A 3.3V 5%	1104860-00	12
1	R 39	RES 1ØØ ½W 5% CC	1300228-00	13
3	J4	HEADER, 2PIN (MALE)	12/2804-00	14
8	R2, R4, R6, R8, R1Ø R12, R14, R16	RES 47Ø ¼W 5% CC	1300316-00	15
8	R27, R29, R31, R47, R52 R43, R41, R45	RES 390 ¼W 5% CC	1300309-00	16
5	R1, R49 - R51, R57	RES 3K ¼W 5% CC	1300432-00	17
9	R26, R28, R3Ø, R38 R42, R44, R46, R48, R53	RES 18Ø ¼W 5% CC	1301322-00	18
8	R3, R5, R7, R9, R11 R13, R15, R17	RES 82Ø ¼W 5% CC	1301775-00	19
1	R35	RES 3ØØ ¼W 5% CC	1301425-00	20
8	R18 – R25	RES 2K ¼W 5% CC	1302388-00	21
1	R34	RES 261 ¼W 1% MF	1302873-00	22
1	R36	RES 287 ¼W 1% MF	1305124-00	23
1	R4Ø	RES 8.2K ¼W 5% CC	1303179-00	24
3	R54 – R56	RES 1K ¼W 5% CC	1300365-00	25
1	Q2	TRANS MXAA05	1510705-00	26
1	Q1	TRANS MXAA55	1510706-00	27
5	E19, E2Ø, E21, E29 E4Ø	I.C 7474	1905547-00	28
3	E9, E57, E59	I.C. 74ØØ	1905575-00	29
2	E93, E6Ø	I.C. 741Ø	1905576-00	30
1	E75	I.C. 745Ø	1905580-00	31
1	E55	I.C. 74H2Ø	1905635-00	32
1	E54	I.C 74Ø2	1909004-00	33
2	E68, E72	I.C. 74HØØ	1909056-00	34
2	E56, E7Ø	I.C. 74H11	1909267-00	35
5	E58, E69, E78, E79, E82	I.C 74H74	1909667-00	36
2	E64, E76	I.C. 7404	1909686-00	37
1	E39	IC 74154	1909701-00	38
2	E1, E2	I.C. 8881	1909705-00	39
1	E61	I.C. 74H64	1909931-00	40
2	E74, E92	I.C. 7486	1910011-00	41
4	E88, E89, E9Ø, E91	I.C 74193	1910018-00	42
2	E27, E37	I.C 8266	1909934-00	43
1	E22	I.C 7402	1910046-00	44
1	E65	I.C 7437	1910091-00	45
1	E49	I.C 745Ø	1910153-00	46
2	E11, E12	I.C 7408	1910155-00	47
2	E97, E98	I.C. 7489	1910396-00	48
1	E5Ø	I.C 74H1Ø6	1910408-00	49
3	E8Ø, E81, E87	I.C 74H1Ø3	1910409-00	50
1	E42	I.C. 74123	1910436-00	51

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
2	E45, E46	I.C 74194	1910623-00	52
8	E23, E24, E25, E26 E3Ø, E31, E32, E36	IC. 74161	1910650-01	53
3	E84, E85, E86	I.C. 74174	1910652-00	54
1	E53	I.C 7427	1910878-00	55
3	E28, E38, E44	I.C. 74175	1910651-00	56
2	E1Ø, E66	I.C. 8640	1911469-00	57
1	E33	I.C 2102 650 NS	2111318-02	58
				59
6	E35, E39, E62, E63 E73, E83	SAME IC SPACES		60
1	E67	CRYSTAL OSCILLATOR 20MHZ	1811660-00	61
4	E41, E71, E93, E52	I.C. 74S74	1910544-00	62
1	E51	I.C. 74H1Ø	1909057-00	63
1	E77	I.C. 74H4Ø	1905586-00	64
				65
A/R		#30 AWG SOLID WIRE (YEL)	9105740-55	66
1	J1	CONN 40 PIN ET ANG HDR	1209941-02	67
1	(J1)	LATCH, LEFT FOR ET ANG HDR	1209941-03	68
1	(J1)	LATCH, RIGHT FOR ET ANG HDR	1209941-04	69
1	E13	I C 256 X 4 ROM FLDØL	23111A2	70
1	E3	I C 256 X 4 ROM FLDØH	23121A2	71
1	E14	I C 256 X 4 ROM FLD1L	**23257A2**	72
1	E4	I.C 256 X 4 ROM FLD1H	**23258A2**	73
1	E15	I C 256 X 4 ROM FLD2L	23115A2	74
1	E5	I C. 256 X 4 ROM FLD2H	23116A2	75
1	E16	I.C. 256 X 4 ROM FLD3L	23117A2	76
1	E6	I C. 256 X 4 ROM FLD3H	23118A2	77
1	E17	I C. 256 X 4 ROM FLD4L	**23259A2**	78
1	E7	I.C. 256 X 4 ROM FLD4H	**23260A2**	79
1	E18	I C. 256 X 4 ROM FLD 5L	23121A2	80
1	E8	I.C. 256 X 4 ROM FLD 5H	23122A2	81
1	R33	RES 150 1/4W 5% CC	1300250-00	82

SPARE I.C. GATES

TYPE	LOCATION	PINS	DESCRIPTION
74H04	E61	12	INVERTER
7404	E64	12, 13	INVERTER
7464	E76	12, 13	INVERTER
7408	E11	1,2,3 8,9,10	2 INPUT AND
74H00	E72	1,2,3 4,5,6 8,9,10	2 INPUT NAND
7437	E65	8, 9, 10	2 INPUT NAND BUFFER
8881	E2	8, 9, 10	2 INPUT NAND OC.
74H10	E51	3, 4, 5, 6	3 INPUT NAND
74H40	E77	1, 2, 4, 5, 6	4 INPUT NAND BUFFER
7402	E54	4, 5, 6	2 INPUT NOR
8640	E66	2, 6, 7 11, 12, 13 3 4, 5	2 INPUT NOR RCVR
7427	E53	1, 2, 12, 13	3 INPUT NOR
7486	E92	4, 5, 6	2 INPUT XOR
7486	E74	1, 2, 3, 4, 5, 6	2 INPUT XOR
7474	E93	1, 2, 3, 4, 5, 6	D TYPE FLIP FLOP
74H106	E58	6, 2, 3, 4, 14, 15, 16	J K FLIP FLOP
74123	E42	1, 2, 3, 4, 13, 14, 15	ONE SHOT

ALLOWABLE SUBSTITUTIONS

PREFERRED			REPLACEMENT	
TYPE	ITEM #	P.N.	TYPE	P.N.
7489	48	1910396-00	3101A	1910653-00
7489	48	1910396-00	8225	1911162-00

REVISIONS

CHK	CHANGE NO.	REV.

TITLE: FLOPPY DISK CONTROLLER
SIZE D | CODE DCS | NUMBER M7726-Ø-1 | REV. J
SCALE: — | SHEET 2 OF 9 | DIST.

DEC FORM NO. DRD 137

DCS M7726-Ø-1 J

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ROM OUT 7
ROM OUT 6
ROM OUT 5
ROM OUT 4
ROM OUT 3
ROM OUT 2
ROM OUT 1
ROM OUT Ø

B266 E27
MUX OUT 7
MUX OUT 6
MUX OUT 5
MUX OUT 4

B266 E37
MUX OUT 3
MUX OUT 2
MUX OUT 1
MUX OUT Ø

COUNTER MOST SIG HALF
74161 E26
HIGH 1
CNTR OVFLW H

COUNTER LEAST SIG HALF
74161 E36
INIT + PC AL
CI(1) H
HIGH 1
C.O.

CØ(1) H
CLK CNTR L
WBR CLK CNTR L
74H11 E56

P/O J3
N1 E2 N2 S1

P/O J3
R1 P1 J1 K2

HIGH 1
SR LOAD H

DSØ SØ SI SHIFT REG MOST SIG HALF 74194 E45
D0 R0(1)
D1 R1(1)
D2 R2(1)
D3 R3(1)
CLR CLK DS3

SI SØ DSØ SHIFT REG LEAST SIG HALF 74194 E46
DØ RØ(1)
D1 R1(1)
D2 R2(1)
D3 R3(1)
CLK CLR DS3

CLK SR L
INIT + PC AL

LD SCRATCH PAD L
SR MSB (1) H

WR ENB SCRATCH PAD MOST SIG HALF 7489 E48
DØ MØ(1)
D1 M1(1)
D2 M2(1)
D3 M3(1)
A3 A2 A1 AØ

ENB WR SCRATCH PAD LEAST SIG HALF 7489 E47
D2 M2(1)
D1 M1(1)
DØ MØ(1)
D3 M3(1)
A3 A2 A1 AØ

+5V
R25, 2K
R24, 2K
R23, 2K
R22, 2K
R21, 2K
RØ2Ø 2K
R19, 2K
R18, 2K

MEMORY BUFFER 74175 E28
D3 R3(Ø) R3(1)
D2 R2(Ø) R2(1)
D1 R1(Ø) R1(1)
DØ RØ(Ø) RØ(1)
CLR CLK

INST 1(1) L
INST Ø(1) L
INST 1(1) H
INST Ø(1) H
SEL 3(1) H
SEL 2(1) H

MEMORY BUFFER 74175 E38
D3 R3(Ø) R3(1)
D2 R2(Ø) R2(1)
D1 R1(Ø) R1(1)
DØ RØ(Ø) RØ(1)
CLR CLK

SEL 1(1) H
SELØ(1) H
CI(1) L
CI(1) H
CØ(1) L
CØ(1) H
CI(1) AH
74H04 E61

INIT + PC AL
LD MB + CLK PC L

SCRATCH PAD ADDR REGISTER 74175 E44
D0 R3(1)
R3(Ø)
D1 R2(1)
R2(Ø)
R1(1)
D2 R1(Ø)
D3 RØ(1)
RØ(Ø)
CLR CLK

INIT + PC AL
CLK SP ADDR REG L

CØ(1) L
CI(1) H
74Ø2 E54
SR LOAD H

74ØØ E59
74ØØ E59

CØ(1) H
SEP DATA(1) H
74LØ E60

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D3)	D	CS	M7726-Ø-1	J
SCALE	SHEET 3 OF 9	DIST.		

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HIGH 3
2Ø MHZ CLK
74H74 E82
HIGH 3
74H103 E87
END WIND L
HIGH 3
74S74 E71
74S74 E71
2Ø MHZ CLK
74H74 E82
74H ØØ E72
BRW CRY 74193 E89
BRW CRY 74193 E88
END WIND L
INIT + PC H
BRW CRY 74193 E9Ø
BRW CRY 74193 E91
INIT + PC H
74H11 E7Ø
74H103 E81
MIS CLK (1) L
INIT + PC AL
74H103 E8Ø
74H103 E8Ø
INIT + PC A L
74Ø2 E54
74H103 E81
SEP DATA (1) H
SEP DATA (1) L
74H11 E7Ø
INIT + PC AL
74H103 E87
P/O J2
DRV RAW DATA L
7404 E64
7437 E65
74S74 E93
SEP CLK(1) H
BTP 3 H
HIGH 2
74161 E3Ø
LSB BUFFER ADDR REG LS THIRD MSB
CLR
LD
CLK
CNT EN
CRY EN CO
74161 E31
LSB BUFFER ADDR REG MSB
CNT EN CO
CRY EN
2/Ø2 E33
EN
SECTOR DATA BUFFER 1K RAM
SEC BUF OUT (1) H
DATA WRT IN
HIGH 1
74174 E29
CLK SEC BUF L
74161 E32
LSB BUFFER ADDR REG MS THIRD MSB
CØ (1) L
INIT + PC L
C1 (1) A H
CLK BAR L
HIGH 1
SEC BUF OVFLW H
DRV BUSS H
7404 E76
DATA I L
SEP DATA(1) L
7450 E75

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D4)	D	DCS	M7726-Ø-1	J
SCALE	SHEET 4 OF 9	DIST.		

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HIGH 1
C1 (1) L
7404 E64
7474 E19
DRV BUSS H
INTERF BUSS H
OB1 (1) H
7474 E20
OB3 (1) H
7474 E2Ø
7474 E21
7474 E29
SEC BUF H
SA H
7474 E91
SYN INDEX (1) H
74154 E39
DO PULSE GEN
SEL 3 (1) H
SEL 2 (1) H
SEL 1 (1) H
SEL Ø (1) H
CLK BAR L
CLK SEC BUF L
CLK CRC L
CLK CNTR L
CLK SR L
STB1 STBØ
TP3 L
DO INST L
+5V
C95 12pf
R4Ø 8.2K
74LS123 E42
LD SCRATCH PAD L
HIGH 2
BTP 3 H
7400 E9
SEC BUF OUT (1) H
SR MSB (1) H
SR H
INIT+PC L
C1 (1) AH
CØ (1) H
74H106 E56 FLAG
FLAG (1) H
UNIT 7474 E4Ø
HD LD 7474 E4Ø
8881 E1
8881 E2
R41, 39Ø
R42, 18Ø
R52, 39Ø
R53, 18Ø
R43, 39Ø
R49, 18Ø
R45, 39Ø
R46, 18Ø
R47, 39Ø
R48, 18Ø
P/O J1
RX ERROR L
RX TRANSFER REQUEST
RX OUT L
RX DONE L
RX SHIFT L
RX DATA (1) L
7408 E12
7408 E11
HOME H
DRV WT GATE H
DRV STEP L
DRV OUT H
DRV ERASE H
DRV ABOVE TK 43 H
DRV WT DATA
DRV SEL TRK Ø H
DRV SEL DK I H
DRV LOAD HEAD H
DRV SEL INDX H
P/O J2

REVISIONS		
ECO	CHANGE NO.	REV.

TITLE	FLOPPY DISK CONTROLLER (D5)	SIZE D CODE CS	NUMBER M7726-Ø-1	REV J
SCALE		SHEET 5 OF 5	DIST.	

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SIZE D | CODE CS | NUMBER M7726-Ø-1 | REV. J

+5V
R1 3K
DISABLE ROMS L
7404 E64
7442 E22 FIELD DECODER
FLD 5 L
FLD 4 L
FLD 3 L
FLD 2 L
FLD 1 L
FLD Ø L
R2 470
R3 820
R4 470
R5 820
R6 470
R7 820
R8 470
R9 820
R10 470
R11 820
R12 470
R13 820
R14 470
R15 820
R16 470
R17 520
ROM OUT 7
ROM OUT 6
ROM OUT 5
ROM OUT 4
ROM OUT 3
ROM OUT 2
ROM OUT 1
ROM OUT Ø
SEL 3(1) H
SEL 2(1) H
SEL 1(1) H
SEL Ø(1) H
JUMP L
FIELD COUNTER
74161 E23
P/O J3
MUX OUT 7
MUX OUT 6
MUX OUT 5
MUX OUT 4
PROGRAM COUNTER MS HALF
74161 E25
INIT + PC AL
MUX OUT 3
MUX OUT 2
MUX OUT 1
MUX OUT Ø
PROGRAM COUNTER LS HALF
74161 E24
INIT + PC L
PC LOAD EN L
LD MB + CLK PC L
HIGH 1
FLD 4 HI E7
FLD 3 HI E6
FLD 4 LO E17
FLD 3 LO E16
FLD 2 HI E5
FLD Ø HI E3
FLD 2 LO E15
FLD 1 LO E14
FLD 1 HI E4
FLD Ø LO E13
P/O J3
PC7(1) H
PC6(1) H
PC5(1) H
PC4(1) H
PC3(1) H
PC2(1) H
PC1(1) H
PCØ(1) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FLOPPY DISK CONTROLLER (D6)
SIZE D | CODE CS | NUMBER M7726-Ø-1 | REV. J
SCALE
SHEET 6 OF 9
DIST.

DEC FORM NO. 9860 130

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+5V
20 MHZ OSCILLATOR EG7
W1
NOTE 3
74H40 E77
20 MHZ CLK
INIT + PC H
74Ø0 E59
HIGH 2
TP3 H
TP1 H
TP3 L
TP4 L
TP4 H
74H74 E78
74H74 E79
74H04 E61
BTP 3 H
74H00 E68
INIT + PC AL
74H11 E70
74H74 E69
7404 E76
P/O J3
L2
HALT H
CONTIN L
HALT L
ERROR HALT ENABLE L
U1
V2
B2
T1
C2
R49 3K
R50 3K
R51 3K
7400 E59
7404 E76
7410 E60
INTERF BUSS H
OB I (1) H
CØ (1) H
CI (1) H
PRESET CRC L
CLK CRC L
SHIFT CRC L
CØ (1) L
CI (1) L
SER DATA (1) L
CRC 16 (1) L
7450 E75
7486 E92
74174 E84
74174 E85
74174 E86
CRC 1
CRC 2
CRC 3
CRC 4
CRC 5
CRC 6
CRC 7
CRC 8
CRC 9
CRC 10
CRC 11
CRC 12
CRC 13
CRC 14
CRC 15
CRC 16
R54 1K
R55 1K
R56 1K
HIGH 1 (21 LOADS)
HIGH 2 (21 LOADS)
HIGH 3 (20 LOADS)
CRC 16 (1) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D7)	D	CS	M7726-Ø-1	J
SCALE	SHEET 7 OF 9	DIST.		

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HIGH 2

+5V

BTP 3 H

P/O J1

RX RUN L

RX 12 BIT L

RX DATA (1) L

R31 39ØΩ
R30 18Ø
R29 39Ø
R28 15Ø
R27 39Ø
R26 18Ø

8640 E10

7474 ES2

7404 EG9

DATA I L

SEP DATA (1) L

SR MSB (1) H

MIS CLK (1) L

7486 E74

SEMSB EQ SEP DATA H

MIS CLK EQ SRMSB H

STB

7415Ø E49

D0 D10 D2 D11 D13 D3 D4 D5 D6 D7 D8 D9 D12 D14 D15 D1

CONDITION SELECTOR

SYN INDEX (1) H
SR MSB (1) H
CNTR OVFLW H
CRC 16 (1) H
HOME H
SEP CLK (1) H
SEC BUF OVFLW H
SEC BUF OUT (1) H
FLAG (1) H
OB3 (1) H

S3 S2 S1 S0

SEL 3 (1) H
SEL 2 (1) H
SEL 1 (1) H
SEL 0 (1) H

P/O J2

DRV SEL
WT PROT L

HIGH 2

TP3 H

CNTR OVFLW H

INST DIS H
INST Ø (1) L

7402 ES4

INST DIS L
INST 1 (1) L

7410 E93

DO INST L

INST Ø (1) H

7427 ES3

WBR H

CNTR OVFLW H

7400 ES7

CBR L

C1 (1) AH

C1 (1) L

74H1Ø ES1

74H11 ES6

PC LOAD EN L

74H2Ø ES5

LDMB †CLK PC L

TP4 H

WBR CLK CNTR L

JUMP L

CLK SP ADDR REG L

7410 E43

74H11 ES6

74H2Ø ES5

P/O J1

RX INIT L

R33 15Ø

8640 E10

8881 E2

DRV INIT + PC

P/O J2

+5V

R37 10K

Q1 A55

R38 18Ø

Q2 A56

R39 18Ø 1/2W

P/O J4

+1Ø V

D1 IN4004
D2 IN4004
D3 IN4004

R34 261 1%
R35 3ØØ
R36 287 1%

D4 IN746A 3.3V

P/O J3

+7V
+5V
GND

8640 EG6

INIT + PC H

7437 EG5

INIT + PC L

INIT + PC A L

HIGH 2

R57 3K

MAINT DISABLE L

74H74 ES8

INST DIS H
INST DIS L

TP4 L

INIT + PC AL

C1 (1) AH

C1 (1) L

C Ø (1) L

74H74 ES8

CLK CNTR L

74H04 EG1

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D8)	D	CS	M7726-Ø-1	J
SCALE —	SHEET 8 OF 9	DIST.		

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THIS LIST GIVES THE SOURCE AND DESTINATIONS OF SIGNAL NAMES WITHIN THE M7726 PRINT SET. SIGNAL NAMES THAT DO NOT APPEAR ON THIS LIST ARE PRESENT FOR INFORMATION ONLY. THEY DO NOT INDICATE CONNECTIONS TO OTHER POINTS IN THE PRINT SET.

INTERFACE	REFERS TO SIGNALS ON THE INTERFACE BUSS
DRIVE	REFERS TO SIGNALS ON THE DRIVE BUSS
POWER SUPPLY	REFERS TO VOLTAGES FROM THE POWER SUPPLY
KM11	REFERS TO SIGNALS ON J3 THE MAINTANENCE CONNECTOR

SIGNAL NAME	ORIGIN	DESTINATION
BTP 3 H	D7-C1	D4-A5,D5-A6,D8-D6
CLK BAR L	D5-C7	D4-A3
CLK CNTR L	D5-B7	D3-B7,D8-A4
CLK CRC L	D5-C7	D7-B7
CNTR OVFLW H	D3-C5	D8-D4,D8-C6,D8-B4
CLK SEC BUF L	D5-C7	D4-B2
CLK SP ADDR REG L	D8-B3	D3-A4
CLK SR L	D5-B7	D3-B4
CONTIN L	KM11	D7-C7
CRC16 (1) H	D7-B1	D8-C6
CRC16 (1) L	D7-A1	D7-B7
C1 (1) AH	D3-A6	D4-B3,D5-B4,D8-D4,D8-C4
C1 (1) H	D3-A6	D3-C6,D3-B2,D7-B8
C1 (1) L	D3-A6	D5-D6,D7-B8,D8-D4,D8-B4
C0 (1) H	D3-A6	D3-C7,D3-A2,D4-B1,D5-B4,D7-B8
C0 (1) L	D3-A6	D3-B2,D4-B3,D7-B8,D8-B3
DATA I L	D8-D5	D4-A2
DISABLE ROMS L	TEST PAD	D6-D8
DO INST L	D8-B4	D5-B8
DRV BUSS H	D5-D4	D4-A4
DRV ERASE H	D5-B1	DRIVE
DRV OUT H	D5-C1	DRIVE
DRV LOAD HEAD H	D5-A1	DRIVE
DRV STEP L	D5-C1	DRIVE
DRV INIT + PC	D8-B6	DRIVE
DRV ABOVE TK 43 H	D5-B1	DRIVE
DRV RAW DATA L	DRIVE	D4-A8
DRV SEL DK 1 H	D5-B1	DRIVE
DRV SEL INDX H	DRIVE	D5-A1
DRV SEL TRK 0 H	DRIVE	D5-B1
DRV WT DATA	D5-B1	DRIVE
DRV WT GATE H	D5-C1	DRIVE
DRV SEL WT PROT L	DRIVE	D8-C8
END WIND L	D4-D3	D4-D8
ERROR HLT ENABLE L	KM11	D7-C7
FLAG (1) H	D5-B3	D8-B6
FLD 0 L	D6-D6	D6-A3,D6-A2
FLD 1 L	D6-D6	D6-B3,D6-B2
FLD 2 L	D6-D6	D6-C3,D6-C2
FLD 3 L	D6-D6	D6-A6,D6-A4
FLD 4 L	D6-D6	D6-B6,D6-B4
FLD 5 L	D6-D6	D6-C6,D6-C4
HALT H	D7-C3	KM11
HALT L	KM11	D7-C7
HIGH 1	D7-C4	D3-D6,D3-D4,D3-C6,D3-C4,D4-A3 D4-B1,D5-D5,D6-A8
HIGH 2	D7-B4	D4-A5,D5-B7,D5-A7,D5-B4,D7-D5 D7-D4,D7-C4,D7-C5,D8-D5,D8-B3 D8-A5
HIGH 3	D7-B4	D4-D8,D4-C8,D4-D7,D4-D5,
HOME H	D5-B2	D8-C6
INIT +PC A L	D8-A4	D3-C6,D3-B4,D3-A4,D3-A7,D4-B6 D4-B5,D4-B8,D7-C5,D8-B2
INIT + PC H	D8-A4	D4-D5,D4-C5,D7-D4
INIT + PC L	D8-A4	D4-B3,D5-B5,D6-A8
INST 0 (1) H	D3-B6	KM11,D8-B5
INST 0 (1) L	D3-B6	D8-C5
INST 1 (1) H	D3-B6	KM11
INST 1 (1) L	D3-B6	D8-B5
INST DIS H	D8-B1	D8-C5
INST DIS L	D8-A1	D8-B5
INTERF BUSS H	D5-D4	D7-B8
JUMP L	D8-C3	D8-C8
LD MM + CLK PC L	D8-C1	D6-A4,D3-A8
LD SCRATCH PAD L	D5-H6	D3-D3
MAINT DIS L	TEST PAD	D8-B1
MIS CLK (1) L	D4-C6	D8-C8
MUX OUT 0	D3-C7	D6-A8
MUX OUT 1	D3-C7	D6-A8
MUX OUT 2	D3-C7	D6-A8
MUX OUT 3	D3-C7	D6-B8
MUX OUT 4	D3-C7	D6-B8
MUX OUT 5	D3-D7	D6-B8
MUX OUT 6	D3-D7	D6-B8
MUX OUT 7	D3-D7	D6-B8
OB1 (1) H	D5-D4	D7-B8
OB3 (1) H	D5-C4	D8-B6
PC 0 (1) H	D6-A1	KM11
PC 1 (1) H	D6-A1	KM11
PC 2 (1) H	D6-A1	KM11
PC 3 (1) H	D6-A1	KM11
PC 4 (1) H	D6-A1	KM11
PC 5 (1) H	D6-A1	KM11
PC 6 (1) H	D6-A1	KM11
PC 7 (1) H	D6-A1	KM11
PC LOAD EN L	D8-D1	D6-A8
ROM OUT 0	D6-D1	D3-C8
ROM OUT 1	D6-D1	D3-C8
ROM OUT 2	D6-D1	D3-C8
ROM OUT 3	D6-D1	D3-C8
ROM OUT 4	D6-D1	D3-C8
ROM OUT 5	D6-D1	D3-D8
ROM OUT 6	D6-D1	D3-D8
ROM OUT 7	D6-D1	D3-D8
RX DATA (1) L	D5-C1,INTERFACE	INTERFACE,D8-D8
RX DONE L	D5-D1	INTERFACE
RX ERROR L	D5-D1	INTERFACE
RX INIT L	INTERFACE	D8-B8
RX OUT L	D5-D1	INTERFACE
RX RUN L	INTERFACE	D8-D8
RX SHIFT L	D5-C1	INTERFACE
RX TRANSFER REQUEST	D5-D1	INTERFACE
RX 12 BIT L	INTERFACE	D8-D8
SEC BUF OVFLW H	D4-A1	D8-C6
SEC BUF OUT (1) H	D4-C1	D5-C4,D8-B6
SEC BUF H	D5-H4	D5-C4
SEL 0 (1) H	D3-A6	D5-C8,D6-C8,D8-B6,KM11
SEL 1 (1) H	D3-A6	D5-C8,D6-C8,D8-B6,KM11
SEL 2 (1) H	D3-B6	D5-C8,D6-C8,D8-B6,KM11
SEL 3 (1) H	D3-B6	D5-C8,D6-C8,D8-B6,KM11
SEP CLK (1) H	D4-B4	D8-C6
SEP DATA (1) H	D4-B5	D3-A2
SEP DATA (1) L	D4-B5	D4-A2,D7-A8,D8-C8
SR H	D5-B4	D5-C4
SR LOAD H	D3-B1	D3-C4
SR MSB (1) H	D3-D3	D5-C4,D8-C8,D8-C6
SYN INDEX (1) H	D5-A5	D8-C6
TP3 H	D7-D3	D7-C6,D8-B4,D8-C5
TP3 L	D7-D3	D5-B8
TP4 H	D7-D2	D8-C3
TP4 L	D7-D3	D8-B2
WRR CLK CNTR L	D8-C2	D3-B7
20 MHZ CLK	D7-C5	D4-C8,D4-D7
GND	POWER SUPPLY	D1-A4
+5V	POWER SUPPLY	D1-A4,D8-A7
+7V	D8-A7	KM11
+10V	POWER SUPPLY	D8-B8

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER	D	CS	M7726-Ø-1	J
SCALE	SHEET 9 OF 9		DIST.	

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REV.	NUMBER	CODE	SIZE
	RXØ1-Ø-2	SP	K

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RXØ1		PARTS LIST		

DRN.	DATE 19 FEB. 76	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
CHK'D	DATE 19 FEB. 76		
ENG.	DATE 2/19/76	TITLE: FLOPPY CONTROLLER FIRMWARE	
PROJ. ENG.	DATE 2/23/76		
PROD.	DATE 2/23/76		
NEXT HIGHER ASSEMBLY		SIZE K / CODE SP / NUMBER RXØ1-Ø-2 / REV.	
SCALE			
SHEET 1 OF 1		DIST.	

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO. DRB 109

```
                        /RX01 FLOPPY CONTROLLER FIRMWARE

                        /THIS SYMBOL TABLE REPLACES THE NORMAL PAL SYMBOL TABLE AND DEFINES
                        /THE INSTRUCTIONS POSSIBLE BY THE RX01 CONTROLLER



                        /DO INSTRUCTIONS

          0002    SET=2
          0000    CLR=0
          0002    ONE=2
          0000    ZERO=0

          0000    IOB0=0                  /INTERFACE-DISK BUSS OUTPUT BUFFER
          0004    IOB1=4
          0010    IOB2=10
          0014    IOB3=14
          0020    IOB4=20
          0024    IOB5=24
          0030    IOB6=30

          0000    INTERF=CLR IOB0         /IOB0 SELECTS EITHER INTERFACE OR DISK BUSS.  CLR= INTERFACE
          0002    DISK=SET IOB0           /SET=DISK

                                          /INTERFACE BUFFER DEFINITIONS
          0004    ERR=IOB1                /SET TO INDICATE THAT AN RX01 ERROR HAS OCCURED
          0010    XREQ=IOB2               /SET TO REQUEST AN RX01 WORD TRANOFER
          0014    IOOUT=IOB3              /DIRECTION FOR DATA LINE.  SET=TO INTERFACE
          0020    DONE=IOB4               /SET TO INDICATE RX01 READYNESS TO ACCEPT A COMMAND
          0024    SHIFT=IOB5              /SHIFT FOR DATA LINE
          0030    SECDAT=IOB6             /SELECTS SOURCE FOR DATA OUT OF CONTROLLER ON DATA LINE
                                          /SET=SECTOR BUFFER   CLR=SHIFT REGISTER MOST SIG BIT

                                          /DISK BUFFER DEFINITIONS
          0004    WGATE=IOB1              /WRITE CURRET ENABLE WHEN SET
          0010    STPHD=IOB2              /HEAD STEP.  TWO PULSES REQUIRED FOR EACH TRACK
          0014    HDOUT=IOB3              /DIRECTION OF HEAD MOTION
          0020    EGATE=IOB4              /ERASE CURRENT ENABLE
          0024    LOWCUR=IOB5             /SPECIFIES WRITE CURRENT LEVEL

          0034    UNIT=34                 /SELECTS ONE OF TWO DRIVES.  UNIT (ZERO)(ONE)

          0040    UNHD=40                 /DEACTIVATES HEAD LOAD SOLONOID OF SELECTED DRIVE
          0042    LDHD=42                 /ACTIVATES HEAD LOAD SOLONOID OF SELECTED DRIVE

          0044    BAR=44                  /SECTOR BUFFER ADDRESS REGISTER CONTROL
          0001    LONG=1                  /FORMAT:  CLR BAR (SHORT)(LONG)
          0000    SHORT=0                 /SHORT PRESETS FOR COUNT OF 1024
          0002    INCR=2                  /LONG PRESETS FOR COUNT OF 4096
                                          /FORMAT:  INCR BAR    INCREMENT THE BUFFER ADDRESS REG.
```



```

          0050    WRTBUF=50               /SECTOR BUFFER WRITE CLOCK
          0003    START=3                 /FORMAT:  (STRAT)(FIN) WRTBUF
          0000    FIN=0                   /A 750NS MINIMUM PULSE IS REQUIRED

                                          /CRC REGISTER CONTROL
          0054    CRC=54                  /FORMAT:  CRC (ONE)(ZERO)   SPECIFIES DATA TO
                                          /BE JAMMED INTO CRC GENERATOR/CHECKER
          0057    PRECRC=57               /PRESETS CRC REG TO ALL ONES
          0055    DATCRC=55               /SHIFTS SEPERATED DATA INTO CRC CIRCUIT

                                          /GENERAL PURPOSE FLAG CONTROL
          0060    FLAG=60                 /FORMAT:  FLAG (ON)(OFF)(TOG)
          0002    ON=2                    /SET FLAG
          0001    OFF=1                   /CLR FLAG
          0003    TOG=3                   /TOGGLE FLAG

          0064    LSP=64                  /LOAD OPEN SCRATCHPAD REG WITH CONTENTS OF SHIFT REG

          0070    LCT=70                  /LOAD COUNTER WITH CONTENTS OF NEXT ROM LOCATION
          0071    ESP=71                  /LOAD COUNTER WITH CONTENTS OF OPEN SCRATCHPAD
          0073    ICT=73                  /INCREMENT COUNTER

                                          /SHIFT REGISTER CONTROL
          0074    ROTATE=74               /FORMAT: ROTATE(ONE)(ZERO)
                                          /SHIFTS SHIFT REG TOWARDS MOST SIGNIFICANT BIT
                                          /WHILE INSERTING A ONE OR ZERO INTO THE LEAST
                                          /SIGNIFICANT BIT
          0075    LSR=75                  /LOAD SHIFT REGISTER WITH CONTENTS OF COUNTER
          0077    DATSR=77                /SHIFT REG TOWARDS MSB WHILE INSERTING SEPERATED
                                          /DATA INTO LSB
```

```
                        /BRANCH INSTRUCTIONS AND CONDITIONS

0100    BR=100          /FORMAT: BR COND (T)(F)(ONE)(ZERO)
                        /IF CONDITION IS MET,  A BRANCH IS MADE WITHIN
                        /THE CURRENT FIELD USING THE CONTENTS OF THE
                        /NEXT ROM LOCATION AS THE BRANCH ADDRESS
                        /IF THE CONDITION IS NOT MET,  THE NEXT ROM LOCATION
                        /IS IGNORED AND THE FOLLOWING INSTRUCTION IS EXECUTED
0300    WBR=300         /FORMAT:  WBR COND (T)(ONE)
                        /THE COUNTER IS INCREMENTED WITH EVERY EXECUTION OF
                        /THIS INSTRUCTION,  THE WBR IS REPEATEDLY
                        /EXECUTED UNTILL EITHER THE COUNTER OVERFLOWS OR
                        /THE CONDITION IS MET.  IF THE CONDITION IS MET
                        /THE BRANCH IS MADE,  IF THE COUNTER OVERFLOWS
                        /THE BRANCH ADDRESS IS IGNORED AND THE NEXT INSTRUCTION
                        /IS EXECUTED
0000    F=ZERO          /REQUIRES THE CONDITION TO BE FALSE
0002    T=ONE           /REQUIRES THE CONDITION TO BE TRUE
0001    IND=1           /IF APPENDED TO THE JUMP, BR OR WBR INSTRUCTION,
                        /CAUSES THE BRANCH ADDRESS TO BE TAKEN FROM THE
                        /OPEN SCRATCHPAD RATHER THAN FROM THE NEXT ROM LOCATION
0000    RUN=0           /WHEN ASSERTED INDICATES THAT THE INTERFACE HAS
                        /SERVICED A TRANSFER REQUEST, OR THAT A COMMAND
                        /IS PENDING
0004    IOB3OT=4        /INTERF/DISK OUTPUT BUFFER BIT 3
0010    DATAIN=10       /BIDIRECTIONAL DATA LINE BETWEEN INTERFACE AND CONTROLLER
0014    INDX=14         /DRIVE INDEX LATCH
0020    SR7=20          /SHIFT REGISTER MOST SIGNIFICANT BIT
0024    COFL=24         /OVERFLOW (ALL ONES) OF THE COUNTER
0030    CRC16=30        /BIT 16 OF CRC GENERATOR/CHECKER
0034    HOME=34         /TRACK ZERO OF SELECTED DRIVE ANDED WITH HEAD
                        /DIRECTION BEING OUT
0040    WRTEN=40        /WRITE ENABLED STATUS OF THE SELECTED DRIVE
0044    SEPCLK=44       /SEPERATED CLOCK FROM DISK DATA
0050    XIIBIT=50       /ASSERTED IF INTERFACE TRANSFERS ARE TO BE AS
                        /12 BIT WORDS RATHER THAN 8 BIT BYTES
0054    DEQSR7=54       /SEPERATED DATA EQUAL TO SHIFT REG BIT 7
0060    BAROFL=60       /OVERFLOW CONDITION (ALL ONES) OF THE SECTOR BUFFER
                        /ADDRESS REGISTER
0064    MCEQSR=64       /MISSING CLOCK EQUAL TO SHIFT REG BIT 7
0070    BDATAO=70       /OUTPUT OF SECTOR BUFFER
0074    FLAGO=74        /STATE OF GENERAL PURPOSE FLAG
```



```
                        /SCRATCHPAD REGISTER SELECTION

0200    OPEN=200        /FORMAT: OPEN X  WHERE X IS ONE OF THE SCRATCHPAD REG
                        /THIS INSTRUCTION MAKES THE NAMED SCRATCHPAD
                        /ACCESSABLE VIA THE LSP AND ESP COMMANDS

0000    R0=0            /DEFINITIONS OF SCRATCHPADS BY R#
0004    R1=4
0010    R2=10
0014    R3=14
0020    R4=20
0024    R5=24
0030    R6=30
0034    R7=34
0040    R8=40
0044    R9=44
0050    R10=50
0054    R11=54
0060    R12=60
0064    R13=64
0070    R14=70
0074    R15=74

                        /DEFINITION OF SCRATCHPADS BY PNEUMONICS
0000    CURTK0=R0       /CURRENT TRACK ADDRESS OF DRIVE 0
0004    CURTK1=R1       /CURRENT TRACK ADDRESS OF DRIVE 1
0010    ERREG=R2        /DEFINITIVE ERROR CODE IF ANY
0014    STAT=R3         /STATUS WORD OF RX01
0020    TARTRK=R4       /TARGET TRACK OF CURRENT DISK ACCESS
0024    TARSEC=R5       /TARGET SECTOR OF CURRENT DISK ACCESS
0030    TEMPA=R6        /TEMPORARY STORAGE
0034    TEMPB=R7        /TEMPORARY STORAGE
0040    TEMPC=R8        /TEMPORARY STORAGE
0044    TEMPD=R9        /BIT 7 IS UNIT SELECT BIT,  0 MEANS UNIT 1
0050    TEMPE=R10       /BIT 7 IS HEAD LOADED BIT,  1 MEANS HEAD LOADED
0054    TEMPF=R11       /TEMPORARY STORAGE
0060    TEMPG=R12       /TEMPORARY STORAGE
0064    RTNB=R13        /RETURN ADDRESS FOR 3RD LEVEL NESTED SUBROUTINES
0070    RTNA=R14        /RETURN ADDRESS FOR 2ND LEVEL NESTED SUBROUTINES
0074    RTN=R15         /RETURN ADDRESS FOR 1ST LEVEL SUBROUTINES
```

```
                        /JUMP INSTRUCTION AND JUMP FIELD DEFINITIONS
                        
0202    JUMP=202        /FORMAT:  JUMP FX (IND)
                        /CAUSES A BRANCH TO ONE OF SIX ROM FIELDS (0-5)
                        /SPECIFIED BY X.  THE BRANCH ADDRESS IS TAKEN FROM
                        /THE ROM LOCATION FOLLOWING THE JUMP INSTRUCTION.
                        /IF IND IS APPENDED, THE BRANCH ADDRESS
                        /IS TAKEN FROM THE OPEN SCRATCH PAD
                        
0000    F0=0
0004    F1=4
0010    F2=10
0014    F3=14
0020    F4=20
0024    F5=24
```



```
                        
                        
                        
                        
                        
                        
                        
                        
                        /TABLE OF DEFINITIVE ERROR CODES
                        
0010    KNXDV0=10       /DRIVE 0 FAILED TO SEE HOME ON INITIALIZE
0020    KNXDV1=20       /DRIVE 1 FAILED TO SEE HOME ON INITIALIZE.  DOES NOT CAUSE ERROR
0030    KWRONG=30       /FOUND HOME WHEN STEPPING IN 10 TRACKS FOR INIT
0040    KERTRK=40       /TRIED TO ACCESS A TRACK GREATER THAN 76
0050    KHOMERR=50      /HOME WAS FOUND BEFORE DESIRED TRACK WAS REACHED
0060    KSELFER=60      /SELF DIAGNOSTIC ERR
0070    KNXHDR=70       /DESIRED SECTOR COULD NOT BE FOUND AFTER LOOKING
                        /AT 52 HEADERS
0100    KWPROT=100      /WRITE FUNCTION ATTEMPTED ON A WRITE PROTECTED DISK
0110    KTIMERR=110     /MORE THAN 40 MICROSECONDS AND NO SEPCLOCK SEEN
0120    KNXPRAM=120     /A PREAMBLE COULD NOT BE FOUND
0130    KNXIDAM=130     /PREAMBLE FOUND BUT NO ID MARK FOUND WITHIN ALLOWABLE TIME
0140    KHCRCER=140     /CRC ERROR ON WHAT APPEARED TO BE A HEADER.  ERROR IS NOT ASSERTED
0150    KTKSKER=150     /THE TRACK ADDRESS OF A GOOD HEADER DOES NOT COMPARE
                        /WITH THE DESIRED TRACK
0160    KXSTRYS=160     /TOO MANY TRIES FOR AN IDAM
0170    KNODAM=170      /DATA AM NOT FOUND IN ALLOTTED TIME
0200    KDCRCER=200     /CRC ERROR ON READING THE SECTOR FROM THE DISK
0210    KPARER=210      /PARITY ERROR ON SOME WORD FROM THE INTERFACE
                        
```

```
                        /[ROUTINE: INITIALIZE]  IF A HOST PROCESSOR INITIALIZE OR AN
                        /RX01 POWER LOW IS DETECTED, THE PC IS CLEARED AND THE RX01 TIMING
                        /STOPS.  UPON THE NEGATION OF INITIALIZE, TIMING RESUMES AND A SELF TEST OF
                        /INTERNAL DATA PATHS IS MADE.  IF AN ERROR OCCURS HERE,  ERROR AND
                        /DONE ARE SET, BUT ERREG IS NOT ALTERED.  THEN IF NO ERROR HAS OCCURRED AN ATTEMPT
                        /IS MADE TO RECALABRATE DRIVE 1 THEN DRIVE 0.  IF DRIVE 0 FAILS TO RECALIBRATE,
                        /THE ERROR CODE IS LOADED INTO ERREG AND ERROR IS SET.  IF DRIVE
                        /0 RECALIBRATES AND IS READY (DISK LOADED) SECTOR ONE OF TRACK ONE
                        /IS READ INTO THE SECTOR BUFFER.  IT IS POSSIBLE FOR A READ ERROR
                        /TO OCCUR WHILE READING THIS SECTOR.


                0000    *0000
                        DECIMAL

0000  0210             OPEN ERREG      /CLEAR ERROR REGISTER
0001  0064             LSP

0002  0222             JUMP F4         /GO DO THE INITIALIZE DIAGNOSTIC ROUTINE
0003  2352             TEST

0004  0070    TSTRTN,  LCT             /RETURN FROM SUCCESSFUL DIAGNOSTIC ROUTINE
                        OCTAL
0005  0004             4
                        DECIMAL
0006  0075             LSR             /SET THE INIT DONE BIT OF STAT
0007  0214             OPEN STAT
0010  0064             LSP

0011  0070             LCT             /SET UP SOME SCRATCHPAD REGISTERS
0012  0377             -1
0013  0075             LSR
0014  0244             OPEN TEMPD      /UNIT 0 TO SOFT UNIT BIT
0015  0064             LSP
0016  0200             OPEN CURTK0     /NEG ZERO TO BOTH CURRENT TRACK ADDRESSES
0017  0064             LSP
0020  0204             OPEN CURTK1
0021  0064             LSP

0022  0074             ROTATE ZERO     /NEG ONE TO TARGET SECTOR
0023  0224             OPEN TARSEC
0024  0064             LSP
0025  0220             OPEN TARTRK     /NEG ONE TO TARGET TRACK FOR INITIALIZE BOOTSTRAP
0026  0064             LSP

0027  0002             DISK            /SELECT DISK BUSS

0030  0070             LCT             /CALL SUBROUTINE TO LOAD HEAD AND WAIT 25 MS
0031  0034             RECAL1          /TO ALLOW POWER UP DRIVE SETTLE TIME
0032  0222             JUMP F4
0033  2145             DLY25

0034  0036    RECAL1,  UNIT ONE        /SELECT UNIT ONE FOR RECALIBRATE

0035  0014    RECAL0,  CLR HDOUT       /STEP HEAD IN 1" TRACKS TO ASSURE IT IS NOT BEHIND TRACK 0
```



```
0036  0070             LCT
0037  0365             -10-1
0040  0075             LSR
0041  0070             LCT
0042  0045             IN10
0043  0222             JUMP F4
0044  2100             STEPHD

0045  0226    IN10,    JUMP F5         /ERROR,  HOME WAS SEEN WHILE STEPPING IN.
0046  2621             WRONG

0047  0016             SET HDOUT       /STEP OUT AS MANY AS 80 TRACKS IN SEARCH OF HOME
0050  0070             LCT
0051  0257             -80-1
0052  0075             LSR
0053  0070             LCT
0054  0060             RCALOK
0055  0040             UNHD
0056  0222             JUMP F4
0057  2100             STEPHD

0060  0202    RCALOK,  JUMP F0         /HOME WAS FOUND OK
0061  0075             WHCHDR

0062  0174             BR FLAGO F      /IF FLAG=0 RECALIBRATE WAS ON DRIVE 1
0063  0070             NXDRV1

0064  0070    NXDRV0,  LCT             /RECALABRATE FAILURE WAS ON DRV 0
0065  0010             KNXDV0
0066  0226             JUMP F5
0067  2610             GOERDN

0070  0070    NXDRV1,  LCT             /RECAL FAILURE WAS ON DRV 1, LOG ERROR
0071  0020             KNXDV1          /AND CONTINUE RECALIBRATION
0072  0075             LSR
0073  0210             OPEN ERREG
0074  0064             LSP

0075  0176    WHCHDR,  BR FLAGO T      /IF FLAG=1 BOTH DRIVES HAVE BEEN RECALIBRATED
0076  0372             PDNRCL

0077  0062             FLAG ON         /SET FLAG TO INDICATE DRV 0 IS BEING RECALIBRATED

0100  0034             UNIT ZERO

0101  0202             JUMP F0         /GO BACK AND RECALIBRATE DRV0
0102  0035             RECAL0
```

```
                        /[SUBROUTINE; FINDTRACK]
                        /THIS SUBROUTINE IS USED TO LOCATE A SPECIFIED SECTOR, IT PICKS
                        /UP THE TRACK AND SECTOR ADDRESS FROM THE INTERFACE, CHECKS THAT
                        /THE TRACK ADDRESS IS LEGAL (NOT GREATER THAN 114 OCTAL.), MOVES THE
                        /HEAD OF THE SELECTED DRIVE TO THE SPECIFIED TRACK, VERIFIES
                        /TRACK POSITION, AND LOCATES THE CORRECT SECTOR, EXIT FROM
                        /THIS SUBROUTINE OCCURS AT WRITE TURN ON TIME OF THE SELECTED,
                        /SECTOR, ENTRANCE IS MADE WITH THE RETURN ADDRESS IN THE COUNTER

0103  0075    FINDTR, LSR             /SAVE THE RETURN ADDRESS
0104  0274            OPEN RTN
0105  0064            LSP

0106  0070            LCT             /CLEAR THE ERROR REGISTER
0107  0000            0
0110  0075            LSR
0111  0210            OPEN ERREG
0112  0064            LSP

0113  0244            OPEN TEMPD      /SOFT UNIT BIT TO SR
0114  0071            ESP
0115  0075            LSR

0116  0122            BR SR7 ONE      /IF SR=1  DRIVE 0 IS CURRENTLY SELECTED
0117  0127            UZERO

0120  0174    UONE,   BR FLAGO ZERO   /IF FLAG=0 DRIVE 1 IS DESIRED AND ALREADY SELECTED
0121  0141            USAME

0122  0034            UNIT ZERO       /DRIVE 0 IS DESIRED AND DRIVE1 WAS SELECTED,  SELECT 0
0123  0070            LCT             /SET UP SOFT UNIT SELECT AS DRIVE 0
                      OCTAL
0124  0200            200
                      DECIMAL

0125  0202            JUMP F0         /GO STORE SOFT UNIT BIT
0126  0134            UDIF

0127  0176    UZERO,  BR FLAGO ONE    /IF FLAG=1 DRIVE 0 IS DESIRED AND ALREADY SELECTED
0130  0141            USAME

0131  0036            UNIT ONE        /DRIVE 1 IS DESIRED BUT DRIVE0 IS SELECTED, SELECT DRIVE 1
0132  0070            LCT             /SET UP SOFT UNIT SELECT BIT AS DRIVE 1
0133  0000            0

0134  0075    UDIF,   LSR             /STORE SOFT UNIT SELECT BIT
0135  0064            LSP

0136  0074            ROTATE ZERO     /CLR SOFT HD LOAD BIT BECAUSE UNITS CHANGED
```



```
0137  0250            OPEN TEMPE
0140  0064            LSP

0141  0070    USAME,  LCT             /CALL GETWORD SUBROUTINE FOR THE SECTOR ADDRESS
0142  0145            PUTSEC
0143  0222            JUMP F4
0144  2000            GETWRD

0145  0070    PUTSEC, LCT             /MAKE FIRST BIT OF COMPLIMENTED SECTOR ADDRESS A 1 REGARDLESS OF DATA
0146  0370            -7-1
0147  0076            ROTATE ONE
0150  0126            BR COFL T
0151  0160            .+7
0152  0073            ICT
0153  0122            BR SR7 T
0154  0147            .-5
0155  0074            ROTATE ZERO
0156  0202            JUMP F0
0157  0150            .-7

0160  0224            OPEN TARSEC     /PUT THE TARGET SECTOR AWAY
0161  0064            LSP

0162  0070            LCT             /CALL GETWRD SUBROUTINE FOR TRACK ADDRESS
0163  0166            PUTTRK
0164  0222            JUMP F4
0165  2000            GETWRD

0166  0220    PUTTRK, OPEN TARTRK     /STASH THE TRACK ADDRESS
0167  0064            LSP

0170  0254            OPEN TEMPF      /START SETUP FOR COMPARING THE
0171  0064            LSP             /TARGET TRACK AND TRACK 76
0172  0260            OPEN TEMPG      /F= TARGET TRACK
0173  0070            LCT             /G= 77
0174  0262            -77-1
0175  0075            LSR
0176  0064            LSP

0177  0070            LCT             /CALL SUBR MAGCOM TO SEE IF TARGET TRACK
0200  0206            ILTRK           /IS GREATER THAN 114 OCTAL,  76 DECIMAL.
0201  0075            LSR
0202  0270            OPEN RTNA
0203  0064            LSP
0204  0226            JUMP F5
0205  2400            MAGCOM

0206  0202    ILTRK,  JUMP F0         /TARGET TRACK IS 77, ILLEGAL ADDRESS
0207  0242            ERTRK           /GO, REPORT THE ERROR
0210  0202            JUMP F0         /TARGET TRACK IS GREATER THAN 77
0211  0242            ERTRK           /GO, REPORT THE ERROR
```

```
 432   0212  0244            OPEN TEMPD      /TARGET TRACK IS OK, GET THE DRIVE
 433   0213  0071            ESP             /SELECT FROM TEMPD
 434   0214  0075            LSR
 435
 436   0215  0200            OPEN CURTK0     /PRESELECT UNIT 0
 437
 438   0216  0002            DISK            /SELECT DISK BUSS
 439
 440   0217  0122            BR SR7 ONE      /WHICH UNIT SELECTED? BIT7=0 MEANS UNIT ONE
 441   0220  0222            .+2             /ZERO, SKIP UNIT 1 SETUP
 442   0221  0204            OPEN CURTK1
 443
 444   0222  0071            ESP             /PASS SELECTED CURRENT TRACK TO MAGCOM SUBR
 445   0223  0075            LSR
 446   0224  0260            OPEN TEMPG
 447   0225  0064            LSP
 448
 449   0226  0220            OPEN TARTRK     /PASS TARGET TRACK TO MAGCOM SUBROUTINE
 450   0227  0071            ESP
 451   0230  0075            LSR
 452   0231  0254            OPEN TEMPF
 453   0232  0064            LSP
 454   0233  0070            LCT             /CALL SUBROUTINE MAGCOM TO SEE IF TARGET
 455   0234  0246            TRKEQ           /IS SAME AS CURRENT TRACK,  F=TARGET,  G=CURRENT
 456   0235  0075            LSR
 457   0236  0270            OPEN RTNA
 458   0237  0064            LSP
 459   0240  0226            JUMP F5
 460   0241  2400            MAGCOM
 461
 462
 463   0242  0070  ERTRK,    LCT
 464   0243  0040            KERTRK          /TRIED TO ACCESS A TRACK GREATER THAN 76 DECIMAL
 465   0244  0226            JUMP F5
 466   0245  2610            GOERDN
 467
 468
 469   0246  0202  TRKEQ,    JUMP F0         /TARGET EQUALS THE CURRENT TRACK, NO
 470   0247  0357            NOSTPS          /STEPS ARE REQUIRED
 471   0250  0270            OPEN RTNA       /NOOP;  TARGET > ACTUAL RETURN
 472   0251  0270            OPEN RTNA       /NOOP
 473
 474   0252  0270  BOOT,     OPEN RTNA       /TARGET IS LESS THAN ACTUAL, STEPS NEEDED ALSO START OF
 475   0253  0070            LCT             /OF BOOT SUBROUTINE.  SET UP RETURN FROM DIF SUBR
 476   0254  0275            STPOUT
 477   0255  0075            LSR
 478   0256  0064            LSP
 479
 480   0257  0244            OPEN TEMPD      /SOFT UNIT SELECT BIT TO SR7
 481   0260  0071            ESP
 482   0261  0075            LSR
 483
 484   0262  0204            OPEN CURTK1     /PRESELECT UNIT 1
 485
 486   0263  0120            BR SR7 ZERO     /SR7=0 MEANS UNIT ONE
```



```
 487   0264  0266            .+2
 488   0265  0200            OPEN CURTK0
 489
 490   0266  0071            ESP             /PASS SELECTED CURRENT TRACK TO DIFF SUBR VIA SR
 491   0267  0075            LSR
 492
 493   0270  0220            OPEN TARTRK     /PASS TARGET TRACK TO DIF VIA CNTR
 494   0271  0071            ESP
 495
 496   0272  0016            SET HDOUT       /ASSUME A STEP OUT
 497
 498   0273  0226            JUMP F5         /GO TO THE SUBROUTINE DIF TO CALCULATE THE STEPS NEEDED
 499   0274  2462            DIF
 500
 501
 502   0275  0202  STPOUT,    JUMP F0         /TARGET TRACK IS LESS THAN
 503   0276  0300            .+2             /THE ACTUAL, MOVE OUT IS NECESSARY
 504
 505   0277  0014            CLR HDOUT       /TARGET IS GREATER THAN ACTUAL.  STEPS IN NEEDED
 506
 507   0300  0070            LCT             /COMPLEMENT OF STEPS REQUIRED IS IN THE
 508   0301  0305            DUNSTP          /SHIFT REG.  SET UP RETURN FROM STPHD SUBR
 509
 510   0302  0040            UNHD            /UNLOAD HEAD BEFORE MOVING
 511
 512   0303  0222            JUMP F4         /CALL SUBROUTINE STEPHD
 513   0304  2100            STEPHD
 514
 515
 516   0305  0226  DUNSTP,    JUMP F5         /HOME FOUND BEFORE LAST STEP TAKEN
 517   0306  2456            HOMERR
 518
 519   0307  0244            OPEN TEMPD      /SOFT UNIT BIT TO SR7
 520   0310  0071            ESP
 521   0311  0075            LSR
 522   0312  0220            OPEN TARTRK     /GET READY TO PASS TARGET TRK TO PROPER
 523   0313  0071            ESP             /CURRENT TRACK
 524
 525   0314  0200            OPEN CURTK0     /OPEN PROPER CURRENT TRACK REGISTER
 526   0315  0122            BR SR7 ONE      /BIT7=0 MEANS UNIT ONE
 527   0316  0320            .+2
 528   0317  0204            OPEN CURTK1
 529
 530   0320  0075            LSR             /UPDATE THE CURRENT TRACK ADDRESS
 531   0321  0064            LSP
 532
 533
 534   0322  0220  HDSETL,    OPEN TARTRK     /HEAD IS SETTLED DETERMINE IF ABOVE TPACK 43 DECIMAL
 535   0323  0071            ESP             /PASS TARGET TO MAGCOM VIA TEMPF
 536   0324  0075            LSR
 537   0325  0254            OPEN TEMPF
 538   0326  0064            LSP
 539
 540   0327  0070            LCT             /PASS 44 TO MAGCOM VIA TEMPG
 541   0330  0323            -44-1
```

```
                0331  0075          LSR
                0332  0260          OPEN TEMPG
                0333  0064          LSP
                
                0334  0026          SET LOWCUR      /ASSUME TARGET GREATER THAN 43
                
                0335  0070          LCT             /CALL MAGCOM SUBROUTINE
                0336  0344          ABV43           /RETURN ADDRESS
                0337  0075          LSR
                0340  0270          OPEN RTNA
                0341  0064          LSP
                0342  0226          JUMP F5
                0343  2400          MAGCOM
                
                
                0344  0202  ABV43,  JUMP F0         /NOOP F=G RETURN, ABOVE TRK 43
                0345  0346          .+1             /NOOP
                
                0346  0202          JUMP F0         /F<G; ABOVE TRACK 43
                0347  0351          .+2
                
                0350  0024          CLR LOWCUR      /F>G;  BELOW TRACK 43,  WRITE WITH HIGH CURRENT
                
                0351  0070  CFINSE, LCT             /CALL FINDSEC SUBROUTINE TO LOCATE THE DESIRED SECTOR
                0352  0355          RFINTR
                0353  0206          JUMP F1
                0354  0714          FINDSE
                
                0355  0274  RFINTR, OPEN RTN        /RETURN FROM FINDTR SUBROUTINE
                0356  0207          JUMP F1  IND
                
                
                0357  0250  NOSTPS, OPEN TEMPE      /NO STEPS REQUIRED
                0360  0071          ESP             /SOFT HEAD LOAD BIT TO SR7
                0361  0075          LSR
                
                0362  0122          BR SR7 ONE      /IS HEAD LOADED?
                0363  0322          HDSETL          /YES, GO UPDATE CURRENT CONTROL
                
                0364  0070          LCT             /NO, GO LOAD HEAD AND WAIT FOR 20MS SETTLE TIME
                0365  0322          HDSETL          /RETURN ADDR FROM DLY25 SUBROUTINE
                0366  0222          JUMP F4
                0367  2145          DLY25
                
                
                0370  0212  PFUNCT, JUMP F2         /POINTER FROM GETWORD SUBROUTINE TO
                0371  1036          FUNCT           /FUNCTION DECODE
                
                0372  0226  PDNRCL, JUMP F5         /POINTER TO DRV% CHECK DONE AFTER RECALABRATE
                0373  2625          DNRCAL
                
                0374  0000          0               /SPARE LOCATIONS
                0375  0000          0               /OPEN
                0376  0000          0               /OPEN
                0377  0000          0               /OPEN
```



```
                                /[ROUTINE: WRITE SECTOR]
                                /THIS ROUTINE TURNS ON WRITE GATE AT WRITE TURN ON TIME,
                                /WRITES A PREAMBLE OF 6 BYTES OF ZEROES, A DATA OR DELETED DATA MARK,
                                /THEN TURNS ON ERASE GATE,  ENTER WITH CNTR=100 IF
                                /DELETED DATA, CNTR=0 IF NORMAL DATA MARK,  THE DATA MARK, DATA FIELD,  CRC
                                /AND ONE BYTE POSTAMBLE ARE WRITTEN,  WRITE CURRENT IS TURNED OFF,
                                /511 MICRO SECONDS LATER ERASE CURRENT IS TURNED OFF,  A HEADER MUST
                                /THEN BE READ TO INSURE DISK IS STILL UP TO SPEED BEFORE  THE WRITE
                                /SECTOR FUNCTION IS COMPLETE,
                
                
                
                0400  0214  WRTSEC, OPEN STAT       /DEL DATA BIT TO STAT6
                0401  0075          LSR
                0402  0064          LSP
                
                0403  0070          LCT             /CALL SUBROUTINE TO FIND DESIRED TRACK AND SECTOR
                0404  0407          SWGATE
                0405  0202          JUMP F0
                0406  0103          FINDTR
                
                0407  0061  SWGATE, FLAG OFF        /ALWAYS START WRITING WITH WRITE FLOP CLEARED
                
                0410  0140          BR WRTEN F      /GO REPORT ERROR IF NO WRITE ENABLE
                0411  0503          PRTERR
                
                0412  0214          OPEN STAT       /DEL DATA BIT TO SR7 AND ENABLE WRT CURRENT
                0413  0071          ESP
                0414  0006          SET WGATE
                0415  0075          LSR
                0416  0074          ROTATE ZERO
                
                0417  0234          OPEN TEMPB      /USE TEMPB FOR SECOND HALF DATA AM PATTERN
                
                0420  0057          PRECRC          /JAM THE CRC GENERATOR WITH FIRST 6 BITS OF DATA AM
                0421  0056          CRC ONE
                0422  0056          CRC ONE
                0423  0056          CRC ONE
                0424  0056          CRC ONE
                0425  0056          CRC ONE
                0426  0054          CRC ZERO
                
                0427  0120          BR SR7 ZERO     /DELETED DATA?
                0430  0460          DAMSUP          /NO, REGULAR DATA MARK
                
                0431  0070          LCT             /YES, SECOND HALF OF DELETED DATA MARK TO CNTR
                                    OCTAL
                0432  0325          325             /FLUX PATTERN
                                    DECIMAL
                
                0433  0054          CRC ZERO        /JAM LAST 2 BITS OF DELETED DATA MARK TO CRC GEN,
                0434  0054          CRC ZERO
                0435  0002          DISK            /NOOP
                0436  0002          DISK            /NOOP
```

```
                                
0053  0037  0063  STASH,  TCG FLAG        /END OF THE FIRST 0 BIT
0054                                
0055  0038  0075          LSR             /PUT SECOND HALF OF THE DESIRED MARK IN THE TEMPB
0056  0039  0060          LSP
0057                                
0058  003A  0078          LCT             /SET UP RETURN FROM WRITE ZEROS SUBROUTINE
0059  003B  0066          MLFDLY
0060  003C  0075          LSR
0061                                
0062  003D  0072          LCT             /STALL 1.0 MICRO SECONDS
0063  003E  0374          -3-1
0064  003F  0073          ICT
0065  0040  0124          BR COFL F
0066  0041  0047          .-2
0067  0042  0002          DISK            /NOOP
0068                                
0069  0043  0070          LCT             /SPECIFY 22 ZEROS TO BE WRITTEN BY WRTOS SUBROUTINE
0070  0044  0351          -22-1
0071                                
0072  0045  0063          TOG FLAG        /WRITE SECOND CLOCK TRANSITION
0073                                
0074  0046  0212          JUMP F2         /CALL WRITE ZEROS SUBROUTINE
0075  0047  1322          WRTOS
0076                                
0077  0048  0070  DAMSUP,  LCT             /LOAD SECOND HALF OF NORMAL DATA MARK
0078                      OCTAL
0079  0049  0337          337
0080                      DECIMAL
0081                                
0082  004A  0056          CRC ONE         /JAM LAST 2 BITS OF DATA MARK TO CRC GENERATOR
0083  004B  0056          CRC ONE
0084                                
0085  004C  0206          JUMP F1         /GO PUT AWAY THE SECOND HALF OF THE DATA MARK
0086  004D  0037          STASH
0087                                
0088  004E  0002  MLFDLY,  DISK            /NOOP
0089                                
0090  004F  0070          LCT
0091  0050  0514          WRTDAM          /SET UP RETURN FROM WRITE ZEROS SUBROUTINE
0092  0051  0075          LSR
0093                                
0094  0052  0070          LCT             /NOOP WASTE 2.0 MICRO SECONDS
0095  0053  0351          -22-1           /NOOP
0096  0054  0070          LCT             /NOOP
0097  0055  0351          -22-1           /NOOP
0098                                
0099  0056  0070          LCT             /SPECIFY 22 BITS TO BE WRITTEN BY WRTOS SUBROUTINE
0100  0057  0351          -22-1
0101                                
0102  0058  0063          TOG FLAG        /WRITE THE 25TH CLOCK TRANSITION
0103                                
0104  0059  0212          JUMP F2         /CALL WRTOS SUBROUTINE
0105  005A  1322          WRTOS
0106
```



```
0107  005B  0070  PRTERR,  LCT             /SET WRITE PROTECT BIT OF STAT BECAUSE A WRITE FUNCTION WAS ATTEMPTED ON
0108                                      /ON A WRITE PROTECTED DISKETTE
0109                      OCTAL
0110  005C  0010          10
0111                      DECIMAL
0112  005D  0075          LSR
0113  005E  0214          OPEN STAT
0114  005F  0064          LSP
0115                                
0116  0060  0070          LCT             /ERROR CODE FOR WRT PROTECT ERROR
0117  0061  0100          KWPROT
0118  0062  0226          JUMP F5
0119  0063  2610          GOERDN
0120
0121
0122
0123                      /THIS ROUTINE WILL WRITE EITHER A DATA MARK OR A
0124                      /DELETED DATA MARK. THE FIRST HALF OF BOTH MARKS ARE
0125                      /IDENTICAL. THE SECOND HALF IS SPECIFIED BEFORE ENTRY BY
0126                      /PUTTING THE SECOND HALF BIT PATTERN IN TEMPB
0127
0128
0129  0514  0070  WRTDAM,  LCT             /WASTE 2.0 MICRO SECONDS
0130  0515  0375          -2-1
0131  0516  0073          ICT
0132  0517  0075          LSR
0133  0520  0124          BR COFL F
0134  0521  0516          .-3
0135                                
0136  0522  0063          TOG FLAG        /WRITE A CLOCK BIT AS END OF BOTH ZERO
0137                                
0138  0523  0070          LCT             /FIRST HALF OF DATA MARK PATTERN TO CR
0139                      OCTAL
0140  0524  0352          352
0141                      DECIMAL
0142  0525  0075          LSR
0143                                
0144  0526  0270          LCT             /SET TRANSITION LOOP COUNTER FOR 8 LOOPS
0145  0527  0378          -7-1
0146  0530  0202          DISK            /NOOP
0147                                
0148  0531  0128  AGAIN,  BR SR7 ZERO     /WHATS THE BIT?
0149  0532  0562          A               /ZERO, NO TRANSITION
0150                                
0151  0533  0244          CLR BAR         /ONE, RESET THE BUFFER ADDR REG TO 0
0152                                
0153  0534  0063          TOG FLAG        /WRITE FLUX TRANSITION
0154                                
0155  0535  0126  ABACK,  BR COFL T       /CHECK TRANSITION LOOP COUNT
0156  0536  0583          SECHLF          /GO GET SECOND HALF
0157                                
0158  0537  0078          ROTATE          /SHIFT NEXT TRANSITION TO CR7
0159                                
0160  0540  0273          ICT             /BUMP TRANSITION LOOP COUNTER
0161
```

```
                                JUMP F1         /DO ANOTHER LOOP
                                AGAIN
                        SECHLF, OPEN TEMPB      /SECOND HALF OF DATA MARK TO SR
                                ESP
                                LSR

                                LCT             /SET TRANSITION LOOP COUNTER FOR 8 LOOPS
                                -7-1


                        AGAIN1, BR SR7 ZERO     /SHALL WE WRITE A TRANSITION?
                                B               /NO

                                TOG FLAG        /YES
                                DISK            /NOOP

                        BBACK,  BR COFL T       /DONE DATA MARK?
                                WRTDAT          /YES, GO WRITE DATA

                                ICT             /NO, BUMP THE LOOP COUNTER

                                ROTATE          /BRING UP NEXT HALF BIT TO SR7

                                JUMP F1         /DO ANOTHER LOOP
                                AGAIN1

                        A,      JUMP F1         /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
                                ABACK

                        B,      JUMP F1         /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
                                BBACK


                        /THIS ROUTINE WRITES THE CONTENTS OF THE SECTOR BUFFER.

                        WRTDAT, SET EGATE       /TURN ON ERASE CURRENT AT START OF DATA FIELD
                                ICT             /NOOP; WASTE 2 CYCLES
                                ICT             /NOOP

                        DATAA,  BR BDATAO ZERO  /WHATS THE DATA BIT?
                                C               /ZERO, GO WRITE NOTHING

                                CRC ONE         /ONE, UPDATE THE CRC WITH 1

                                TOG FLAG        /WRITE A DATA TRANSITION
                                ICT             /NOOP FOR BIT CELL TIMING

                        CBACK,  BR BAROFL T     /DONE ENTIRE SECTOR?
                                WRTCRC          /YES, GO WRITE THE CRC

                                INCR BAR        /NO, BRING UP NEXT DATA BIT FROM SEC BUFFER
```



```
                                LCT             /NOOP - WASTE 5 CYCLES WITH
                                -2              /NOOP - A SELF TEST OF THE COUNTER
                                ICT             /NOOP
                                BR COFL F       /NOOP
                                SELFER          /NOOP

                                TOG FLAG        /WRITE A CLOCK TRANSITION

                                LCT             /NOOP - WASTE 4 CYCLES WITH
                                -1              /NOOP - A SELF TEST OF THE COUNTER
                                BR COFL F       /NOOP
                                SELFER          /NOOP

                                JUMP F1         /GO WRITE ANOTHER DATA BIT
                                DATAA

                        C,      CRC ZERO        /UPDATE CRC WITH 0 AND SKIP DATA TRANSITION
                                JUMP F1
                                CBACK


                        SELFER, LCT             /A SELF DIAGNOLTIC HAS FAILED
                                KSELFER
                                JUMP F5
                                GOERDN


                        /THIS ROUTINE WRITES THE 16 BIT CRC GENERATED FOR THE
                        /PRECEEDING DATA FIELD.

                        WRTCRC, LCT             /PRESET BIT COUNTER FOR 16 BITS
                                -16-1

                                LSR             /NOOP WASTE 4 CYCLES AND SELF TEST THE SR
                        E,      DISK            /NOOP
                                BR SR7 ZERO     /NOOP
                                SELFER          /NOOP

                                TOG FLAG        /WRITE A CLOCK TRANSITION

                                ROTATE ONE      /NOOP WASTE 6 CYCLES WITH MORE SELFTEST
                                ROTATE ONE      /NOOP
                                ROTATE ONE      /NOOP
                                ROTATE ONE      /NOOP
                                BR SR7 ZERO     /NOOP
                                SELFER          /NOOP

                                BR CRC16 ZERO   /WHAT IS THE CRC BIT
                                D               /ZERO, DO NOT WRITE ANYTHING

                                CRC ONE         /ONE, BRING UP THE NEXT BIT

                                TOG FLAG        /WRITE A DATA TRANSITION
```

```
 872   0645  0076          ROTATE ONE      /NOOP
 873
 874   0646  0073  DBACK,  ICT             /BUMP THE BIT COUNTER
 875
 876   0647  0126          BR COFL T       /DONE CRC YET?
 877   0650  0656          WRTPST          /YES, GO WRITE A POSTAMBLE
 878
 879   0651  0206          JUMP F1         /NO, GO WRITE ANOTHER CRC BIT
 880   0652  0627          E
 881
 882   0653  0054  D,      CRC ZERO        /BRING UP NEXT CRC BIT AND SKIP DATA TRANSITION
 883   0654  0206          JUMP F1
 884   0655  0646          DBACK
 885
 886
 887                 /THIS ROUTINE WRITES THE ONE BYTE POSTAMBLE, TURNS OFF
 888                 /WRITE CURRENT, DELAYS 511 MICRO SEC AND TURNS OFF ERASE
 889                 /CURRENT, IT UTILIZES THE WRITE ZEROES SUBROUTINE.
 890
 891
 892
 893   0656  0070  WRTPST, LCT             /SETUP TO CALL WRT0S TO WRITE 8 BITS OF ZEROES
 894   0657  0666          CWGATE
 895   0660  0075          LSR
 896   0661  0070          LCT
 897   0662  0367          -8-1
 898
 899   0663  0063          TOG FLAG        /WRITE LAST CLOCK TRANSITION OF THE CRC FIELD
 900
 901   0664  0212          JUMP F2         /CALL THE SUBROUTINE WRITE ZEROES
 902   0665  1322          WRT0S
 903
 904
 905   0666  0004  CWGATE, CLR WGATE       /DISABLE WRITE CURRENT
 906
 907   0667  0070          LCT             /CALL WRT0S FOR 127 BITS (511.2 MICRO SEC)
 908   0670  0676          CEGATE          /DELAY TO ERASE TURN OFF
 909   0671  0075          LSR
 910   0672  0070          LCT
 911   0673  0200          -127-1
 912   0674  0212          JUMP F2
 913   0675  1322          WRT0S
 914
 915
 916   0676  0020  CEGATE, CLR EGATE       /DISABLE ERASE CURRENT
 917
 918   0677  0070          LCT             /CALL WRT0S FOR 25 BIT (101 MICRO SEC) DELAY
 919   0700  0706          READOK          /BEFORE TRYING TO READ
 920   0701  0075          LSR
 921   0702  0070          LCT
 922   0703  0346          -25-1
 923   0704  0212          JUMP F2
 924   0705  1322          WRT0S
 925
 926   0706  0070  READOK, LCT             /CALL FIND HEADER ROUTINE TO INSURE
```



```
 927   0707  0712          GODONE          /THAT THE DISK IS STILL MOVING
 928   0710  0216          JUMP F3
 929   0711  1400          FINDHD
 930
 931   0712  0212  GODONE, JUMP F2         /WRITE SECTOR FUNCTION IS COMPLETE
 932   0713  1006          OKDONE
 933
 934
 935                 /[SUBROUTINE: FINDSECTOR]
 936                 /SUBROUTINE TO FIND A SPECIFIC SECTOR.  ENTER WITH RETURN ADDRESS
 937                 /IN CNTR,  DESIRED TRACK ADDRESS IN TARTRK AND DESIRED SECTOR ADDRESS
 938                 /IN TARSEC.  THIS SUBROUTINE ASSUMES THAT THE TARGET TRACK HAS ALREADY
 939                 /BEEN REACHED.
 940
 941
 942   0714  0270  FINDSE, OPEN RTNA       /SAVE RETURN ADDRESS
 943   0715  0075          LSR
 944   0716  0064          LSP
 945
 946   0717  0260          OPEN TEMPG      /PRESET SECTOR TRY COUNT TO 52 TRIES
 947   0720  0070          LCT
 948   0721  0313          -52-1
 949
 950   0722  0075  AGAIN2, LSR             /STORE SECTOR TRY COUNT
 951   0723  0064          LSP
 952
 953   0724  0070          LCT             /CALL SUBROUTINE TO FIND A HEADER
 954   0725  0730          CHKSEC
 955   0726  0216          JUMP F3
 956   0727  1400          FINDHD
 957
 958   0730  0174  CHKSEC, BR FLAGO ZERO   /CORRECT SECTOR? FLAG=1 IF NO
 959   0731  0743          WAIT            /YES, GO WAIT FOR PREAMBLE
 960
 961   0732  0260          OPEN TEMPG      /NO, RECALL SECTOR TRY COUNT AND INCREMENT IT
 962   0733  0071          ESP
 963   0734  0073          ICT
 964
 965   0735  0124          BR COFL F       /52 TRIES MADE FOR SECTOR YET?
 966   0736  0722          AGAIN2          /NO, TRY ANOTHER SECTOR
 967
 968   0737  0070  NXHDR,  LCT             /YES, CANN'T FIND THE SECTOR
 969   0740  0070          KNXHDR
 970   0741  0226          JUMP F5
 971   0742  2610          GOERDN
 972
 973   0743  0070  WAIT,   LCT             /STALL 323.2 MICRO SECONDS TO WAIT FOR DATA PREAMBLE
 974   0744  0345          -26-1
 975   0745  0073          ICT
 976   0746  0124          BR COFL F
 977   0747  0745          .-2
 978   0750  0073          ICT
 979   0751  0124          BR COFL F
 980   0752  0750          .-2
 981   0753  0073          ICT
```

```
 982    0754  0124          BR COFL F
 983    0755  0753          .-2
 984
 985    0756  0270          OPEN RTNA       /RETURN FROM THIS SUBROUTINE AT WRITE TURN ON TIME
 986    0757  0203          JUMP F0 IND     /OF THE DESIRED SECTOR
 987
 988
 989
 990                  /[ROUTINE: READ SECTOR]
 991
 992    0760  0074    RDSEC,  ROTATE ZERO    /ZERO THE STAT
 993    0761  0074            ROTATE ZERO
 994    0762  0214            OPEN STAT
 995    0763  0064            LSP
 996
 997    0764  0070            LCT             /CALL THE FIND TRACK SUBROUTINE TO LOCATE DESIRED SECTOR
 998    0765  0770            GOREAD
 999    0766  0202            JUMP F0
1000    0767  0103            FINDTR
1001
1002    0770  0222    GOREAD, JUMP F4         /GO READ THE DATA FIELD
1003    0771  2167            READ
1004
1005
1006    0772  0000            0               /OPEN  FREE LOCATIONS
1007    0773  0000            0               /OPEN
1008    0774  0000            0               /OPEN
1009    0775  0000            0               /OPEN
1010    0776  0000            0               /OPEN
1011    0777  0000            0               /OPEN
```



```
1012                  /[ROUTINE: DONE AND ERROR DONE]
1013
1014
1015    1000  0020    ERDONE, CLR DONE
1016    1001  0010            CLR XREQ
1017
1018    1002  0000            INTERF          /SELECT INTERFACE BUSS
1019
1020    1003  0006            SET ERR         /ASSERT ERROR LINE
1021
1022    1004  0212            JUMP F2         /SKIP NEXT INSTRUCTION
1023    1005  1007            .+2
1024
1025    1006  0004    OKDONE, CLR ERR         /NEGATE ERROR LINE
1026
1027    1007  0214            OPEN STAT       /OPEN STAT TO MOVE TO INTERFACE
1028
1029    1010  0071            ESP             /STAT OR ERREG TO SR
1030    1011  0075            LSR
1031
1032    1012  0024            CLR SHIFT       /CLEAR INTERFACE OUTPUT BUFFER
1033    1013  0020            CLR DONE
1034    1014  0010            CLR XREQ
1035
1036    1015  0000            INTERF          /SELECT INTERFACE OUTPUT BUSS
1037
1038    1016  0030            CLR SECDAT      /SELECT SR AS DATA LINE SOURCE
1039
1040    1017  0016            SET IOOUT       /DEFINE DATA DIRECTION AS OUT (TO INTERFACE)
1041
1042    1020  0070            LCT             /MOVE SR TO INTERFACE SERIALLY
1043    1021  0367            -8-1
1044    1022  0026            SET SHIFT
1045    1023  0024            CLR SHIFT
1046    1024  0073            ICT
1047    1025  0074            ROTATE ZERO
1048    1026  0124            BR COFL F
1049    1027  1022            .-5
1050
1051    1030  0014            CLR IOOUT       /NEXT TRANSFER WILL BE FROM INTERFACE
1052
1053    1031  0022    STDONE, SET DONE        /FUNCTION IS DONE
1054    1032  0070            LCT             /CALL GET COMMAND SUBROUTINE TO GET NEXT FUNCTION
1055    1033  0370            PFUNCT
1056    1034  0222            JUMP F4
1057    1035  2001            GETCMD
1058
1059    1036  0074    FUNCT,  ROTATE          /MOVE UNIT SELECT BIT TO SR7
1060    1037  0074            ROTATE
1061    1040  0074            ROTATE
1062    1041  0122            BR SR7 ONE      /FLAG IS ALREADY SET,  SAVE UNIT IN FLAG, ON=UNIT 0
1063    1042  1044            .+2
1064    1043  0061            FLAG OFF
1065
1066    1044  0074            ROTATE          /GET FIRST FUNCTION BIT TO SR7
```

```
1067
1068    1045  0120          BR SR7 ZERO
1069    1046  1066          FUNCT4          /FUNCTION 4 OR GREATER
1070
1071    1047  0074          ROTATE          /GET 2ND FUNCTION BIT
1072
1073    1050  0120          BR SR7 ZERO
1074    1051  1057          FUNCT2          /FUNCTION CODE IS 2 OR 3
1075
1076
1077    1052  0074          ROTATE          /GET LAST FUNCTION BIT
1078
1079    1053  0120          BR SR7 ZERO
1080    1054  1107          EMPTYBUF        /FUNCTION CODE 1
1081
1082    1055  0212          JUMP F2         /FUNCTION CODE 0
1083    1056  1110          FILLBUF
1084
1085    1057  0074  FUNCT2,  ROTATE         /GET LAST FUNCTION BIT
1086
1087    1060  0120          BR SR7 ZERO
1088    1061  1105          PRDSEC          /FUNCTION CODE 3
1089
1090    1062  0070          LCT             /CLR CNTR BIT6 TO INDICATE NORMAL DATA
1091    1063  0000          0
1092    1064  0206          JUMP F1         /FUNCTION 2
1093    1065  0400          WRTSEC
1094
1095    1066  0074  FUNCT4,  ROTATE         /GET 2ND FUNCTION BIT
1096
1097    1067  0120          BR SR7 ZERO
1098    1070  1076          FUNCT6          /FUNCTION CODE IS 6 OR GREATER
1099
1100    1071  0074          ROTATE          /GET LAST FUNCTION BIT
1101
1102    1072  0120          BR SR7 ZERO
1103    1073  1224          RDSTAT          /FUNCTION 5
1104
1105    1074  0212          JUMP F2
1106    1075  1243          CLRID           /FUNCTION 4=UNUSED
1107
1108    1076  0074  FUNCT6,  ROTATE         /GET LAST FUNCTION BIT
1109
1110    1077  0120          BR SR7 ZERO
1111    1100  1275          RDEREG          /FUNCTION 7
1112
1113    1101  0070          LCT             /SET CNTR6 TO INDICATE DELETED DATA
1114                        OCTAL
1115    1102  0100          100
1116                        DECIMAL
1117    1103  0206          JUMP F1
1118    1104  0400          WRTSEC          /FUNCTION 6
1119
1120    1105  0206  PRDSEC,  JUMP F1         /POINTER TO READ SECTOR FUNCTION
1121    1106  0760          RDSEC
```



```
1122
1123
1124
1125
1126
1127
1128
1129                /[ROUTINE] FILL AND EMPTY BUFFER]
1130
1131
1132    1107  0016  EMPTYBUF,SET IOOUT     /IOOUT IS CLEARED,  SET IT TO INDICATE DATA IS
1133                                        /MOVING TO THE INTERFACE
1134
1135    1110  0074  .FILLBUF,ROTATE ZERO   /CLEAR STAT
1136    1111  0074          ROTATE ZERO
1137    1112  0214          OPEN STAT
1138    1113  0064          LSP
1139
1140    1114  0210          OPEN ERREG      /CLEAR ERREG
1141    1115  0064          LSP
1142
1143    1116  0061          FLAG OFF        /NOOP
1144
1145    1117  0044          CLR BAR SHORT   /ADDRESS THE 1ST BIT OF SECTOR BUFFER
1146
1147    1120  0070          LCT             /SET UP BYTE COUNT TO 128 (8 BIT) OR 64 (12 BIT)
1148    1121  0177          -128-1
1149    1122  0150          BR XIIBIT F
1150    1123  1126          .+3
1151    1124  0070          LCT
1152    1125  0277          -64-1
1153    1126  0230          OPEN TEMPA
1154
1155    1127  0106          BR IOB3OT T     /WHICH FUNCTION IS THIS?
1156    1130  1210          EMPTY1          /EMPTYBUF
1157
1158    1131  0012  XFRQ,    SET XREQ        /REQUEST DATA TRANSFER
1159
1160    1132  0073          ICT             /INCREMENT BYTE COUNT AND RESTORE
1161    1133  0075          LSR
1162    1134  0064          LSP
1163
1164    1135  0070          LCT             /CALL WAITRUN SUBR TO WAIT FOR DATA TRANSFER
1165    1136  1141          NEWORD
1166    1137  0222          JUMP F4
1167    1140  2312          WAITRN
1168
1169    1141  0230  NEWORD,  OPEN TEMPA     /REOPEN THE BYTE COUNT REGISTER BECAUCE WAITRUN CLOCED IT
1170    1142  0070          LCT             /SET UP BIT COUNT IN CNTR TO 8 BITS OR 12 BITS
1171    1143  0367          -8-1
1172    1144  0150          BR XIIBIT F
1173    1145  1150          .+3
1174    1146  0070          LCT
1175    1147  0363          -12-1
1176
```

```
1177    1150  0104            BR IOB3OT F     /WHICH FUNCTION IS THIS?
1178    1151  1175            FILL1           /FILLBUF
1179
1180
1181    1152  0026  BYTEOUT,SET SHIFT        /EMPTYBUF,  MOVE A BYTE FROM SECTOR BUFFER
1182    1153  0046            INCR BAR        /TO INTERFACE SERIALLY
1183    1154  0024            CLR SHIFT
1184    1155  0073            ICT
1185    1156  0124            BR COFL F
1186    1157  1152            BYTEOUT
1187
1188    1160  0071            ESP             /CHECK BYTE COUNT
1189    1161  0124            BR COFL F
1190    1162  1131            XFRQ            /NOT DONE, GO REQUEST A DATA TRANSFER
1191
1192    1163  0012            SET XREQ        /DONE, REQUEST TRANSFER OF LAST BYTE
1193
1194    1164  0100            BR RUN F        /WAIT FOR TRANSFER COMPLETION
1195    1165  1164            .-1
1196
1197    1166  0010            CLR XREQ
1198
1199    1167  0212            JUMP F2         /EMPTYBUF FUNCTION IS COMPLETE
1200    1170  1006            OKDONE
1201
1202    1171  0050            FIN WRTBUF      /END SECTOR BUFR WRT PULSE (800 NS)
1203
1204    1172  0046            INCR BAR        /ADDRESS NEXT CELL OF SECTOR BUFFER
1205
1206    1173  0026            SET SHIFT       /SHIFT NEXT BIT FROM INTERFACE
1207    1174  0024            CLR SHIFT
1208
1209    1175  0053  FILL1,    START WRTBUF    /START SECTOR BUFR WRT PULSE
1210
1211    1176  0073            ICT             /LAST BIT OF BYTE?
1212    1177  0124            BR COFL F
1213    1200  1171            .-7             /NO, DO ANOTHER BIT
1214
1215    1201  0050            FIN WRTBUF      /LAST BIT, END SECTOR BUFR WRT PULSE
1216
1217    1202  0046            INCR BAR        /ADDRESS NEXT CELL OF SECTOR BUFFER
1218
1219    1203  0071            ESP             /CHECK BYTE COUNT
1220    1204  0124            BR COFL F
1221    1205  1131            XFRQ            /NOT DONE, GO GET ANOTHER BYTE
1222
1223    1206  0212            JUMP F2         /DONE FILLBUF FUNCTION
1224    1207  1006            OKDONE
1225
1226    1210  0032  EMPTY1,  SET SECDAT       /SELECT SECTOR BUFR AS DATA LINE SOURCE
1227
1228    1211  0073            ICT             /INCREMENT AND SAVE THE BYTE COUNT
1229    1212  0075            LSR
1230    1213  0064            LSP
1231
```



```
1232    1214  0270            LCT             /SET UP THE BIT COUNT TO 8 BITS OR 12 BITS
1233    1215  0367            -8-1
1234    1216  0150            BR XIIBIT F
1235    1217  1152            BYTEOUT
1236    1220  0070            LCT
1237    1221  0363            -12-1
1238
1239    1222  0212            JUMP F2         /GO MOVE A BYTE TO INTERFACE
1240    1223  1152            BYTEOUT
1241
1242
1243
1244                  /[ROUTINE: READ STATUS]
1245
1246
1247    1224  0244  RDSTAT,  OPEN TEMPD       /SELECT THE SOFT UNIT SCRATCH PAD
1248
1249    1225  0036            UNIT ONE        /PRESELECT UNIT ONE
1250    1226  0070            LCT
1251    1227  0000            0
1252
1253    1230  0174            BR FLAGO ZERO   /WHICH UNIT?  FLAG=0=UNIT 1
1254    1231  1235            .+4             /UNIT 1.  SKIP UNIT 0 SETUP
1255
1256    1232  0034            UNIT ZERO       /SELECT UNIT ZERO
1257    1233  0070            LCT
1258                          OCTAL
1259    1234  0200            200
1260                          DECIMAL
1261
1262    1235  0075            LSR             /STORE SOFT UNIT BIT
1263    1236  0064            LSP
1264
1265    1237  0070            LCT             /CALL CHECKRDY SUBROUTINE, RETURN TO CLRID
1266    1240  1765            PNTRDY
1267    1241  0226            JUMP F5
1268    1242  2640            CHKRDY
1269
1270
1271
1272    1243  0214  CLRID,   OPEN STAT        /CLEAR INIT DONE BIT OF STAT
1273    1244  0071            ESP             /STATUS TO SHIFT REG
1274    1245  0075            LSR
1275
1276    1246  0061            FLAG OFF
1277    1247  0070            LCT             /END AROUND SHIFT OF FIRST 5 BITS
1278    1250  0372            -5-1
1279    1251  0122  ROT,     BR SR7 T
1280    1252  1256            .+4
1281    1253  0074            ROTATE ZERO
1282    1254  0212            JUMP F2
1283    1255  1257            .+2
1284    1256  0076            ROTATE ONE
1285    1257  0073            ICT
1286    1260  0124            BR COFL F
```

```
1287    1261  1251            .=8
1288
1289    1262  0176            BR FLAGO T      /IF FLAG IS SET THEN ROTATE IS DONE
1290    1263  1272            GODUN
1291
1292    1264  0062            FLAG ON         /IF NOT, CLEAR INIT DONE AND FINISH ROTATE
1293    1265  0074            ROTATE ZERO
1294    1266  0070            LCT
1295    1267  0375            -2-1
1296    1270  0212            JUMP F2
1297    1271  1251            ROT,
1298
1299
1300    1272  0064    GODUN,  LSP             /RESTORE STAT AND GO DONE
1301    1273  0212            JUMP F2
1302    1274  1006            OKDONE
1303
1304                    /[ROUTINE: READ ERROR REGISTER]
1305
1306
1307
1308    1275  0210    RDEREG, OPEN ERREG
1309    1276  0212            JUMP F2
1310    1277  1010            OKDONE+2
1311
1312
1313                    /[SUBROUTINE: DELAY], THIS SUBROUTINE PROVIDES DELAYS IN MULTIPLES
1314                    /OF .1MS, ENTER WITH RETURN ADDRESS IN THE SHIFT REG,
1315                    /AND MULTIPLIER IN THE COUNTER
1316
1317
1318    1300  0264    DELAY,  OPEN RTNB       /SAVE THE RETURN ADDRESS
1319    1301  0064            LSP
1320
1321    1302  0075            LSR             /MULTPLIER TO SHIFT REGISTER
1322
1323    1303  0070            LCT             /DELAY 490 CYCLES (98 MICRO SECONDS)
1324    1304  0205            -122-1
1325    1305  0073            ICT
1326    1306  0264            OPEN RTNB
1327    1307  0124            BR COFL F
1328    1310  1305            .-3
1329
1330    1311  0071            ESP             /MOVE MULTIPLIER TO CNTR VIA RTNB
1331    1312  0064            LSP
1332    1313  0075            LSR
1333    1314  0071            ESP
1334    1315  0064            LSP
1335
1336    1316  0073            ICT             /INCREMENT THE MULTIPLIER
1337
1338    1317  0124            BR COFL F       /ANY MORE .1MS LOOPS?
1339    1320  1301            DELAY+1         /YES, GO TO IT
1340
1341    1321  0223            JUMP F4 IND     /NO, RETURN FROM SUBROUTINE
```



```
1342
1343                    /[SUBROUTINE: WRITE ZEROES]
1344                    /THIS SUBROUTINE WRITES A SPECIFIED NUMBER OF ZEROS IF
1345                    /WRITE GATE IS ON, IF WRITE GATE IS OFF IT ACTS AS A
1346                    /DELAY OF N.5 BITS, ENTRANCE IS MADE WITH RETURN ADDRESS
1347                    /IN THE SR, NUMBER OF BITS IN THE CNTR, AND A CLOCK
1348                    /TRANSITION OCCURRING IMMEDIATLY PRIOR TO THE JUMP INTO
1349                    /THIS SUBROUTINE,
1350
1351
1352    1322  0274    WRT0S,  OPEN RTN        /SAVE RETURN ADDRESS
1353    1323  0064            LSP
1354
1355    1324  0075            LSR             /PUT BIT COUNTER IN SR
1356
1357    1325  0230            OPEN TEMPA      /TEMPA IS THE PATH THROUGH THE SP
1358
1359    1326  0070    LOOP,   LCT             /STALL 2.6 MICRO SECONDS
1360    1327  0374            -3-1
1361    1330  0073            ICT
1362    1331  0124            BR COFL F
1363    1332  1330            .-2
1364    1333  0064            LSP             /NOOP
1365    1334  0071            ESP             /NOOP
1366
1367    1335  0063            TOG FLAG        /WRITE A CLOCK TRANSITION IF WRT GATE IS SET
1368
1369    1336  0064            LSP             /PUT BIT COUNT IN THE COUNTER
1370    1337  0071            ESP
1371
1372    1340  0073            ICT             /INCREMENT BIT COUNT
1373
1374    1341  0075            LSR             /PUT UPDATED BIT COUNT BACK IN SR
1375
1376    1342  0124            BR COFL F       /DONE ALL BITS?
1377    1343  1326            LOOP            /NO
1378
1379    1344  0274            OPEN RTN        /YES, RETURN FROM SUBROUTINE
1380    1345  0207            JUMP IND F1
1381
1382
1383    1346  0222    PGOTIT, JUMP F4         /POINTER TO GETWORD FROM WAITRUN
1384    1347  2010            GOTIT
1385
1386
1387                    /[RCUTINE: INITIALIZE CONT.]
1388
1389    1350  0061    TEST2,  FLAG OFF        /CLEAR FLAG TO INDICATE R10 IS BEING TESTED
1390
1391    1351  0070    TEST1,  LCT             /LOOP TO TEST THAT SR IS 252 AND THAT
1392    1352  0372            -5-1            /IT CAN BE SHIFTED,
1393    1353  0120    TSTAGN, BR SR7 ZERO
1394    1354  1374            INTER1          /TEST FAILURE
1395    1355  0076            ROTATE ONE
1396    1356  0122            BR SR7 ONE
```

```
1397    1357  1374            INTER1          /TEST FAILURE
1398    1360  0074            ROTATE ZERO
1399    1361  0073            ICT
1400    1362  0124            BR COFL F
1401    1363  1353            TSTAGN
1402
1403    1364  0250            OPEN R10        /CONTENTS OF R10 TO SR,  SHOULD BE 125
1404    1365  0071            ESP
1405    1366  0075            LSR
1406
1407    1367  0074            ROTATE ZERO     /SHIFT SR ONCE TO CHANGE 125 TO 252
1408
1409    1370  0176            BR FLAGO ONE    /HAS R10 BEEN TESTED ALREADY?
1410    1371  1350            TEST2           /NO
1411
1412    1372  0202    TESTDN, JUMP F0         /YES, RETURN TO REMAINING INITIALIZE ROUTINE
1413    1373  0004            TSTRTN
1414
1415    1374  0006    INTER1, SET ERR         /SELF TEST ERROR, SET ERROR AND GO SET DONE
1416    1375  0212            JUMP F2
1417    1376  1031            STDONE
1418
1419    1377  0000            0               /OPEN
```



```
1420                    /[SUBROUTINE: FINDHEADER AND FIND DATA ADDRESS MARK]
1421                    /SUBROUTINE TO LOCATE A LEGAL HEADER (CORRECT CRC AND TRACK #)
1422                    /ENTER WITH THE RETURN ADDRESS IN CNTR.  ALSO ROUTINE TO FIND A DATA MARK
1423                    /OR DELETED DATA MARK.
1424
1425                                            /THIS ROUTINE LOCATES A SIX BYTE PREAMBLE OF ZEROES,
1426
1427
1428    1400  0264    FINDHD, OPEN RTNB       /STORE RETURN ADDRESS
1429    1401  0075            LSR
1430    1402  0064            LSP
1431
1432    1403  0230            OPEN TEMPA      /256 TO BAD START INNER COUNT
1433    1404  0070            LCT
1434    1405  0377            -1
1435    1406  0075            LSR
1436    1407  0064            LSP
1437
1438    1410  0234            OPEN TEMPB      /3 TO CNTR FOR BAD START OUTER COUNT,  768 BAD STARTS ALLOWED
1439    1411  0070            LCT
1440    1412  0374            -3-1
1441
1442    1413  0075    TRYAGN, LSR             /RESTORE BAD START COUNT
1443    1414  0064            LSP
1444
1445    1415  0045            CLR BAR LONG    /RESET FOR A COUNT OF 4096 AS PREAMBLE FAILURE COUNT
1446
1447    1416  0240            OPEN TEMPC      /24 TO CNTR AS ZERO BIT COUNT
1448    1417  0070            LCT
1449    1420  0347            -24-1
1450    1421  0075    MOREØS, LSR             /RESTORE ZERO BIT COUNT
1451    1422  0064            LSP
1452
1453    1423  0070            LCT             /PUT 0 IN SR7 FOR DATA COMPARISONS, ALSO CONSTANT FOR 40 MICRO SEC WAIT CRAM
1454    1424  0067            -200-1
1455    1425  0075            LSR
1456
1457    1426  0346            WBR SEPCLK T    /WAIT 40 MICRO SECONDS FOR SEP CLK
1458    1427  1432            .+3
1459
1460    1430  0216            JUMP F3         /ERROR,NO SEP CLK
1461    1431  1667            TIMERR
1462
1463    1432  0154            BR DEQSR7 F     /WHAT IS SEP DATA?
1464    1433  1746            NOZERO          /ONE, GO CHECK PREAMBLE FAILURES
1465
1466    1434  0071            ESP             /ZERO FOUND, CHECK ZERO COUNT
1467    1435  0073            ICT
1468    1436  0124            BR COFL F
1469    1437  1421            MOREØS          /NEED MORE ZEROES FOR PREAMBLE
1470    1440  0061            FLAG OFF        /FOUND PREAMBLE, CLR FLAG TO INDICATE SEARCH FOR IDAM
1471
1472    1441  0045    GETDAM, CLR BAR LONG    /START SEARCH FOR IDAM OR DATA AM, BAR IS NOSTART COUNTER
1473
1474    1442  0070            LCT             /WAIT 40 MICRO SEC FOR SEP CLK
```

```
1475    1443  0067            -200-1
1476    1444  0346            WBR SEPCLK T
1477    1445  1450            .+3
1478    1446  0216            JUMP F3         /TIMING ERROR
1479    1447  1667            TIMERR
1480
1481    1450  0156            BR DEQSR7 T     /WHAT IS SEP DATA?
1482    1451  1755            NOTYET          /ZERO, GO DETERMINE IF TO MANY STARTS
1483
1484    1452  0164            BR MCEQSR F     /ONE, MISSING CLOCK?
1485    1453  1673            BADSRT          /YES, SHOULDN'T HAVE BEEN
1486
1487    1454  0057            PRECRC          /JAM 1ST TWO BITS OF CRC
1488    1455  0056            CRC ONE
1489    1456  0056            CRC ONE
1490
1491    1457  0070            LCT             /WAIT 40 MICRO SECONDS FOR SECOND CELL
1492    1460  0067            -200-1
1493    1461  0346            WBR SEPCLK T
1494    1462  1465            .+3
1495    1463  0216            JUMP F3
1496    1464  1667            TIMERR
1497
1498    1465  0156            BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE T
1499    1466  1673            BADSRT
1500    1467  0166            BR MCEQSR T
1501    1470  1673            BADSRT
1502
1503    1471  0056            CRC ONE         /JAM 3 MORE CRC BITS
1504    1472  0056            CRC ONE
1505    1473  0056            CRC ONE
1506
1507    1474  0070            LCT             /WAIT FOR THIRD BIT CELL
1508    1475  0067            -200-1
1509    1476  0346            WBR SEPCLK T
1510    1477  1502            .+3
1511    1500  0216            JUMP F3
1512    1501  1667            TIMERR
1513
1514    1502  0154            BR DEQSR7 F     /DATA SHOULD BE 0, MISSING CLK SHOULD BE F
1515    1503  1673            BADSRT
1516    1504  0164            BR MCEQSR F
1517    1505  1673            BADSRT
1518
1519    1506  0070            LCT             /CLEAR SR
1520    1507  0000            0
1521    1510  0075            LSR
1522
1523    1511  0070            LCT             /WAIT FOR 4TH BIT CELL
1524    1512  0067            -200-1
1525    1513  0346            WBR SEPCLK T
1526    1514  1517            .+3
1527    1515  0216            JUMP F3
1528    1516  1667            TIMERR
1529
```



```
1530    1517  0154            BR DEQSR7 F     /DATA SHOULD BE 0, MISSING CLK SHOULD BE F
1531    1520  1673            BADSRT
1532    1521  0042            LDMD            /NOOP FOR LONG SEP CLOCK
1533    1522  0042            LDMD            /NOOP FOR LONG SEP CLOCK
1534    1523  0164            BR MCEQSR F
1535    1524  1673            BADSRT
1536
1537    1525  0070            LCT             /WAIT FOR FIFTH BIT CELL
1538    1526  0067            -200-1
1539    1527  0346            WBR SEPCLK T
1540    1530  1533            .+3
1541    1531  0216            JUMP F3
1542    1532  1667            TIMERR
1543
1544    1533  0156            BR DEQSR7 T     /DATA SHOULD BE 1
1545    1534  1673            BADSRT
1546
1547    1535  0176            BR FLAGO T      /IF FLAG SET FINISH LOOKING FOR DATA AM
1548    1536  1675            DAM
1549
1550    1537  0164            BR MCEQSR F     /FINISH IDAM, MISSING CLK SHOULD BE F
1551    1540  1673            BADSRT
1552
1553    1541  0056            CRC ONE         /JAM 6TH CRC BIT OF IDAM
1554
1555    1542  0070            LCT             /WAIT FOR SIXTH BIT CELL
1556    1543  0067            -200-1
1557    1544  0346            WBR SEPCLK T
1558    1545  1550            .+3
1559    1546  0216            JUMP F3
1560    1547  1667            TIMERR
1561
1562    1550  0156            BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE F
1563    1551  1673            BADSRT
1564    1552  0164            BR MCEQSR F
1565    1553  1673            BADSRT
1566
1567    1554  0042            LDMD            /NOOP FOR LONG SEP CLOCK
1568
1569    1555  0056            CRC ONE         /JAM 7TH CRC BIT OF IDAM
1570
1571    1556  0070            LCT             /WAIT FOR SEVENTH BIT CELL
1572    1557  0067            -200-1
1573    1560  0346            WBR SEPCLK T
1574    1561  1564            .+3
1575    1562  0216            JUMP F3
1576    1563  1667            TIMERR
1577
1578    1564  0156            BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE T
1579    1565  1673            BADSRT
1580    1566  0166            BR MCEQSR T
1581    1567  1673            BADSRT
1582
1583    1570  0054            CRC ZERO        /IDAM FOUND, JAM LAST CRC BIT
1584
```

```
1585
1586
1587
1588
1589                        /THIS ROUTINE COMPARES THE HEADER TRACK ADDRESS TO THE
1590                        /DESIRED TRACK ADDRESS ON THE FLY.  IT IS ENTERED AFTER
1591                        /FINDING THE IDAM, ERREG BIT 9 IS SET IF AN ERROR IS DETECTED.
1592
1593
1594    1571  0220    HDRCOM, OPEN TARTRK     /TARGET TRACK ADDRESS TO SR
1595    1572  0071            ESP
1596    1573  0075            LSR
1597
1598    1574  0070            LCT             /SET BIT COUNTER TO 8
1599    1575  0367            -8-1
1600
1601    1576  0144    AGAIN3, BR SEPCLK F     /WAIT FOR BIT CELL
1602    1577  1576            .-1
1603
1604    1600  0156            BR DEQSR7 T     /SEP DATA EQUAL TO SR7?
1605    1601  1605            .+4             /NO, TRACK COMPARE ERROR
1606
1607    1602  0074            ROTATE ZERO     /YES, GET NEXT TRACK ADRESS BIT
1608    1603  0216            JUMP F3
1609    1604  1610            .+4
1610
1611    1605  0210            OPEN ERREG      /SET ERREG BIT 9 TO INDICATE TRACK ERROR
1612    1606  0076            ROTATE ONE
1613    1607  0064            LSP
1614
1615    1610  0055            DATCRC          /UPDATE THE CRC
1616
1617    1611  0073            ICT             /INCREMENT AND TEST THE BIT COUNTER
1618    1612  0124            BR COFL F
1619    1613  1576            AGAIN3          /GO DO NEXT BIT
1620
1621    1614  0070            LCT             /TRACK COMPARED, SET UP BIT COUNTER FOR  0 BYTE
1622    1615  0367            -8-1
1623
1624    1616  0144    AGAIN4, BR SEPCLK F     /WAIT FOR BIT
1625    1617  1616            .-1
1626
1627    1620  0061            FLAG OFF        /CLEAR FLAG FOR NEXT ROUTINE
1628    1621  0061            FLAG OFF        /NOOP FOR LONG SEP CLK
1629    1622  0061            FLAG OFF        /NOOP FOR LONG SEP CLK
1630    1623  0061            FLAG OFF        /NOOP FOR LONG SEP CLK
1631
1632    1624  0055            DATCRC          /UPDATE CRC
1633
1634    1625  0073            ICT             /INCREMENT AND TEST BIT COUNT
1635    1626  0124            BR COFL F
1636    1627  1616            AGAIN4          /GO DO ANOTHER BIT
1637                                          /CONTINUE
1638
1639
```



```
1640                    /THIS ROUTINE COMPARES THE HEADER SECTOR ADDRESS WITH THE
1641                    /TARGET SECTOR ADDRESS ON THE FLY.  IT IS ENTERED FROM
1642                    /THE TRACK COMPARE ROUTINE.  A MISMATCH WILL SET THE FLAG.
1643
1644
1645    1630  0224            OPEN TARSEC     /TARGET SECTOR ADDRESS TO SR
1646    1631  0071            ESP
1647    1632  0075            LSR
1648
1649    1633  0070            LCT             /SET UP BIT COUNTER FOR 8 BITS
1650    1634  0367            -8-1
1651
1652    1635  0144    AGAIN5, BR SEPCLK F     /WAIT FOR A BIT
1653    1636  1635            .-1
1654
1655    1637  0156            BR DEQSR7 T     /HOW DO THEY COMPARE?
1656    1640  1643            .+3             /BAD, GO SET THE FLAG
1657
1658    1641  0216            JUMP F3         /GOOD, SKIP THE ERROR FLAG.
1659    1642  1644            .+2
1660
1661    1643  0062            FLAG ON         /SET FLAG TO INDICATE MISMATCH
1662
1663    1644  0074            ROTATE ZERO     /BRING UP NEXT BIT
1664
1665    1645  0055            DATCRC          /UPDATE THE CRC
1666    1646  0073            ICT             /BUMP THE BIT COUNTER
1667    1647  0124            BR COFL F       /ALL BITS COMPARED?
1668    1650  1635            AGAIN5          /NO, LOOP BACK
1669
1670    1651  0070            LCT             /YES, SETUP TO WAIT FOR END OF
1671    1652  0347            -24-1           /CRC
1672
1673    1653  0144    AGAIN6, BR SEPCLK F     /WAIT FOR BIT
1674    1654  1653            .-1
1675
1676    1655  0074            ROTATE ZERO     /NOOP FOR LONG SEP CLK
1677    1656  0074            ROTATE ZERO     /NOOP FOR LONG SEP CLK
1678    1657  0074            ROTATE ZERO     /NOOP FOR LONG SEP CLK
1679    1660  0074            ROTATE ZERO     /NOOP FOR LONG SEP CLK
1680
1681    1661  0055            DATCRC          /UPDATE CRC
1682
1683    1662  0073            ICT             /BUMP THE BIT COUNTER
1684    1663  0124            BR COFL F       /ALL DONE?
1685    1664  1653            AGAIN6          /NO, LOOP BACK
1686
1687    1665  0226            JUMP F5         /YES, GO CHECK IF CRC IS ALL ZEROES
1688    1666  2515            CKHCRC
1689
1690
1691    1667  0070    TIMERR, LCT             /40 MICROSEC PASSED AND NO SEP CLOCK WAS SEEN
1692    1670  0110            KTIMERR
1693    1671  0226            JUMP F5
1694    1672  2610            GOERDN
```

```
1695
1696
1697    1673  0226  BADSRT, JUMP F5          /POINTER TO BADSTART ON IDAM OR DATA AM
1698    1674  2555          BDSRT
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708    1675  0166  DAM,    BR MCEQSR T      /MISSING CLK SHOULD BE T
1709    1676  1673          BADSRT
1710
1711    1677  0054          CRC ZERO         /JAM 6TH CRC BIT OF DATA AM
1712
1713    1700  0070          LCT              /WAIT FOR SIXTH BIT CELL
1714    1701  0067          -200-1
1715    1702  0346          WBR SEPCLK T
1716    1703  1706          .+3
1717    1704  0216          JUMP F3
1718    1705  1667          TIMERR
1719
1720    1706  0164          BR MCEQSR F      /MISSING CLK SHOULD BE F
1721    1707  1673          BADSRT
1722    1710  0042          LDHD             /NOOP FOR LONG SEP CLK
1723
1724    1711  0156          BR DEQSR7 T      /IF DATA=0 THEN LOOK FOR DELETED DATA AM
1725    1712  1727          DELDAT
1726
1727    1713  0056          CRC ONE          /JAM 7TH BIT OF DATA AM
1728
1729    1714  0070          LCT              /WAIT FOR SEVENTH BIT OF DATA AM
1730    1715  0067          -200-1
1731    1716  0346          WBR SEPCLK T
1732    1717  1722          .+3
1733    1720  0216          JUMP F3
1734    1721  1667          TIMERR
1735
1736    1722  0056          CRC ONE          /JAM LAST BIT OF DATA AM
1737
1738    1723  0154          BR DEQSR7 F      /DATA SHOULD BE 1
1739    1724  1742          ENDDAM           /FLAG IS SET TO INDICATE NORMAL DATA MARK
1740
1741    1725  0216          JUMP F3          /LAST DATA BIT WAS BAD
1742    1726  1673          BADSRT
1743
1744
1745    1727  0054  DELDAT, CRC ZERO         /JAM 7TH CRC BIT OF DEL DATA AM
1746
1747    1730  0070          LCT              /WAIT FOR 7TH CELL OF DEL DATA AM
1748    1731  0067          -200-1
1749    1732  0346          WBR SEPCLK T
```



```
1750    1733  1736          .+3
1751    1734  0216          JUMP F3
1752    1735  1667          TIMERR
1753
1754    1736  0061          FLAG OFF         /CLR FLAG TO INDICATE DELETED DATA MARK
1755
1756    1737  0054          CRC ZERO         /JAM LAST CRC BIT OF DEL DATA AM
1757
1758    1740  0154          BR DEQSR7 F      /DATA SHOULD BE 0
1759    1741  1673          BADSRT
1760
1761    1742  0164  ENDDAM, BR MCEQSR F      /MISSING CLK SHOULD BE F FOR BOTH DATA AMS
1762    1743  1673          BADSRT
1763
1764    1744  0222          JUMP F4          /GO PICK UP DATA FIELD
1765    1745  2206          DATA
1766
1767
1768    1746  0046  NOZERO, INCR BAR         /INCREMENT AND TEST PREAMBLE FAILURE COUNT
1769    1747  0160          BR BAROFL F
1770    1750  1416          TRYAGN+3         /OK, TRY AGAIN FOR A PREAMBLE
1771
1772    1751  0070  NXPRAM, LCT              /TOO MANY BITS WITH NO ZEROES
1773    1752  0120          KNXPRAM
1774    1753  0226          JUMP F5
1775    1754  2610          GOERDN
1776
1777
1778    1755  0046  NOTYET, INCR BAR         /INCR AND TEST IDAM OR DATA AM START FAILURE COUNT
1779    1756  0042          LDHD                    /NOOP FOR LONG SEP CLK
1780    1757  0160          BR BAROFL F
1781    1760  1442          GETDAM+1         /OK, TRY AGAIN
1782
1783    1761  0070  NXIDAM, LCT              /TOO MANY ZEROES WHILE LOOKING FOR START OF
1784    1762  0130          KNXIDAM          /IDAM OR DATA AM
1785    1763  0226          JUMP F5
1786    1764  2610          GOERDN
1787
1788
1789    1765  0212  PNTRDY, JUMP F2          /POINTERS FROM CHECKRDY SUBROUTINE TO RDSTAT ROUTINE
1790    1766  1243          CLRID
1791    1767  0212  PYSRDY, JUMP F2
1792    1770  1243          CLRID
1793
1794    1771  0212  PNORDY, JUMP F2          /POINTERS FROM CHECK RDY TO INITIALIZE ROUTINE
1795    1772  1006          OKDONE
1796    1773  0226          JUMP F5
1797    1774  2631          INTRDY
1798
1799    1775  0000          0                /OPEN
1800    1776  0000          0                /OPEN
1801    1777  0000          0                /OPEN
1802
```

```
1803                    /[SUBROUTINES: GETWORD AND GETCOMMAND]
1804                    /SUBROUTINE TO GET AN EIGHT BIT WORD FROM THE INTERFACE.
1805                    /IF TALKING TO A PDP8 INTERFACE IN 12 BIT MODE, THERE
1806                    /WILL BE FOUR MEANINGLESS BITS PRECEDING THE DESIRED EIGHT
1807                    /BIT WORD, ENTER THIS SUBROUTINE WITH THE RETURN ADDRESS
1808                    /IN THE COUNTER, EXIT WITH THE ONES COMPLIMENT OF THE
1809                    /DESIRED WORD IN THE SHIFT REGISTER. PARITY IS COMPUTED AND
1810                    /CHECKED ON ALL WORDS.
1811
1812
1813    2000  0012    GETWRD, SET XREQ        /REQUEST A WORD FROM INTERFACE
1814
1815    2001  0075    GETCMD, LSR             /STASH THE RETURN ADDRESS
1816    2002  0270            OPEN RTNA
1817    2003  0064            LSP
1818
1819    2004  2070            LCT             /CALL SUBR WAITRN TO WAIT FOR A WORD
1820    2005  1346            PGOTIT
1821    2006  0222            JUMP F4
1822    2007  2312            WAITRN
1823
1824    2010  0061    GOTIT,  OFF FLAG        /CLEAR FLAG FOR PARITY CHECK
1825
1826    2011  0004            CLR ERR         /IN CASE RUN WAS A RESPONSE TO DONE
1827    2012  0020            CLR DONE
1828
1829    2013  0070            LCT             /SET UP BIT COUNT IN CNTR,  8 BIT OR 12 BIT
1830    2014  0367            -8-1
1831    2015  0150            BR XIIBIT  F
1832    2016  2021            .+3
1833    2017  0070            LCT
1834    2020  0363            -12-1
1835
1836    2021  0112    WAITDAT, BR DATAIN ONE  /WHAT IS THE DATA BIT?
1837    2022  2030            GOTONE          /ITS A ONE, GO SAVE IT
1838
1839    2023  0126            BR COFL T       /ITS A ZERO, WAS IT THE PARITY BIT (9TH BIT)?
1840    2024  2041            CHKPAR          /YES, GO CHECK PARITY
1841
1842    2025  0076            ROTATE ONE      /NO SAVE THE DATA BIT COMPLIMENTED IN SR
1843
1844    2026  0222            JUMP F4         /GO SHIFT UP ANOTHER BIT.
1845    2027  2034            NUTHER
1846
1847
1848
1849
1850    2030  0063    GOTONE, TOG FLAG        /COMPLIMENT THE PARITY GENERATOR
1851
1852    2031  0126            BR COFL T       /WAS IT THE PARITY BIT?
1853    2032  2041            CHKPAR          /YES, GO CHECK PARITY
1854
1855    2033  0074            ROTATE ZERO     /NO, SAVE THE COMPLIMENTED DATA BIT IN SR
1856
1857    2034  0026    NUTHER, SET SHIFT       /SHIFT PULSE AND INCREMENT BIT COUNT
```



```
1858    2035  0073            ICT
1859    2036  0024            CLR SHIFT
1860
1861    2037  0222            JUMP F4         /GO TEST THIS BIT.
1862    2040  2021            WAITDAT
1863
1864
1865    2041  0176    CHKPAR, BR  FLAGO ONE   /WHERE THERE AN ODD NO. OF ONES?
1866    2042  2076            GOTWRD          /YES, PARITY WAS GOOD
1867
1868    2043  0214            OPEN STAT       /NO, STAT TO SR
1869    2044  0071            ESP
1870    2045  2075            LSR
1871
1872    2046  0070            LCT             /END AROUND SHIFT OF UPPER 5 BITS OF STAT IN SR
1873    2047  0372            -5-1
1874    2050  0122            BR SR7 T
1875    2051  2055            .+4
1876    2052  0074            ROTATE ZERO
1877    2053  0222            JUMP F4
1878    2054  2056            .+2
1879    2055  0076            ROTATE ONE
1880    2056  0073            ICT
1881    2057  0124            BR COFL F
1882    2060  2050            .-8
1883
1884    2061  0074            ROTATE ZERO     /CLEAR INIT DONE
1885    2062  0076            ROTATE ONE      /SET PARITY ERROR
1886
1887    2063  0122            BR SR7 T        /END AROUND SHIFT OF CRC ERROR BIT OF STAT IN SR
1888    2064  2070            .+4
1889    2065  0074            ROTATE ZERO
1890    2066  0222            JUMP F4
1891    2067  2071            .+2
1892    2070  0076            ROTATE ONE
1893
1894    2071  0064            LSP             /RESTORE STAT TO SCRATCH PAD
1895
1896    2072  0070            LCT             /ERRCODE FOR PARITY ERROR
1897    2073  0210            KPARER
1898    2074  0226            JUMP F5
1899    2075  2610            GOERDN
1900
1901    2076  0270    GOTWRD, OPEN RTNA       /WORD WAS GOOD, EXIT FROM GETWRD, GETCMD
1902    2077  0203            JUMP F0 IND
```

```
1903
1904                    /[SUBROUTINE: STEPHEAD]
1905                    /THIS SUBROUTINE WILL STEP THE SPECIFIED NUMBER OF TRACKS IN THE
1906                    /SPECIFIED DIRECTION.  DIRECTION IS DETERMINED BY THE HD DIR FLOP
1907
1908                    /THE NUMBER OF STEPS IS IN THE SR.  RETURN ADDRESS IS IN THE CNTR.
1909                    /EXIT IS TO THE RETURN ADDRESS IF HOME IS DETECTED.  EXIT IS TO RETURN
1910                    /PLUS 2 IF THE LAST STEP HAS BEEN TAKEN.  AFTER THE LAST STEP IS TAKEN,
1911                    /THE HEAD IS LOADED AND A 25MS DELAY IS EXECUTED FOR HEAD SETTLE TIME
1912
1913
1914
1915
1916    2100  0270    STEPHD, OPEN RTNA       /STORE RETURN ADDR AND MOVE STEP COUNT TO CNTR
1917    2101  0064            LSP
1918    2102  0075            LSR
1919    2103  0071            ESP
1920    2104  0064            LSP
1921
1922    2105  0136    CKHOME, BR HOME T       /IS THE HEAD HOME?
1923    2106  2150            OUT             /YES, GO EXIT
1924
1925    2107  0073            ICT             /NO, INCREMENT STEP COUNT AND STORE IN TEMPA
1926    2110  0075            LSR
1927    2111  0230            OPEN TEMPA
1928    2112  0064            LSP
1929
1930    2113  0070            LCT             /PASS 30 TO DELAY SUBR FOR 3MS DELAY
1931    2114  2124            SECPLS
1932    2115  0075            LSR
1933    2116  0070            LCT
1934    2117  0341            -30-1
1935
1936    2120  0012            SET STPHD       /ISSUE STEP PULSE
1937    2121  0010            CLR STPHD
1938
1939    2122  0212            JUMP F2         /CALL DELAY SUBR
1940    2123  1300            DELAY
1941
1942    2124  0012    SECPLS, SET STPHD       /ISSUE SECOND STEP PULSE
1943    2125  0010            CLR STPHD
1944
1945    2126  0070            LCT             /CALL DELAY FOR 3MS DELAY
1946    2127  2135            DONSTP
1947    2130  0075            LSR
1948    2131  0070            LCT
1949    2132  0341            -30-1
1950    2133  0212            JUMP F2
1951    2134  1300            DELAY
1952
1953    2135  0230    DONSTP, OPEN TEMPA      /CHECK STEP COUNT
1954    2136  0071            ESP
1955    2137  0124            BR COFL F
1956    2140  2105            CKHOME          /NOT DONE, GO CHECK IF HOME
1957
```



```
1958    2141  0270            OPEN RTNA       /DONE STEPPING, INCREMENT RETURN ADDRESS BY 2
1959    2142  0071            ESP
1960    2143  0073            ICT
1961    2144  0073            ICT
1962
1963    2145  0270    DLY25,  OPEN RTNA       /STORE RETURN ADDRESS ALSO START OF 25MS DELAY SUBROUTINE
1964    2146  0075            LSR
1965    2147  0064            LSP
1966
1967    2150  0042    OUT,    LDHD            /LOAD HEAD
1968    2151  0250            OPEN TEMPE      /SET SOFT HD LOAD BIT
1969    2152  0070            LCT
1970                          OCTAL
1971    2153  0200            200
1972                          DECIMAL
1973    2154  0075            LSR
1974    2155  0064            LSP
1975
1976    2156  0070            LCT             /CALL DELAY SUBR FOR 25MS DELAY
1977    2157  2165            DONDLY
1978    2160  0075            LSR
1979    2161  0070            LCT
1980    2162  0000            -255-1
1981    2163  0212            JUMP F2
1982    2164  1300            DELAY
1983
1984    2165  0270    DONDLY, OPEN RTNA       /RETURN FROM STEP HEAD OR DELAY 25MS SUBROUTINE
1985    2166  0203            JUMP F0 IND
1986
1987
1988
1989
1990
1991
1992
1993                    /[ROUTINE: READ SECTOR CONT.]
1994
1995    2167  0070    READ,   LCT             /3 TO DATA MARK TRY COUNTER
1996    2170  0374            -3-1
1997    2171  0234            OPEN TEMPB
1998    2172  0075            LSR
1999    2173  0064            LSP
2000
2001    2174  0070            LCT             /STALL FOR 96 MICRO SEC (3 BYTES) TO AVOID WRT TURN ON SPLASH
2002    2175  0207            -120-1
2003    2176  0073            ICT
2004    2177  0062            FLAG ON         /SET THE FLAG TO SPECIFY DATA AM IN FIND AM ROUTINE
2005    2200  0124            BR COFL F
2006    2201  2176            .-3
2007
2008    2202  0073            ICT             /CLR COUNTER AND SR
2009    2203  0075            LSR
2010
2011    2204  0216            JUMP F3         /GO TRY FIND THE ADDRESS MARK
2012    2205  1441            GETDAM
```

```
2013
2014
2015                    /THIS ROUTINE FOLLOWS THE DISCOVERY OF A DATA MARK OR
2016                    /A DELETED DATA MARK,  IT MOVES THE NEXT 1024 BITS
2017                    /INTO THE SECTOR BUFFER, THEN PICKS UP AND CHECKS THE CRC.
2018
2019    2206  0044      DATA,   CLR BAR           /CLEAR THE BUFFER ADDRESS REGISTER
2020
2021    2207  0144              BR SEPCLK F       /WAIT FOR CLOCK
2022    2210  2207              .-1
2023
2024    2211  0053              START WRTBUF      /START THE WRITE PULSE FOR THIS BIT
2025
2026    2212  0055              DATCRC            /UPDATE THE CRC WITH SEP DATA
2027
2028    2213  0162              BR BAROFL T       /IS BUFFER FULL YET?
2029    2214  2221              GETCRC            /YES, GO GET THE CRC
2030
2031    2215  0050              FIN WRTBUF        /NO, END THE WRITE PULSE
2032
2033    2216  0046              INCR BAR          /ADDRESS NEXT SECTOR BUFFER CELL
2034
2035    2217  0222              JUMP F4           /LOOP BACK FOR NEXT BIT
2036    2220  2207              DATA+1
2037
2038    2221  0050    GETCRC,   FIN WRTBUF        /END THE WRITE PULSE FOR THE LAST BIT
2039
2040    2222  0070              LCT               /SET BIT COUNT TO 16 FOR 2 BYTE CRC
2041    2223  0357              -16-1
2042
2043    2224  0144              BR SEPCLK F       /WAIT FOR NEXT BIT
2044    2225  2224              .-1
2045
2046    2226  0042              LDHD              /4 NOOPS FOR LONG SEP CLOCK
2047    2227  0042              LDHD
2048    2230  0042              LDHD
2049    2231  0042              LDHD
2050
2051    2232  0055              DATCRC            /PUT CRC BIT IN THE CRC GENERATOR
2052    2233  0073              ICT               /INCREMENT AND TEST BIT COUNT
2053    2234  0124              BR COFL F
2054    2235  2224              .-9               /NOT DONE, GET ANOTHER
2055
2056    2236  0214              OPEN STAT         /STATUS TO SHIFT REG
2057    2237  0071              ESP
2058    2240  0075              LSR
2059
2060    2241  0122              BR SR7 T          /END AROUND SHIFT OF DRV RDY BIT OF STAT IN SR
2061    2242  2246              .+4
2062    2243  0074              ROTATE ZERO
2063    2244  0222              JUMP F4
2064    2245  2247              .+2
2065    2246  0076              ROTATE ONE
2066
2067    2247  0176              BR FLAGO T        /SET DEL DATA BIT OF STAT IF FLAG=0
```



```
2068    2250  2254              .+4
2069    2251  0076              ROTATE ONE
2070    2252  0222              JUMP F4
2071    2253  2255              .+2
2072    2254  0074              ROTATE ZERO
2073
2074    2255  0070              LCT               /END AROUND SHIFT OF NEXT 5 BITS OF STAT IN SR
2075    2256  0372              -5-1
2076    2257  0122              BR SR7 T
2077    2260  2264              .+4
2078    2261  0074              ROTATE ZERO
2079    2262  0222              JUMP F4
2080    2263  2265              .+2
2081    2264  0076              ROTATE ONE
2082    2265  0073              ICT
2083    2266  0124              BR COFL F
2084    2267  2257              .-8
2085
2086    2270  0070              LCT               /SET BIT COUNTER TO  16 FOR CRC TEST
2087    2271  0357              -16-1
2088
2089    2272  0132              BR CRC16 ONE      /IS THIS CRC BIT OK
2090    2273  2304              DCRCER            /NO, GO REPORT DATA CRC ERROR
2091
2092    2274  0054              CRC ZERO          /YES, BRING UP NEXT CRC BIT
2093
2094    2275  0073              ICT               /INCREMENT AND TEST BIT COUNTER
2095    2276  0124              BR COFL F
2096    2277  2272              .-5               /GO CHECK ANOTHER
2097
2098    2300  0074              ROTATE ZERO       /CRC WAS GOOD, CLR CRC ERR BIT OF STAT IN SR
2099
2100    2301  0064              LSP               /PUT THE STATUS WORD BACK IN SCRATCHPAD
2101
2102    2302  0212              JUMP F2           /EXIT TO DONE
2103    2303  1006              OKDONE
2104
2105    2304  0076    DCRCER,   ROTATE ONE        /INSERT 1 INTO CRC ERROR BIT
2106
2107    2305  0064              LSP               /PUT THE STAT WORD BACK
2108
2109    2306  0070              LCT               /ERROR CODE FOR CRC ERROR
2110    2307  0200              KDCRCER
2111    2310  0226              JUMP F5
2112    2311  2610              GOERDN
```

```
2113                    /[SUBROUTINE: WAIT FOR RUN]
2114                    /THIS SUBROUTINE WILL WAIT FOR RUN.  IF 46MS ELAPSES, THE HEAD IS UNLOADED
2115                    /AND THE ROUTINE CONTINUES WAITING FOR RUN,  RETURN ADDRESS IS PASSED
2116                    /VIA THE COUNTER
2117
2118
2119    2312  0264      WAITRN, OPEN RTNB       /STASH THE RETURN ADDRESS
2120    2313  0075              LSR
2121    2314  0064              LSP
2122
2123    2315  0102              BR RUN T        /GOT RUN?
2124    2316  2347              GOTRUN
2125
2126    2317  0240              OPEN TEMPC      /PRESET LOOP COUNTER TO 0
2127    2320  0070              LCT
2128    2321  0000              0
2129
2130    2322  0075      BACK,   LSR             /RESTORE LOOP COUNT
2131    2323  0064              LSP
2132
2133    2324  0302              WBR RUN T       /TIME WHILE WAITING FOR FUN
2134    2325  2347              GOTRUN
2135    2326  0302              WBR RUN T
2136    2327  2347              GOTRUN
2137    2330  0302              WBR RUN T
2138    2331  2347              GOTRUN
2139    2332  0302              WBR RUN T
2140    2333  2347              GOTRUN
2141
2142    2334  0071              ESP             /INCREMENT AND TEST LOOP COUNT
2143    2335  0073              ICT
2144    2336  0124              BR COFL F
2145    2337  2322              BACK            /46MS NOT ELAPSED YET
2146
2147    2340  0250              OPEN TEMPE      /TIME IS EXPIRED (45.8 MS), CLEAR THE SOFT HOLD BIT AND UNLOAD THE HEAD
2148    2341  0073              ICT
2149    2342  0075              LSR
2150    2343  0064              LSP
2151    2344  0042              UNHD
2152
2153    2345  0100              BR RUN F        /WAIT FOR RUN. FOREVER IF NECESSARY
2154    2346  2345              .-1
2155
2156    2347  0010      GOTRUN, CLR XREQ        /IF RUN WAS RESPONSE TO XFREQ
2157
2158    2350  0264              OPEN RTNB       /RETURN FROM WAITRUN SUBROUTINE
2159    2351  0213              JUMP IND F2
2160
2161
```



```
2162                    /[ROUTINE: INITIALIZE CONT.]
2163                    /CONTINUATION OF THE INITIALIZE SELF TEST
2164
2165    2352  0070      TEST,   LCT             /LOAD R5 WITH TEST PATTERN 252
2166                            OCTAL
2167    2353  0252              252
2168                            DECIMAL
2169    2354  0075              LSR
2170    2355  0224              OPEN R5
2171    2356  0064              LSP
2172
2173    2357  0070              LCT             /LOAD R10 WITH TEST PATTERN 125
2174                            OCTAL
2175    2360  0125              125
2176                            DECIMAL
2177    2361  0075              LSR
2178    2362  0252              OPEN R10
2179    2363  0064              LSP
2180
2181    2364  0062              FLAG ON         /SET FLAG AND TEST IT
2182    2365  0176              BR FLAGO T
2183    2366  2371              .+3
2184    2367  0212              JUMP F2
2185    2370  1374              INTER1          /FLAG FAILURE
2186
2187    2371  0224              OPEN R5         /CONTENTS OF R5 TO SR,  SHOULD BE 252
2188    2372  0071              ESP
2189    2373  0075              LSR
2190
2191    2374  0212              JUMP F2         /GO CONTINUE INIT TEST IN FLD 2
2192    2375  1351              TEST1
2193
2194
2195    2376  0000              0               /OPEN
2196    2377  0000              0               /OPEN
```

```
2197                    /[SUBROUTINE: MAGNITUDE COMPARISON]
2198                    /THIS SUBROUTINE COMPARES THE EIGHT BIT NUMBERS IN REGISTERS F AND G
2199                    / EXIT IS TO THE RETURN ADDRESS IF F=G,  IF F<G, RETURN IS TO RTNA+2,
2200                    /IF F>G, RETURN IS TO RTNA+4,  CONTENTS OF F AND G ARE UNDEFINED AT
2201                    /THE END OF THE SUBROUTINE
2202
2203
2204
2205
2206    2400  0230    MAGCOM, OPEN TEMPA      /FOR BIT COUNT
2207
2208    2401  0070            LCT             /BIT COUNT IS 8
2209    2402  0367            -8-1
2210
2211    2403  0075            LSR             /RESTORE BIT COUNT
2212    2404  0064            LSP
2213
2214    2405  0254            OPEN TEMPF      /F TO SR
2215    2406  0071            ESP
2216    2407  0075            LSR
2217
2218    2410  0120            BR SR7 ZERO     /TEST F
2219    2411  2443            TSTG0           /ITS 0
2220
2221    2412  0076            ROTATE ONE      /ITS 1, BRING UP NEXT BIT
2222
2223    2413  0064            LSP             /RESTORE F
2224
2225    2414  0260            OPEN TEMPG      /G TO SR
2226    2415  0071            ESP
2227    2416  0075            LSR
2228
2229    2417  0120            BR SR7 ZERO     /TEST G
2230    2420  2432            GLESSF          /ITS 0, G IS LESS THAN F
2231
2232    2421  0074    NEXTG,  ROTATE ZERO     /ITS 1, BRING UP NEXT G BIT
2233
2234    2422  0064            LSP             /RESTORE G
2235
2236    2423  0230            OPEN TEMPA      /INCREMENT AND TEST BIT COUNT
2237    2424  0071            ESP
2238    2425  0073            ICT
2239    2426  0124            BR COFL F
2240    2427  2403            MAGCOM+3        /GO COMPARE ANOTHER BIT
2241
2242    2430  0270            OPEN RTNA       /ALL BITS COMPARED, NO DIFFERENCE
2243    2431  0203            JUMP F0 IND
2244
2245    2432  0270    GLESSF, OPEN RTNA       /G IS LESS THAN F RETURN TO RTNA +4
2246    2433  0271            ESP
2247    2434  0073            ICT
2248    2435  0073            ICT
2249    2436  0273            ICT
2250    2437  0273            ICT
2251    2440  0375            LSR
```



```
2252    2441  0064            LSP
2253    2442  0203            JUMP F0 IND
2254
2255    2443  0074    TSTG2,  ROTATE ZERO     /F WAS 0, BRING UP NEXT BIT
2256
2257    2444  0064            LSP             /RESTORE F
2258
2259    2445  0260            OPEN TEMPG      /G TO SR
2260    2446  0071            ESP
2261    2447  0275            LSR
2262
2263    2450  0120            BR SR7 ZERO     /TEST G
2264    2451  2421            NEXTG           /MATCHS F, GO BRING UP NEXT G BIT
2265
2266    2452  0270            OPEN RTNA       /G IS LESS THAN F,  RETURN TO RTNA +2
2267    2453  0271            ESP
2268    2454  0226            JUMP F5
2269    2455  2436            GLESSF+4
2270
2271
2272
2273                    /[SUBROUTINE: FIND TRACK CONT.]
2274
2275    2456  0070    HOMERR, LCT             /HOME FOUND BEFORE LAST STEP TAKEN
2276    2457  0050            KHOMERR
2277    2460  0226            JUMP F5
2278    2461  2610            GOERDN
2279
2280
2281                    /[SUBROUTINE: DIFFERENCE]
2282                    /THIS SUBROUTINE COMPUTES THE DIFFERENCE BETWEEN TWO EIGHT BIT
2283                    /NUMBERS. ENTER WITH THE RETURN ADDRESS IN RTN, A IN THE
2284                    /COUNTER AND B IN THE SHIFT REGISTER, EXIT IS MADE WITH THE
2285                    /COMPLIMENT OF THE DIFFERENCE IN THE SHIFT REGISTER,
2286                    /EXIT IS TO RTN IF A>=B,  EXIT IS TO RTN+2 IF A<B
2287
2288
2289
2290
2291    2462  0230    DIF,    OPEN TEMPA      /OPEN TEMPORARY PATH THRU THE SP
2292
2293    2463  0126            BR COFL T       /HAS A REACHED ALL ONES YET?
2294    2464  2501            DIFB            /YES, GO GET B FOR THE DIFFERENCE
2295
2296    2465  0064            LSP             /NO, GET B
2297    2466  0075            LSR             /A INTO SHIFT REG
2298    2467  0071            ESP             /B INTO COUNTER
2299
2300    2470  0126            BR COFL T       /HAS B REACHED ALL ONES YET?
2301    2471  2503            DIFA            /YES, GO GET A FOR THE DIFFERENCE
2302
2303    2472  0073            ICT             /INCREMENT B
2304    2473  0064            LSP             /, BRING BACK A
2305    2474  0075            LSR             /B INTO SHIFT REG
2306    2475  0071            ESP             /A INTO COUNTER
```

```
 2307    2476  0073            ICT             /INCREMENT A
 2308    2477  0226            JUMP F5         /GO BACK TO TEST A AGAIN
 2309    2500  2463            DIF+1
 2310
 2311
 2312    2501  0273    DIFB,   OPEN RTNA       /B IS THE COMPLEMENT OF THE DIFFERENCE
 2313    2502  0203            JUMP F0 IND     /EXIT A>=B
 2314
 2315
 2316    2503  0273    DIFA,   OPEN RTNA       /A IS THE COMPLEMENT OF THE DIFFERENCE
 2317    2504  0071            ESP             /INCREMENT THE RETURN ADDRESS BY 2
 2318    2505  0073            ICT
 2319    2506  0073            ICT
 2320
 2321    2507  0064            LSP             /RESTORE RETURN ADDRESS TO SCRATCHPAD AND A TO SR
 2322    2510  0275            LSR
 2323    2511  0071            ESP
 2324    2512  0064            LSP
 2325    2513  0075            LSR
 2326
 2327    2514  0203            JUMP F0  IND    /EXIT A<B
 2328
 2329
 2330                  /[ROUTINE: FIND HEADER CONT.]
 2331                  /THIS ROUTINE CHECKS THE CRC, AND THE RESULTS OF THE TRACK
 2332
 2333                  /AND SECTOR COMPARISONS.
 2334
 2335
 2336
 2337
 2338    2515  0070    CKHCRC, LCT             /PRESET BIT COUNT TO 16 FOR CRC
 2339    2516  0357            -16-1
 2340
 2341    2517  0132            BR CRC16 ONE    /IS CRC ZERO
 2342    2520  2546            HCRCER          /NO, LOG ERROR AND TRY AGAIN
 2343
 2344    2521  0073            ICT             /YES, CRC GOOD SO FAR, BUMP BIT CNTR
 2345
 2346    2522  0054            CRC ZERO        /BRING UP NEXT CRC BIT
 2347
 2348    2523  0124            BR COFL F       /ALL BITS TESTED?
 2349    2524  2517            .-5             /NO, BRANCH BACK
 2350
 2351    2525  0210            OPEN ERREG      /YES, CRC WAS GOOD, CHECK TRK COMP
 2352    2526  0071            ESP
 2353    2527  0075            LSR
 2354
 2355    2530  0070            LCT             /ROTATE BIT 0 TO BIT 7
 2356    2531  0370            -7-1
 2357    2532  0074            ROTATE ZERO
 2358    2533  0073            ICT
 2359    2534  0124            BR COFL F       /DONE ROTATING?
 2360    2535  2532            .-3             /NO
 2361
```



```
 2362    2536  0122            BR SR7 ONE      /YES, WAS THERE A BAD COMPARE
 2363    2537  2542            TKSKER          /YES, GO REPORT A TRACK SEEK ERROR
 2364
 2365    2540  0264            OPEN RTNB       /CORRECT TRACK, EXIT FROM FIND HDR SUBR
 2366    2541  0207            JUMP F1 IND
 2367
 2368
 2369
 2370
 2371    2542  0070    TKSKER, LCT             /HEADER CRC WAS GOOD BUT TRACK
 2372    2543  0150            KTKSKER         /ADDRESS DID NOT COMPARE, MUST
 2373    2544  0226            JUMP F5         /EXIT TO ERROR DONE
 2374    2545  2610            GOERDN
 2375
 2376
 2377    2546  0070    HCRCER, LCT             /HEADER CRC WAS NOT CORRECT
 2378    2547  0140            KHCRCER
 2379    2550  0075            LSR
 2380    2551  0210            OPEN ERREG      /LOG THE ERROR
 2381    2552  0064            LSP
 2382
 2383    2553  0226            JUMP F5         /GO TRY ANOTHER HEADER
 2384    2554  2557            BADHDR
 2385
 2386
 2387
 2388
 2389    2555  0176    BDSRT,  BR FLAGO T      /BAD START ON DATA AM OR IDAM?
 2390    2556  2577            BADDAM
 2391
 2392    2557  0230    BADHDR, OPEN TEMPA      /IDAM, INCREMENT AND TEST BAD START INNER COUNT
 2393    2560  0071            ESP
 2394    2561  0073            ICT
 2395    2562  0275            LSR
 2396    2563  0064            LSP
 2397    2564  0124            BR COFL F
 2398    2565  2615            PTRYAG          /NO OVERFLOW, GO TRY ANOTHER HEADER
 2399    2566  0234            OPEN TEMPB      /INCREMENT AND TEST BAD START OUTER COUNT
 2400    2567  0071            ESP
 2401    2570  0073            ICT
 2402    2571  0124            BR COFL F
 2403    2572  2615            PTRYAG          /NO OVERFLOW, GO TRY AGAIN
 2404    2573  0070    XSTRYS, LCT             /TOO MANY TRIES FOR A HEADER
 2405    2574  0160            KXSTRYS
 2406    2575  0226            JUMP F5
 2407    2576  2610            GOERDN
 2408
 2409
 2410    2577  0234    BADDAM, OPEN TEMPB      /BAD START ON DATA AM, INCREMENT AND TEST BAD START COUNT
 2411    2600  0071            ESP
 2412    2601  0073            ICT
 2413    2602  0075            LSR
 2414    2603  0064            LSP
 2415    2604  0124            BR COFL F
 2416    2605  2617            PGETDA          /NO OVERFLOW GO TRY FOR DATA AM AGAIN
```

```
2417    2606  0070    NODAM,  LCT             /TRIED 3 IMES FOR DATA AM, GO FLAG THE ERROR
2418    2607  0170            KNODAM
2419    2610  0210    GOERON, OPEN ERREG
2420    2611  0075            LSR
2421    2612  0064            LSP
2422    2613  0212            JUMP F2
2423    2614  1000            ERDONE
2424
2425    2615  0216    PTRYAG, JUMP F3         /POINTER TO FIND AN IDAM
2426    2616  1413            TRYAGN
2427
2428
2429    2617  0216    PGETDA, JUMP F3         /POINTER TO FIND DATA AM
2430    2620  1441            GETDAM
2431
2432
2433
2434                    /[ROUTINE: INITIALIZE CONT.]
2435    2621  0070    WRONG,  LCT             /HOME WAS FOUND WHILE STEPPING OUT
2436    2622  0030            K4RONG
2437    2623  0226            JUMP F5
2438    2624  2610            GOERON
2439
2440    2625  0070    DNRCAL,   LCT           /CALL CHECK READY SUBROUTINE
2441    2626  1771            PNORDY
2442    2627  0226            JUMP F5
2443    2630  2640            CHKRDY
2444
2445    2631  0070    INTRDY, LCT             /DRV 0 IS READY CALL BOOT SUBROUTINE TO
2446    2632  0770            GOREAD          /MOVE TO TRACK 1, THEN GO TO READ ROUTINE TO
2447    2633  0274            OPEN RTN        /PICK UP SECTOR 1
2448    2634  0075            LSR
2449    2635  0064            LSP
2450    2636  0202            JUMP F0
2451    2637  0252            BOOT
2452
2453
2454
2455
```



```
2456                    /[SUBROUTINE: CHECKREADY]
2457
2458                    /SUBROUTINE TO CHECK THE SELECTED DRIVE TO SEE IF THE
2459                    /DISK IS INSERTED AND UP TO SPEED.  THIS IS DONE BY CHECKING TO SEE IF
2460                    /THE INTERVAL BETWEEN 2 INDEX PULSES IS BETWEEN 150 MS AND 180 MS.  RETURN
2461                    /ADDRESS IS PLACED IN THE COUNTER BEFORE ENTRY.  NOT READY RETURN IS
2462                    /TO THE RETURN ADDRESS.  READY RETURN IS TO THE RETURN ADDRESS PLUS 2
2463
2464
2465
2466                    /
2467    2640  0274    CHKRDY, OPEN RTN        /SAVE RETURN ADDRESS
2468    2641  0075            LSR
2469    2642  0064            LSP
2470
2471    2643  0070            LCT             /2 TO CNTR FOR INDEX PASS COUNT
2472    2644  0375            -2-1
2473
2474    2645  0230            OPEN TEMPA      /FOR INDEX PASS COUNT
2475
2476    2646  0075    NEWPAS, LSR             /RESTORE INDEX PASS COUNT
2477    2647  0064            LSP
2478
2479    2650  0061            FLAG OFF        /CLOSE INDEX WINDOW
2480
2481    2651  0042            LDHD            /TO CLEAR INDEX FLOP
2482
2483    2652  0070            LCT             /FOR 15 TIMES THROUGH 10MS LOOP
2484    2653  0360            -15-1
2485
2486    2654  0234    STDLY,  OPEN TEMPB      /RESTORE OUTER COUNT
2487    2655  0075            LSR
2488    2656  0064            LSP
2489
2490    2657  0070            LCT             /FOR 40 TIMES THROUGH .25MS LOOP
2491    2660  0327            -40-1
2492
2493    2661  0240            OPEN TEMPC
2494    2662  0075    SPBACK, LSR             /RESTORE INNER COUNT
2495    2663  0064            LSP
2496
2497    2664  0070            LCT             /WAIT .25 MS FOR INDEX
2498    2665  0005            -250-1
2499    2666  0116            BR INDX T
2500    2667  2714            SAWIND          /FOUND INDEX
2501    2670  0073            ICT
2502    2671  0124            BR COFL F
2503    2672  2666            .-4
2504
2505    2673  0240            OPEN TEMPC      /INCREMENT AND TEST  INNER COUNT
2506    2674  0071            ESP
2507    2675  0073            ICT
2508    2676  0124            BR COFL F
2509    2677  2662            SPBACK
2510
```

```
2511    2700  0234            OPEN TEMPB      /INCREMENT AND TEST OUTER COUNT
2512    2701  0071            ESP
2513    2702  0073            ICT
2514    2703  0124            BR COFL F
2515    2704  2655            STDLY+1
2516
2517    2705  0176            BR FLAGO ONE    /WAS INDEX WINDOW OPEN?
2518    2706  2767            UNRDY           /YES, NO INDEX WITHIN 180MS
2519
2520    2707  0062            FLAG ON         /NO, OPEN WINDOW
2521
2522    2710  0070            LCT             /FOR 3 TIMES THROUGH 10 MS LOOP
2523    2711  0374            -3-1            /THE WINDOW IS 30 MS WIDE
2524
2525    2712  0226            JUMP F5         /GO LOOK FOR INDEX
2526    2713  2654            STDLY
2527
2528
2529    2714  0230    SAWIND, OPEN TEMPA      /INCREMENT AND TEST INDEX PASS COUNT
2530    2715  0071            ESP
2531    2716  0073            ICT
2532    2717  0124            BR COFL F
2533    2720  2646            NEWPAS          /THIS WAS 1ST INDEX, GO LOOK FOR SECOND
2534
2535    2721  0174            BR FLAGO ZERO   /THIS WAS 2ND INDEX, WAS THE WINDOW OPEN?
2536    2722  2767            UNRDY           /NO, INDEX OCCURRED TOO SOON
2537
2538    2723  0274            OPEN RTN        /YES, INDEX OCCURRED BETWEEN 150 AMD 180 MS, INCREMENT
2539    2724  0071            ESP             /RETURN ADDRESS BY 2
2540    2725  0073            ICT
2541    2726  0073            ICT
2542    2727  0075            LSR
2543    2730  0064            LSP
2544
2545    2731  0214            OPEN STAT       /SET DRV RDY BIT OF STAT IN SR
2546    2732  0071            ESP
2547    2733  0075            LSR
2548
2549    2734  0076            ROTATE ONE
2550
2551    2735  0061            FLAG OFF        /FLAG OFF TO INDICATE FIRST PASS
2552
2553    2736  0070    ROT3,   LCT             /END AROUND SHIFT OF THE NEXT 3 BITS OF STAT IN SR
2554    2737  0374            -3-1
2555    2740  0122            BR SR7 T
2556    2741  2745            .+4
2557    2742  0074            ROTATE ZERO
2558    2743  0226            JUMP F5
2559    2744  2746            .+2
2560    2745  0076            ROTATE ONE
2561    2746  0073            ICT
2562    2747  0124            BR COFL F
2563    2750  2740            .-8
2564
2565    2751  0176            BR FLAGO T      /WAS IT FIRST 3 OR LAST 3
```



```
2566    2752  2764            EXCHRY          /LAST, GO EXIT
2567
2568    2753  0140            BR WRTEN F      /UPDATE WRITE PROTECT BIT OF STAT IN SR
2569    2754  2760            .+4
2570    2755  0074            ROTATE ZERO
2571    2756  0226            JUMP F5
2572    2757  2761            .+2
2573    2760  0076            ROTATE ONE
2574
2575    2761  0062            FLAG ON         /GO SHIFT AROUND LAST 3 BITS
2576    2762  0226            JUMP F5
2577    2763  2736            ROT3
2578
2579    2764  0064    EXCHRY, LSP             /RESTORE THE STAT
2580
2581    2765  0274            OPEN RTN        /RETURN FROM CHKRDY SUBROUTINE
2582    2766  0217            JUMP F3 IND
2583
2584    2767  0214    UNRDY,  OPEN STAT       /CLEAR DRV READY BIT OF STAT IN SR
2585    2770  0071            ESP
2586    2771  0075            LSR
2587    2772  0074            ROTATE ZERO
2588
2589    2773  0226            JUMP F5         /GO UPDATE REST OF STAT IN SR
2590    2774  2735            ROT3-1
2591
2592    2775  0000            0               /OPEN
2593    2776  0000            0               /OPEN
2594    2777  0000            0               /OPEN
2595
2596
2597                  $
```

```
0000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3000
3100

3200
3300

3400
3500

3600
3700
```



```
4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700
```

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 18 SECONDS

3K CORE USED

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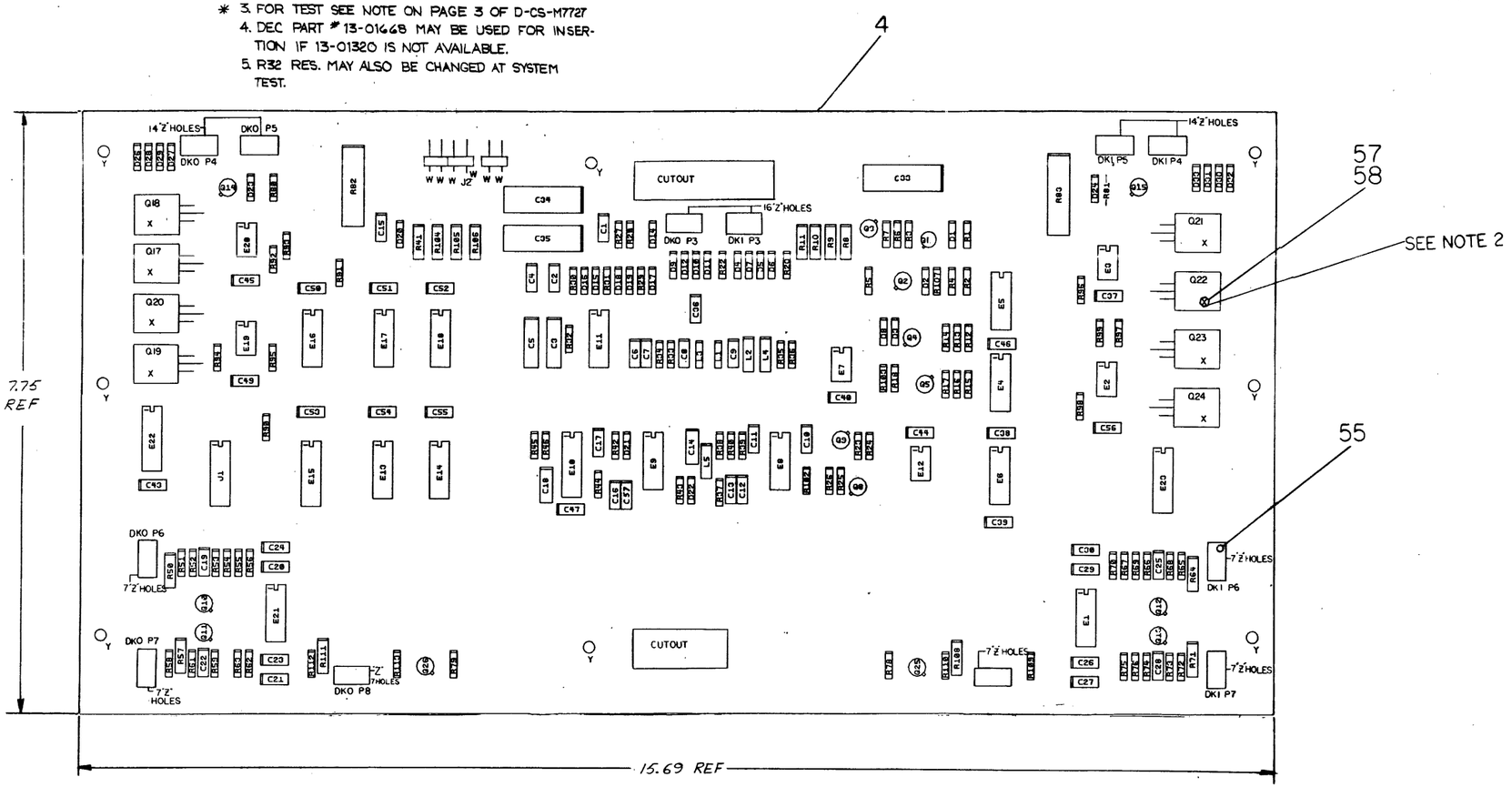
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTORS ARE 1/4W, ±5%.
2. WASHER TO BE USED BETWEEN ITEMS 57 AND 58 WILL BE SUPPLIED WITH THE D44C8 TRANSISTOR ONLY BY G.E..
   THE WASHER IS ONLY REQUIRED WHEN USING THE G.E. TYPE TRANSISTOR.
3. * FOR TEST SEE NOTE ON PAGE 3 OF D-CS-M7727
4. DEC PART # 13-01668 MAY BE USED FOR INSERTION IF 13-01320 IS NOT AVAILABLE.
5. R32 RES. MAY ALSO BE CHANGED AT SYSTEM TEST.



7473	11	4
73451	4	8
74157	8	16
75452	4	8
74123	8	16
IC TYPE	GND	+5V

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

IC PIN LOCATIONS

REV.	CHANGE NO.	DATE	BY
A	M7727-00001	10-8-75	C. YOUSE
B	M7727-00002	10-31-75	W. SMITH
C	M7727-00003	11/10/77	D. BUYCKS
D	M7727-00004	1/31/78	H. DRAB
E	M7727-00005	3-21-78	H. DRAB

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

FIRST USED ON OPTION MODEL: M7727

ETCH BOARD REV. B

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DRN.	DATE	12/3/75
CHKD	DATE	12/24/75
ENG.	DATE	1-24-76
PROJ. ENG.	DATE	1/26/76
PROD.	DATE	1/24/75

NEXT HIGHER ASSY

SCALE

SHEET 1 OF 6

digital

TITLE: READ/WRITE CONTROL

SIZE	CODE	NUMBER	REV.
D	CS	M7727-0-1	E

DIST.

SIZE D CODE CS NUMBER M7727-0-1 REV. E

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PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
		X-Y COORDINATE HOLE LOCATION	K-CO-M7727-0-4	1
		ASSY/ DRILL HOLE LAYOUT	D-AH-M7727-0-5	2
		MODULE ECO HISTORY	B-MH-M7727-0-6	3
1		ETCHED CIRCUIT BOARD	D-IA-5011370-00	4
2	C17, C18	CAP 100 pf	1000016-00	5
1	C9	CAP 180 pf	1000020-00	6
2	C8, C14	CAP 220 pf	1000021-00	7
32	C1, C2, C4, C10, C11, C15 C16, C20, C21, C23, C24 C26, C27, C29, C30, C37, C38, C39, C40 C43 C44, C45, C46, C47 C49 – C57	CAP .01 µf	1001610-00	8
2	C3, C5	CAP 6.8 µf 35V	1005306-00	9
2	C34, C35	CAP 100 µf	1009433-00	10
1	C33	CAP 50 µf	1000080-00	11
9	C7, C6, C12, C13	CAP .047 µf	1010978-32	12
5	C19, C25, C22, C28, C36	CAP .005 µf	1001765-00	13
10	D4, D7, D9, D12, D14 D15, D16, D17, D18, D19	DIODE D671	1103309-00	14
8	D3, D5, D6 D8 D10 D11, D21, D22	DIODE D672	1105275-00	15
10	D23, D24, D26, D27 D28, D29, D30, D31 D32, D33	DIODE IN4004	1105796-00	16
1	D20	DIODE IN4742 12V	1109502-00	17
2	D1, D2	DIODE 5.1V.	1110713-00	18
9	R90, R92 – R99	RES 150 1/4W 5%	1300250-00	19
4	R41, R104, R105, R106	RES 680 1/2W 5%	1300347-00	20
12	R6, R14, R17, R23, R24, R26, R46 R78, R79, R80, R81 R91,	RES 1K 1/4 W 5%	1300365-00	21
4	R8 – R11	RES 1.2K 1/2W 5%	1300385-00	22
6	R50, R57, R64, R71, R108 R111	RES 68 1/2W 5%	1309405-00	23
7	R13, R16, R53, R62 R68, R75, R102	RES 1.5K 1/4W 5%	1300391-00	24
4	R35, R36, R39, R40	RES 511 1/8W 1%	1302411-00	25
1	R5	RES 2.74K 1/8W 1%	1304868-00	26
11	R2, R4, R7, R12, R15 R18, R103, R25, R27 R42, R43	RES 3.3K 1/4W 5%	1300439-00	27
4	R1, R20, R22, R44 R45, R107	RES 10K 1/4W 5%	1300479-00	28
11	R3, R37, R38, R52 R58, R63, R66, R72 R76, R109 R112	RES 1.21K 1/8 W 1%	1302871-00	29
1	R32	RES 220Ω ±5%, 1/4W	1300271-00	30 *
2	R33, R34	RES 464 1/8 W 1%	1303047-00	31
2	R28, R29	RES 34.8K 1/8 W 1%	1303156-00	32
4	R51, R61, R65, R73	RES 10K 1/8 W 1%	1303312-00	33
2	R82, R83	RES 100 5W 5%	1309094-00	34
2	R30, R31	RES 19.6 K 1/8 W 1%	1309419-00	35
6	R55, R59, R67, R74 R110, R113	RES 4.64K 1/4W 1%	1304856-00	36

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
1	L5	CHOKE 1000 MHY	1602723-00	37
2	L2, L4	CHOKE 33 MHY	1601759-00	38
2	L1, L3	CHOKE 120 MHY	1610663-00	39
1	E17	I.C. 7450	1905580-00	40
2	E16, E18	I.C. 7473	1905587-00	41
1	E14	I.C 7402	1909004-00	42
1	E13	I.C 7404	1909686-00	43
2	E4, E6	I.C 7408	1910155-00	44
3	E1, E9, E21	I.C. 1414	1910337-00	45
5	E2, E3, E12, E19, E20	I.C 75451	1910406-00	46
1	E10	I.C 74123	1910436-00	47
2	E8, E11	I.C. 72733	1910644-00	48
1	E15	I.C. 74157	1910655-00	49
1	E5	I.C. 7406	1910741-00	50
1	J1	I.C SOCKET 16 PIN	1211813-02	51
9	Q9 THRU Q15, Q25Q26	TRANS MXAA05	1510705-00	52
6	Q1 – Q5, Q8	TRANS MXAA55	1510706-00	53
8	Q17 – Q24	TRANS D44C8	1510421-00	54
86	"Z" HOLES	WIRE WRAP PIN	1210385-01	55
3	J2	CONN 2 POS	1212204-00	56
8	"X" HOLES	SCREW, PAN HD 4/40 X 5/16	9006010-01	57
8	"X" HOLES	NUT, KEP 4/40 X 1/4 X 3/32	9006557-00	58
1	E7	I.C. 75452	1910645-00	59
4	R54, R56, R69, R70	RES 14.7K 1/4W 1%	1302941-00	60

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	READ/WRITE CONTROL
SCALE	SHEET 2 OF 6
SIZE	D
CODE	CS
NUMBER	M7727-Ø-1
REV.	E
DIST.	

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DG WT GATE H
DG ABOVE TK 43 H
DG SEL WT PROT L
DG ERASE H
DG WT DATA H
DG SEL DK Ø H
DG DC LO L
DG SEL DK 1 H
R/W BUS +
R/W BUS -
D3 RAW DATA L

R32, 560Ω USE IF E11-7 IS < THAN 2.0
R32, 680Ω USE IF E11-7 IS < THAN 2.0
R32, 820Ω USE IF E11-7 IS < THAN 2.0 (Vp-H)
R32, 1.0K USE IF E11-7 IS < THAN 2.0 (Vp-H)
* R32, 220Ω (NOMINAL)
R32, 1.5K USE IF E11-7 IS > THAN 3.2 (Vp-P)

APPLY 12 MX BETWEEN E11-1 AND E11-14. THEN SELECT R32 FOR E11-7, OR E11-8 TO BE 2.0 TO 3.2 (Vp-P)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D3)	D	CS	M7727-Ø-1	E
SCALE —	SHEET 3 OF 6	DIST.		

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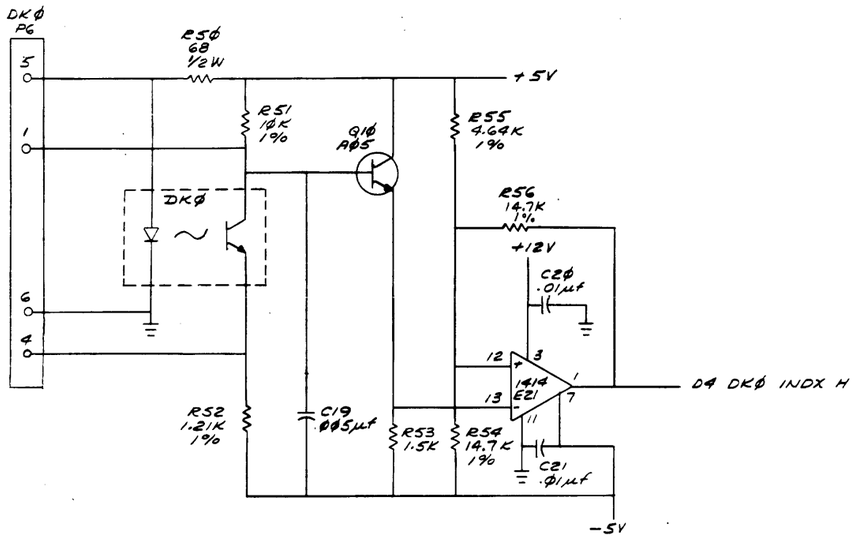

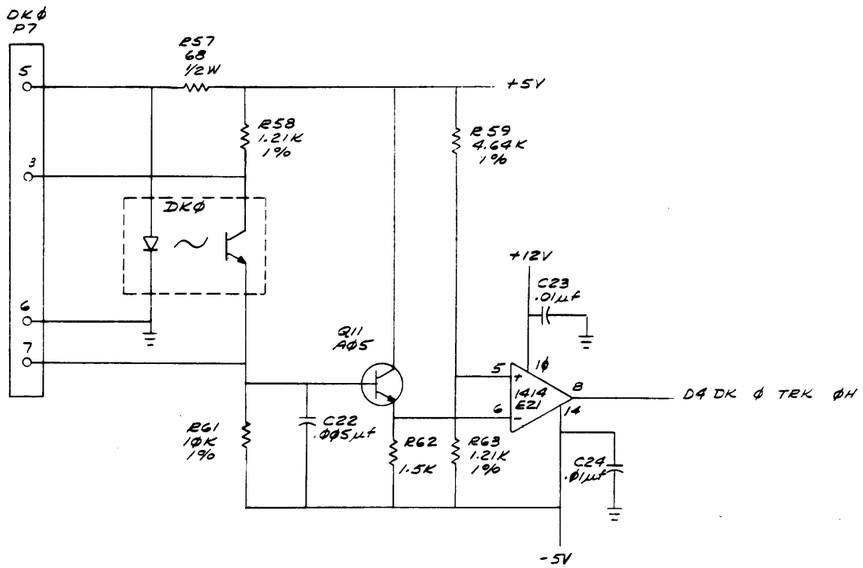

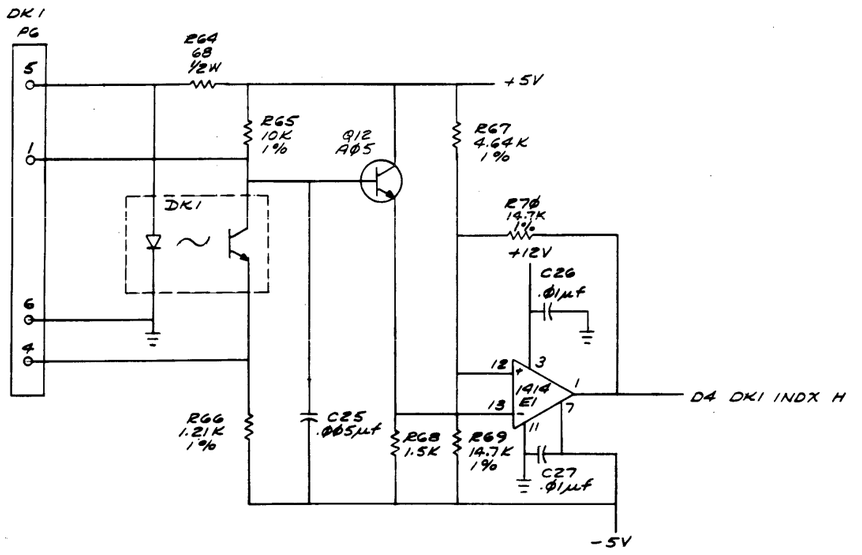

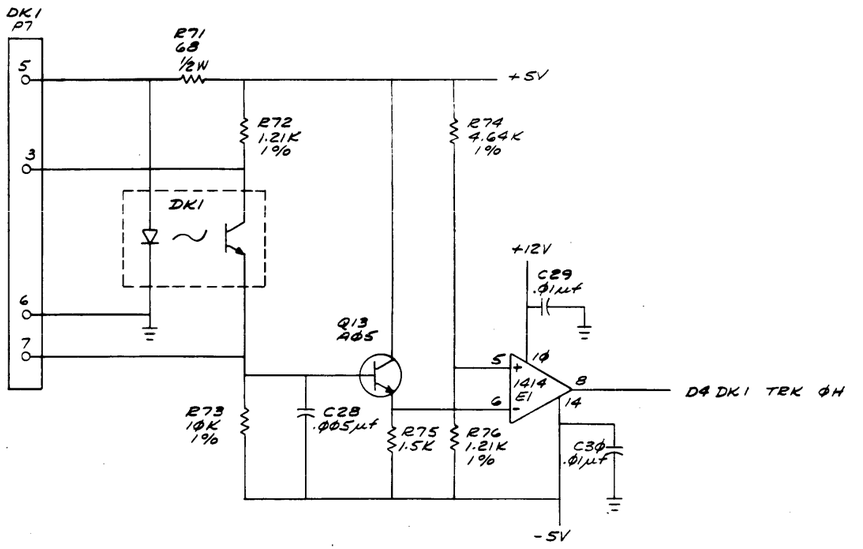

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	READ / WRITE CONTROL (D4)	SIZE	CODE	NUMBER	REV.
		D	CS	M7727-Ø-1	E
SCALE	SHEET 4 OF 6	DIST.			

M7727-Ø-1 E

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+5V
R91 1K
R92 150
R93 150
R95 150
R94 150
R96 150
R97 150
R98 150
R99 150
R9Ø 15Ø
7473 E18
7473 E16
7473 E17
7473 E15
7473 E16
7473 E17
7473 E16
7473 E15
7451 E2Ø
7451 E19
7451 E3
7451 E2
7402 E14
7402 E13
7404 E13
7404 E13
7402 E14
7402 E13
Q17 D44C8
Q18 D44C8
Q19 D44C8
Q2Ø D44C8
Q21 D44C8
Q22 D44C8
Q23 D44C8
Q24 D44C8
D29
D27
D26
D28
D33
D31
D3Ø
D32
DKØ PØ
DKØ HEAD STEPPER
DK1 PØ
DK1 HEAD STEPPER
+24V
DS INIT L
DG SEL DK 1 H
DG STEP L
DG OUT H
DG SEL DK Ø H
DG DC LØ L
DS INIT L

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D5)	D	CS	M7727-Ø-1	E
SCALE —	SHEET 5 OF 6		DIST.	

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DKØ P8

R111 68 1/2W

+5V

R112 1.21K 1%

R79 1K

R113 4.64K 1%

Q26 AØ5

74157 E15

D4 DK1 TRK Ø H
D4 DKØ TRK Ø H
D4 DK1 INDX H
D4 DKØ INDX H

DG SEL WT PROT L
DG SEL TRK Ø H
DG SEL INDX H
DG SEL DK Ø H

DG OUT H
DG ERASE H
DG WT GATE H
DG STEP L
D3 RAW DATA L
DG WT DATA H

I.C. SOCKET J1

DG DC LO L
DG SEL DK 1 H
DG ABOVE TK 43 H
DG LOAD HEAD H
DG SEL TRK Ø H
DG SEL INDX H

DK1 P8

R1Ø8 68 1/2W

+5V

R1Ø9 1.21K 1%

R78 1K

R110 4.64K 1%

Q25 AØ5

75451 E12

Q14 AØ5

DKØ HEAD LOAD SOLENOID

DKØ P5

D23 1N4004

+24V

R82 1ØØ 5W

R80 1K

DG SEL DK 1 H

7404 E13

+5V

DG LOAD HEAD H
DS INIT L

7408 E6

R81 1K

Q15 AØ5

DK1 HEAD LOAD SOLENOID

DK1 P5

D24 1N4004

R83 1ØØ 5W

+24V
+5V
-5V

C33 5Ø µf
C34 19Ø µf
C37-C4Ø C43-C47 C49-C56 .01UF
C35 19Ø µF

J2

N/C
-5V
GND
+5V
+24V RETURN
+24V

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D6)	D	CS	M7727-Ø-1	E
SCALE —	SHEET 6 OF 6	DIST.		

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

THIS IS PRINT SET ☐☐☐☐

SEQUENCE		SEQUENCE
H771 POWER SUPPLY	B-DD-H771-Ø	
H771-A CIRCUIT SCHEMATIC	D-CS-H771-A-1	
H771-C CIRCUIT SCHEMATIC	D-CS-H771-C-1	
H771-D CIRCUIT SCHEMATIC	D-CS-H771-D-1	
RXØ1 POWER BOARD ASSY	D-AD-7010718-0-0	
RXØ1 POWER SUPPLY BOARD	D-CS-5411398-0-1	

UNIT VARIATIONS

VAR	TITLE	PRINT SET 1
H771-A	RXØ1 POWER SUPPLY, 115V, 6ØHZ	X
H771-C	RXØ1 POWER SUPPLY, LOW VOLT, 5ØHZ	X
H771-D	RXØ1 POWER SUPPLY, HIGH V, 5ØHZ	X

REVISIONS		
DATE	CHG. NO.	REV
7-75	H771-1	A
10-75	H771-2	B
11-75	H771-3	C
3-76	H771-4	D
1-78	H771-5	E
7-79	H771-6	F
11-79	H771-ML7	H

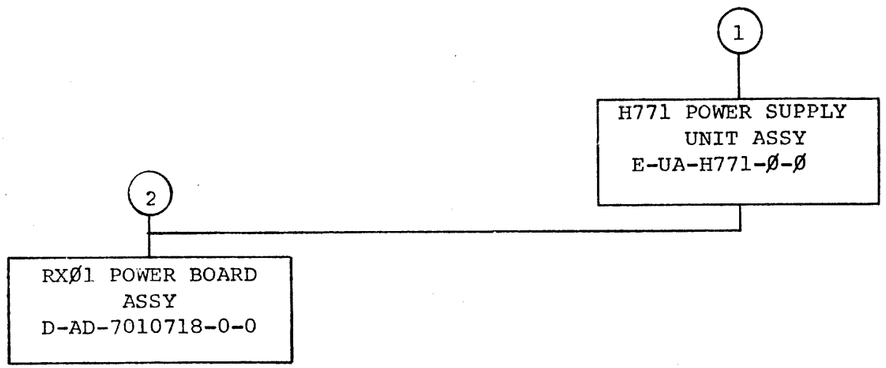
USED ON OPTION/MODEL	
RXØ1	

SHEET 1 OF 3

DRN. W. McCarthy	DATE 2/3/75	TITLE H771 POWER SUPPLY
CHK'D. W.F.McCarthy	DATE 6/13/75	
PROJ ENG. Robert Howard	DATE 6/13/75	
ENGR. D.D. Miller	DATE 6/13/75	SIZE B / CODE DD / NUMBER H771-Ø / REV H
FIELD SERV. K.J. Flaherty	DATE 6/13/75	DIST

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

DRB 106



TITLE		SIZE	CODE	NUMBER	REV
H771 POWER SUPPLY	SHEET 2 OF 3	B	DD	H771-Ø	H

DRB 107

MECHANICAL

CUSTOMER PRINT SET						MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
							1	E-UA-H771-Ø-Ø	H	2	H771 POWER SUPPLY ASSY	
								E-MD-7412667-0-0	D	1	CHASSIS, POWER SUPPLY	
								D-AD-7010680-0-0	C	1	TRANSFORMER ASSY, 6Ø HZ	
								D-AD-7010704-0-0	E	1	TRANSFORMER ASSY, 5Ø HZ	
								C-AD-7010697-0-0	B	1	POWER CORD ASSY	
								D-IA-7010972-0-0	C	1	JUMPER	
								C-MD-7413344-0-0		1	BRACKET, FUSE MOUNTING	
								A-DC-7413403-0-0		1	DECAL, H771-A	
								A-DC-7414250-0-0	A	1	DECAL, H771-C	
								A-DC-7414251-0-0	A	1	DECAL, H771-D	
							2	D-AD-7010718-0-0		1	RXØ1 POWER BOARD ASSY	
								D-IA-7010854-0-0	C	1	READ/WRITE BOARD HARNESS	
								D-IA-7010853-0-0	B	1	DISK CONTROL BOARD HARNESS	

ELECTRICAL

CUSTOMER PRINT SET						MFG SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
							1	B-DD-H771-Ø	E	3	H771 POWER SUPPLY	
								D-CS-H771-A-1	B	1	H771-A CIRCUIT SCHEMATIC	
								D-CS-H771-C-1	C	1	H771-C CIRCUIT SCHEMATIC	
								D-CS-H771-D-1	C	1	H771-D CIRCUIT SCHEMATIC	
								A-SP-H771-Ø-1			ENGINEERING SPECIFICATION	
							2	D-AD-7010718-0-0	※	1	RXØ1 POWER BOARD ASSY	
								D-CS-5411398-0-1	※	1	RXØ1 POWER BOARD ASSY	

CUSTOMER PRINT SET CODES		TITLE		SIZE	CODE	NUMBER	REV
	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED	H771 POWER SUPPLY	SHEET 3 OF 3	B	DD	H771-Ø	H

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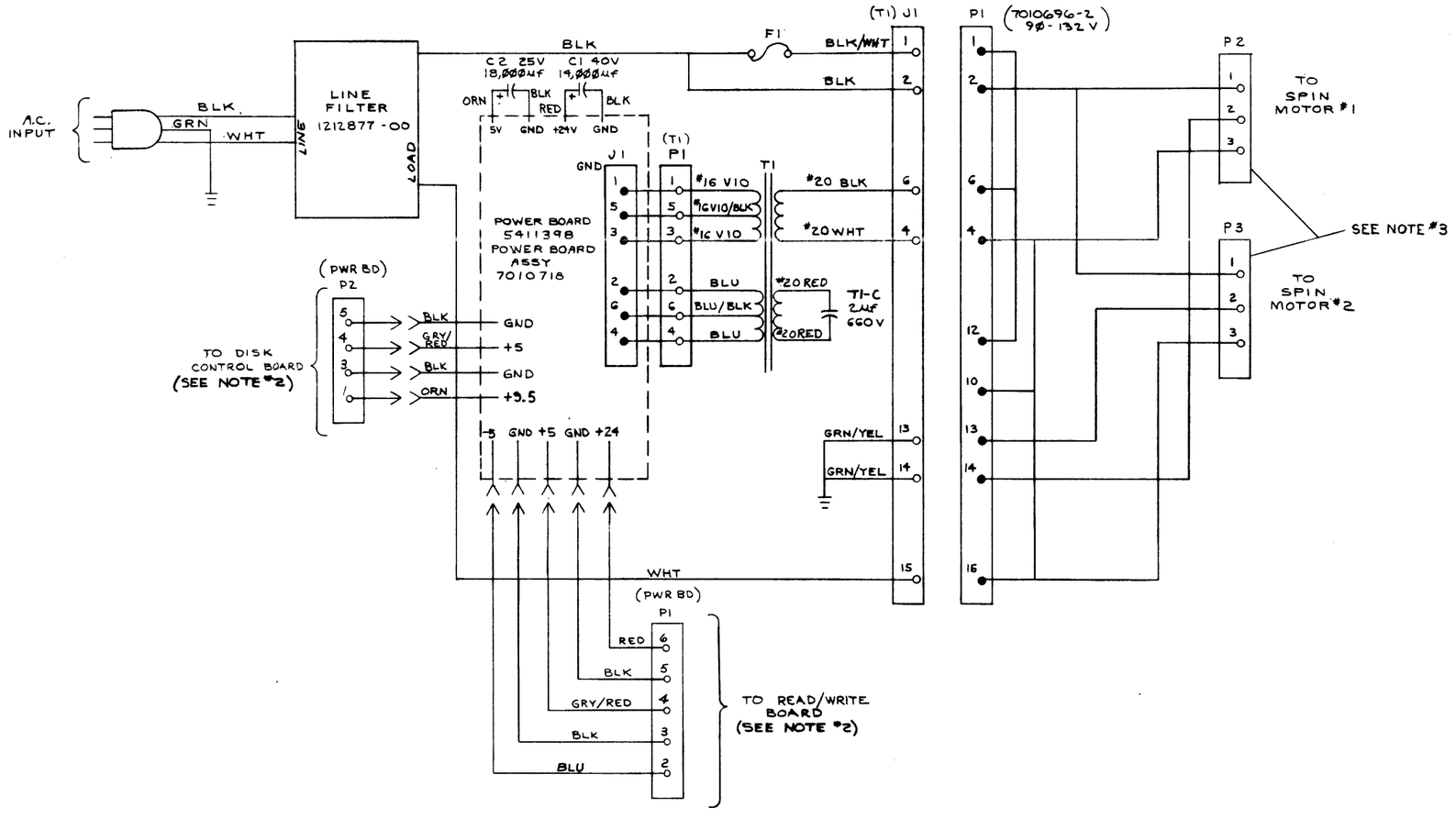
NOTES:
1. ALL WIRE TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
2. SLOT BETWEEN P1-4 + P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 + P2-5 ALSO CONTAINS A DUMMY PIN.
3. NO DOUBLE CRIMPS ARE ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).



REVISIONS			
CHK	CHANGE NO.	REV.	
GW	H771-00001	A	8-Jan-75
W Barker	2201		B. HAZEN
RJD	H771-00004	B	5-2-75
W Barker	3016		B. HAZEN
Bill Hazen	29 Jan 75		

DRN. D.E. Ohara	1/22/75	FIRST USED ON: RX01
CHK'D WFM Cook	3/10/75	TITLE: H771-A POWER CONNECTIONS
ENG. Bill Hazen	3-18-75	
PROJ. ENG. Wm Barker	3-18-75	
PROD. Vanilla	3/14/75	
NEXT HIGHER ASSY.		
B-DD--771-0		SIZE D CODE CS NUMBER H771-A-1 REV. B
SCALE NONE		
SHEET 1 OF 1		DIST.

DEC FORM NO. DRD 107-D

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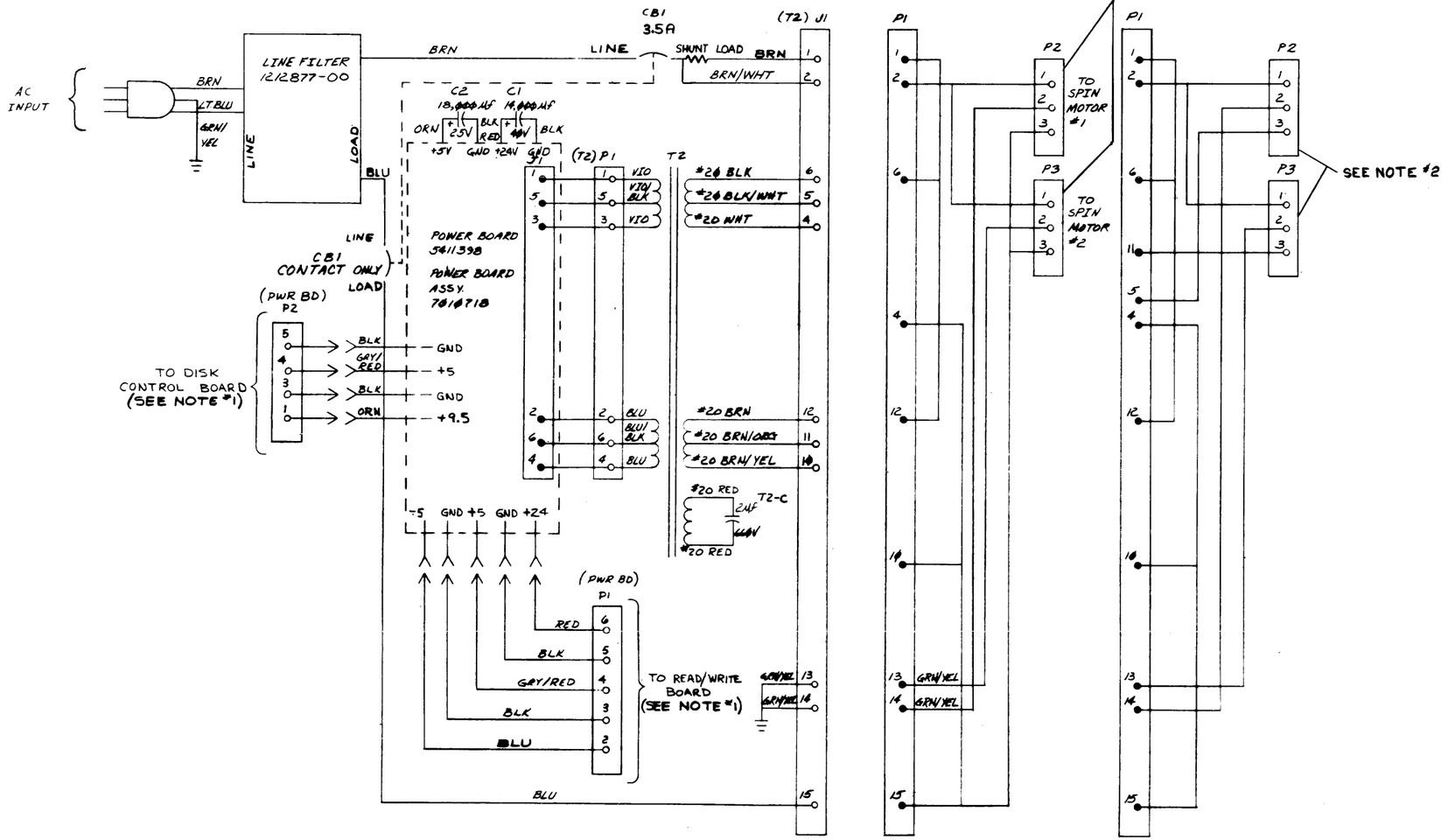
NOTES:
1. SLOT BETWEEN P1-4 AND P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.



REVISIONS			
CHK	CHANGE NO.	REV.	
—	H771-00001	*	ORIGINATED
BD	H771-00002	A	
BD	H771-00003	B	
BD	H771-00004	C	

DEC FORM 495 1068

DRN.	7-3-75
CHK' E. DEMELO	8-5-75
ENG.	8-12-75
PROJ. ENG.	8-12-75
PROD.	8-12-75
NEXT HIGHER ASSY.	B-DD-H771-0
SCALE	—
SHEET	1 OF 1

FIRST USED ON RX01

digital

TITLE H771-C POWER CONNECTIONS

SIZE	CODE	NUMBER	REV.
D	CS	H771-C-1	C

DIST.

SIZE CODE NUMBER REV. D CS H771-R-1

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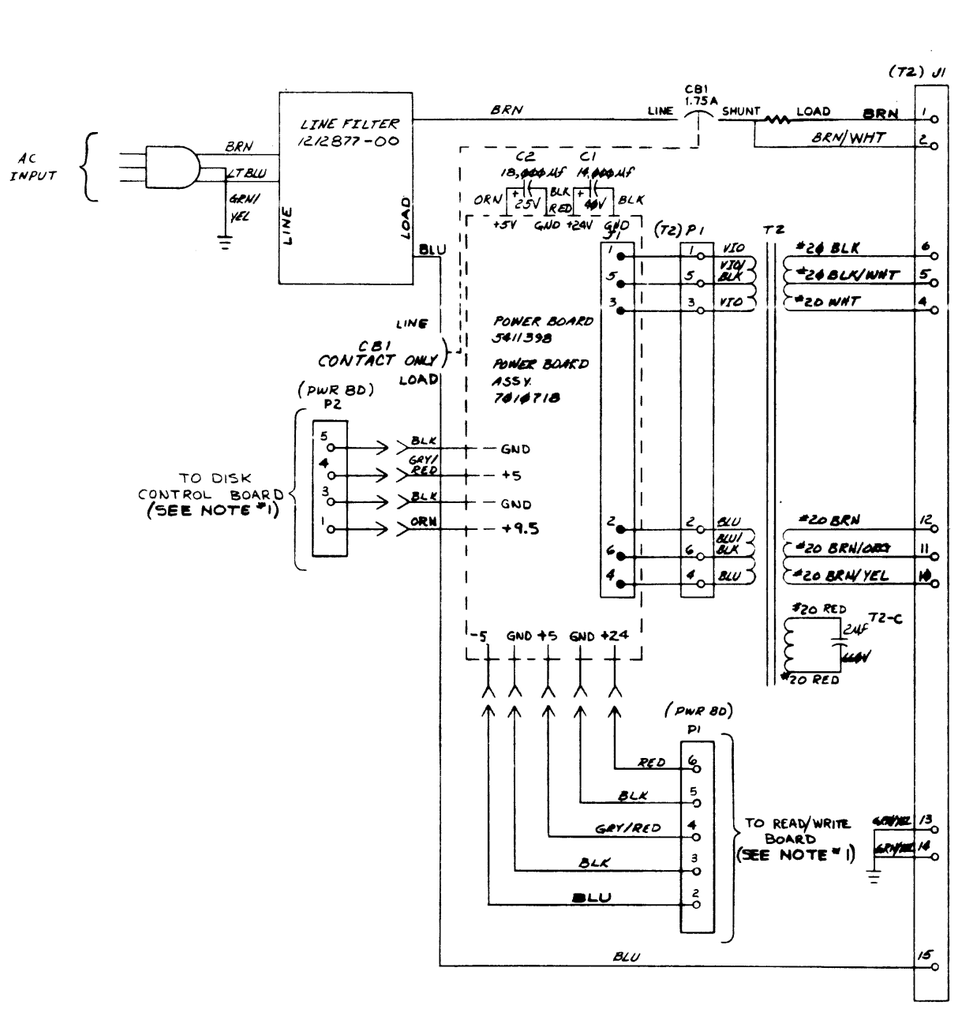
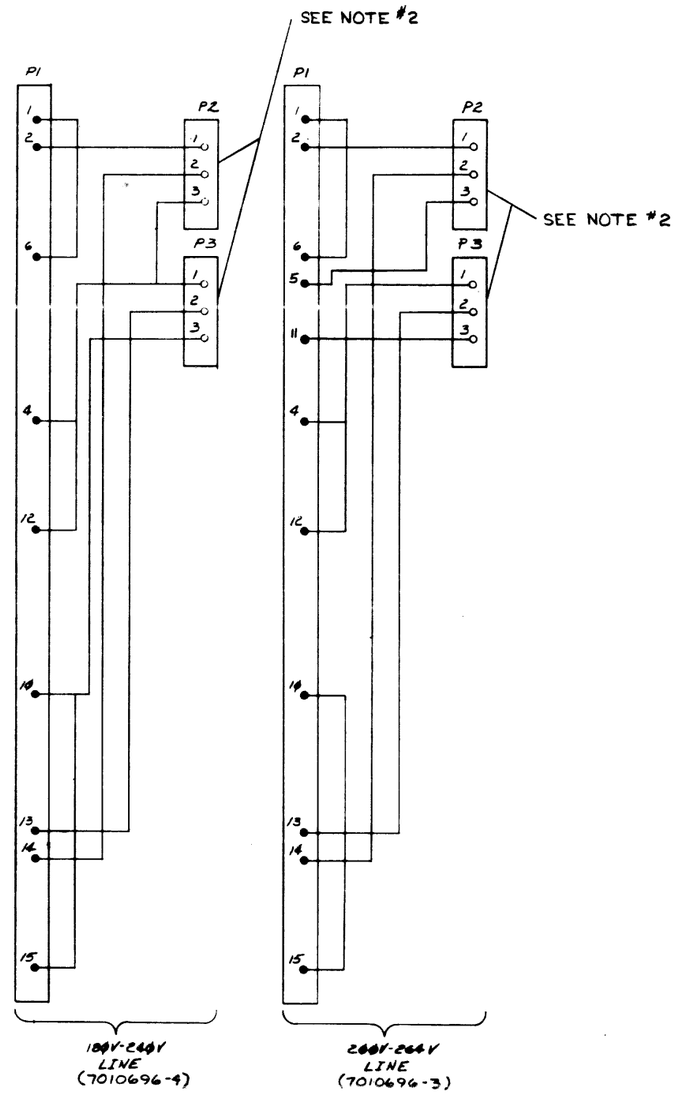
NOTES:
1. SLOT BETWEEN P1-4 AND P1-5 CONTAINS A DUMMY PIN, SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18AWG UNLESS OTHERWISE SPECIFIED.





REVISIONS				
DASH	CHANGE NO.	REV		
—	H771-00001	*	ORIGINATED	
	H771-00002	A	B. HAZEN	8-5-75
	H771-00003	B	B. HAZEN	11-8-75
	H771-00004	C	B. HAZEN	11-8-75

DRN.		7-30-75
CHK'D	E. CLEMENT	8-5-75
ENG.		8-12-75
PROJ. ENGR.		8-12-75
PROD.		8-12-75
NEXT HIGHER ASSY.		
B-DD-H771-0		
SCALE		
SHEET	1 OF 1	

FIRST USED ON: RX01

digital

TITLE: H771-D POWER CONNECTIONS

SIZE	CODE	NUMBER	REV.
D	CS	H771-D-1	C

DIST.

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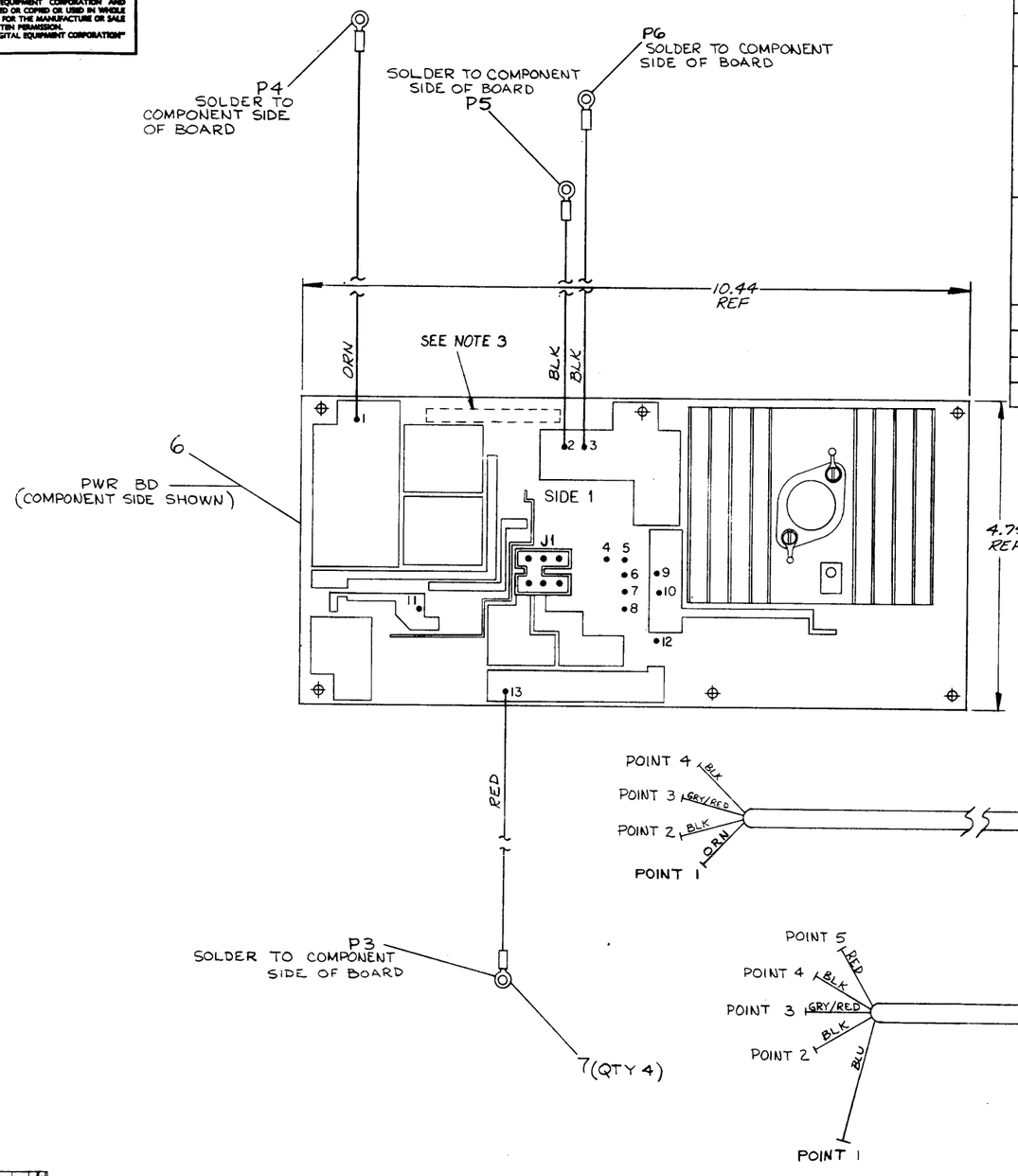

WIRE TABLE

ITEM NO.	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONN	FROM TERM	TO CONN	TO TERM	LENGTH
1	18	BLU	P1 POINT 1	——	PWR BD #11	SOLDER	——
		BLK	P1 POINT 2	——	PWR BD #6		——
		GRY/RED	P1 POINT 3	——	PWR BD #9		——
		BLK	P1 POINT 4	——	PWR BD #5		——
		RED	P1 POINT 5	——	PWR BD #12		——
2		ORN	P2 POINT 1	——	PWR BD #4		——
		BLK	P2 POINT 2	——	PWR BD #7		——
		GRY/RED	P2 POINT 3	——	PWR BD #10		——
	18	BLK	P2 POINT 4	——	PWR BD #8		——
3	14	RED	P3	ITEM 7	PWR BD #13		13 IN ±.25
4	14	BLK	P5	ITEM 7	PWR BD #2		7 IN ±.25
5	14	ORN	P4	ITEM 7	PWR BD #1		11 IN ±.25
4	14	BLK	P6	ITEM 7	PWR BD #3	SOLDER	9 IN ±.25

NOTES:

1. STRIP LENGTH FOR ITEMS 3, 4 & 5 ARE TO BE .16 LONG.
2. THE BLACK WIRES ON P1 & P2 CAN BE INTERCHANGED BETWEEN POINTS 5, 6, 7, & 8 ON THE POWER BOARD.
3. INK STAMP ASS'Y NO. 7010718 IN FIGURES, 13 HIGH WHERE SHOWN.

REVISIONS	CHK	CHANGE NO.	REV.
		RX01-00001	A
		H771-00001	B

4	CONN, SOLDERLESS	9007928-00	7
1	POWER SUPPLY BOARD, RXØ1	D-ES-5411398-0-1	6
A/R	WIRE, #14 AWG, IPVC, ORANGE	9107370-33	5
A/R	WIRE, #14 AWG, IPVC, BLACK	9107370-00	4
A/R	WIRE, #14 AWG, IPVC, RED	9107370-22	3
1	HARNESS, DISK CONTROL BOARD	D-IA-7010853-00	2
1	HARNESS, READ/WRITE BOARD	D-IA-7010854-0-0	1
	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES: OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
MEDIUM	±.004	±.008	±.012	±.016	±.024	±.04
PREFERRED	±.012	±.016	±.025	±.04	±.063	±0.1

ANGLES ±0° 30'
SURFACE QUALITY IN MICROINCHES
QUANTITY & VARIATION

THIRD ANGLE PROJECTION
REMOVE BURRS AND BREAK SHARP CORNERS
DO NOT SCALE DWG
MATERIAL SEE PARTS LIST
FINISH

DRN. T. Quille 1-28-75
CHK'D M. McCarthy 2/5/75
ENG. R. Wilson 3-18-75
PROJ. ENG. R. Wilson 3-18-75
PROD. [illegible] 3/19/75
NEXT HIGHER ASSY.

FIRST USED ON H771

TITLE RXØ1 POWER BOARD ASS'Y

E-UA-H771-Ø-Ø
SCALE 1/1
SHEET 1 OF 1

SIZE D | CODE AD | NUMBER 7010718-0-0 | REV. B
DIST.

DEC FORM NO. DRD 10" -
B.M. 7-78

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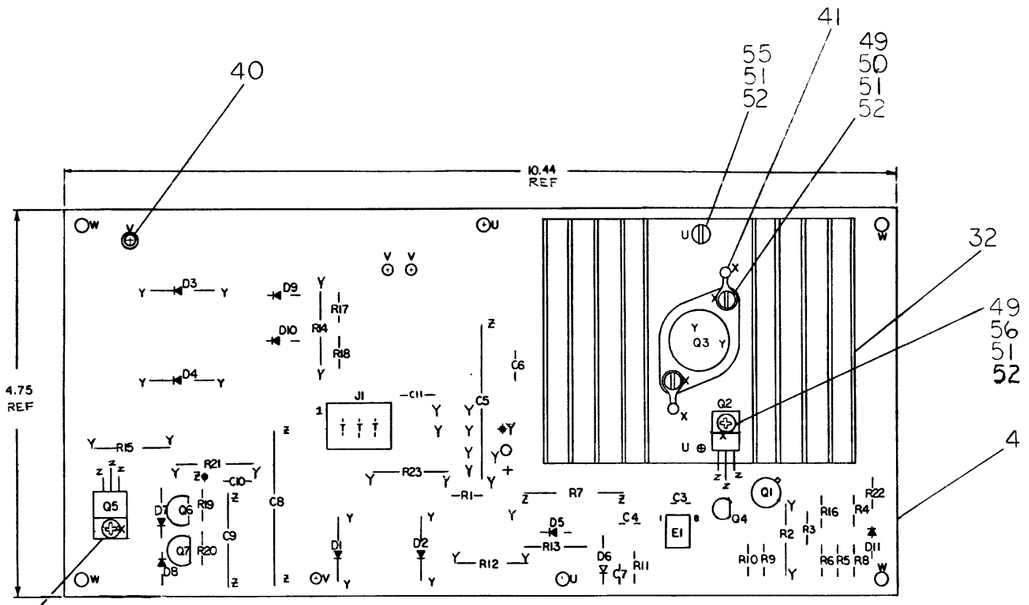
NOTES:

1. UNLESS OTHERWISE SPECIFIED
   A. ALL RESISTORS ARE 1/4W, ±5%.
2. DOTTED AREAS COMPONENT NOT ON BOARD.
3. AT TIME OF MODULE ASSY, ITEM 49 SHOULD BE APPLIED BENEATH Q2, Q3 & Q5.
4. AT TIME OF ASSEMBLY, Q2, Q3 AND Q5 MOUNTING HARDWARE MUST BE TORQUED TO 4 TO 6 INCH POUNDS.
5. Q4, Q6 AND Q7 OUTLINES CORRESPOND TO GENERAL ELECTRIC TYPE TRANSISTORS.
6. FLAT RECTANGULAR WASHER SUPPLIED BY VENDOR TO BE MOUNTED UNDER Q2 AND Q5 SCREWHEAD.



QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF		X-Y COORDINTE HOLE LOCATION	KCD-5411398-0-1	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-5411398-0-5	2
REF		MODULE ECO HISTORY	B-MH-5411398-0-6	3
1		ETCHED CIRCUIT BOARD	5011397-00	4
3	C3, C4, C7	CAP .01 µf 100V 20% DISC	1001610-01	5
2	C5, C8	CAP 1000 µf 16V ELEC	1011849-02	6
3	C6, C10, C11	CAP .1 µf 100V 20% DISC.	1000030-00	7
1	C9	CAP 190 µf 12V 10% ELEC	1009433-00	8
2	D1, D2	DIODE A15B(1N5624)	1110420-00	9
2	D3, D4	DIODE ME752	1110615-00	10
1	D5	DIODE 1N4744 15V 10%	1105648-00	11
				12
2	D7, D6	DIODE .4M5.121, 5.1V 1%	1105873-00	13
1	D8	DIODE D664	1100114-00	14
2	D9, D10	DIODE 1N4004	1105796-00	15
1	D11	DIODE 1N754A 6.8V 5%	1109991-00	16
1	E5,	RES 39 1/4 W 5% CC	1302377-00	17
1	E6	RES 470 1/4 W 5% CC	1300316-00	18
1	E7	RES .08 5W 3%	1311603-00	19
1	E8	RES 47 1/4W 5% CC	1300202-00	20
1	E9	RES 1M 1/4W 5% CC	1309595-00	21
1	E12	RES 270 2W 5% CC	1305380-00	22
1	E13	RES 511 3/4W 1%	1300324-00	23
1	E14	RES 10 2W 10% CC	1300172-00	24
1	E15	RES 180 1W 5% CC	1300262-00	25
1	E16	RES 10 1/4 W 5% CC	1301317-00	26
				27
1	E18	RES 120 1/4W 5% CC	1300247-00	28
2	E19, E20	RES 1K 1/4W 5% CC	1300365-00	29
1	E22	RES 220 1/4W 5%	1300271-00	30
1	E21	RES 120 1W 5%	1301838-00	31
1		HEAT SINK	1212201-00	32
1	Q1	TRANS DEC 2219-2	1501883-00	33
1	Q2	TRANS D44C3	1510171-01	34
1	Q3	TRANS DEC3715	1503068-00	35
2	Q4, Q6	TRANS MXAA05	1510705-00	36
1	Q5	TRANS D45H8	1510708-01	37
1	Q7	TRANS MXAA55	1510706-00	38
1	E1	I.C. DEC 301AN	1910282-00	39
4		EYELET	9007836-00	40
2		TERMINAL LUG, SOLDER	9009676-00	41
1	J1	CONNECTOR 6 PIN	1211342-06	42
				43
1	R4	RES 560 1/4W 5% CC	1301890-00	44
1	R23	RES 75 1W 5% CC	1305281-00	45
3	R1, R10, R11	RES 10K 1/4W 5% CC	1300479-00	46
1	R2	RES 390 2W 5% CC	1301864-00	47
1	R3	RES 620 1/4W 5% CC	1303178-00	48
A/R		THERMAL COMPOUND	9008268-00	49
2		SCREW 4-40 X 1/2	9006013-04	50
5		KEPNUT 4-40	9006557-00	51
5		WASHER FLAT 4-40	9006655-00	52
				53
1		SCREW 4-40 X 5/16 (PHILLIPS HD)	9006011-1	54
1		SCREW 4-40 X 7/16	9006012-04	55
1		SCREW 4-40 X 1/2 (PHILLIPS HD)	9006013-1	56
1		RES. 22 1/4W 5%	1301969-00	57

PARTS LIST

ETCH BOARD REV. D

FIRST USED ON OPTION MODEL: RX01

IC TYPE	GND	+5V
301A	4	7

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

IC PIN LOCATIONS

REV.	REVISIONS	CHANGE NO.	CHK.
C	Added Q4 per ECO 5411398-ML0083	5411398-00001	D.VEINOT 10-24-75
B	Changed Q4 per ECO 5411398-00001	5411398-00001	D.VEINOT 12-1-75
A	Changed Q4 per ECO 5411398-00001	5411398-00001	W.HAZEN 4-3-76

Designed by D.CALDERAN 21 MARCH 74
Drawn by 5411398 MLOC 4 E
Traced by C.TOUBE 28 DEC 78
Checked by D
Quality Assurance by 5411398-ML0083 D
Released by D.VEINOT 10-24-75
Changed by 5411398-00001 C
Changed by 5411398-00001 B
Changed by W.HAZEN 4-3-76
Changed by 5411398-00001 A

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. Ray Merrace DATE 11/27/74
CHK'D. D. Vaughan DATE 1/8/75
ENG. David Veint DATE 1/27/75
PROJ. ENG. C. Toube DATE 1/28/75
PROG. J. Miller DATE 1-24-75
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 2

digital

TITLE
RX01
POWER SUPPLY

SIZE	CODE	NUMBER	REV.
D	CS	5411398-0-1	E

DIST.

5411398-0-1 E
SIZE D CODE CS

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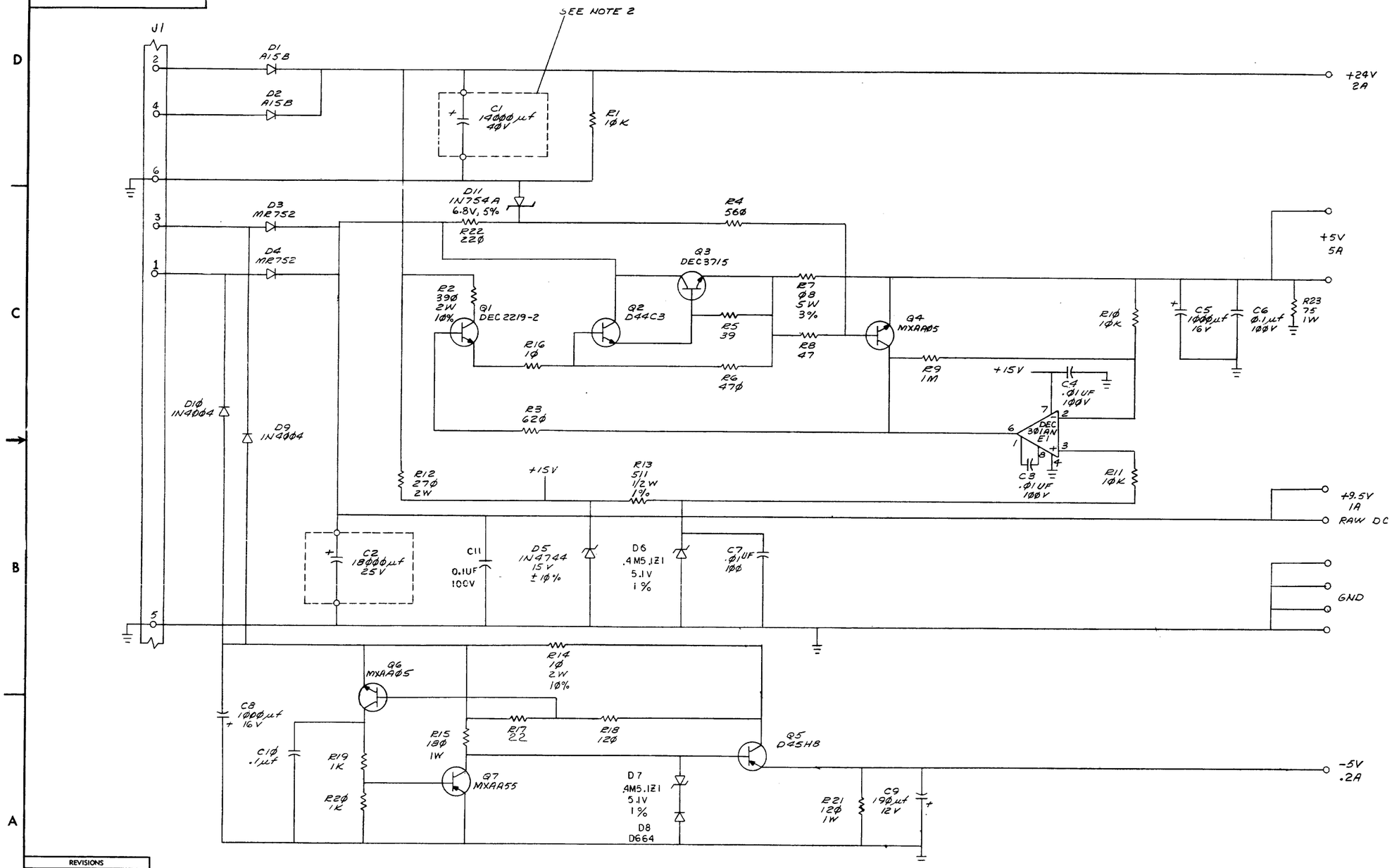

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	RX01 POWER SUPPLY			SIZE	CODE	NUMBER	REV.
SCALE		SHEET 2 OF 2	DIST.	D	CS	5411398-0-1	E

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

SEQUENCE SEQUENCE

THIS IS PRINT SET ☐☐☐☐

FOR FIELD MAINTENANCE PRINT SET
REFER TO MP 00284

UNIT VARIATIONS		PRINT SET
VAR	TITLE	
7013503-Ø	COOLING UNIT FOR DUAL RXØ1 115V	
7013503-1	COOLING UNIT FOR DUAL RXØ1 230V	
7013503-2	COOLING UNIT FOR SINGLE RXØ1 115V	
7013503-3	COOLING UNIT FOR SINGLE RXØ1 230V	
7013503-4	7013503-0 W/O PACKAGING	
7013503-5	7013503-1 W/O PACKAGING	
7013503-6	7013503-2 W/O PACKAGING	
7013503-7	7013503-3 W/O PACKAGING	

REVISIONS

REV	CHG. NO.	DATE

USED ON OPTION/MODEL		DRN.	DATE
RXØ1		[signature]	18-NOV-76
		CHK'D. [signature]	DATE 11/23/76
		PROJ ENG. [signature]	DATE 11/23/76
		PROD. [signature]	DATE 11/23/76
		FIELD SERV. [signature]	DATE 23-Nov-76

SHEET 1 OF 2

TITLE: RXØ1 PLENUM/FAN ASSY.

SIZE	CODE	NUMBER	REV
B	DD	7013503-0	

DIST

EN-01062-1A-16-R972-(325)

DRB 106

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	MP 00284	FIELD MAINTENANCE PRINT SET (MP)	-
	B-TC-7013503-0-1	FIELD MAINTENANCE PRINT SET (TC)	-
1	E-UA-7013503-0-0	PLENUM, FAN ASSY.	E/M
	D-IA-7013474-0-0	CABLE, PLENUM ADAPTOR	E/M
	C-IA-7417817-0-0	BRACKET, LEFT PLENUM MOUNTING	M
	C-IA-7417816-0-0	BRACKET, RIGHT PLENUM MOUNTING	M
	E-MD-7417815-0-0	PLENUM	M
	C-IC-7013503-0-2	PLENUM INTERCONNECTION DIAGRAM	E
	D-MD-7417958-0-0	INSERT, PLENUM	M
	A-SP-3700267-0-0	RXØ1 SUB-ASSY. PACKAGING KIT	M

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE		SIZE	CODE	NUMBER	REV
RXØ1 PLENUM/FAN ASSY.	SHEET 2 OF 2	B	DD	7013503-0	

EN-01062-2C-16-R376-(325)

DRB 108A

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FOR FIELD MAINTENANCE PRINT SET
REFER TO MP 00656

UNIT VARIATIONS

VAR	TITLE
7015622-Ø	COOLING UNIT FOR DUAL RXØ1 115V
7015622-1	COOLING UNIT FOR DUAL RXØ1 230V
7015622-2	COOLING UNIT FOR SINGLE RXØ1 115V
7015622-3	COOLING UNIT FOR SINGLE RXØ1 230V
7015622-4	7015622-0 W/O PACKAGING
7015622-5	7015622-1 W/O PACKAGING
7015622-6	7015622-2 W/O PACKAGING
7015622-7	7015622-3 W/O PACKAGING

REVISIONS
REV.
CHANGE NO.
CHK

USED ON OPTION/MODEL
RXØ1

SHEET 1 OF 2

DRN. W. Brown — DATE 3-JUN-78
CHK'D. E. REMOND — DATE 5 JUN 78
PROJ. ENG. H. Drab (DP) — DATE 6-7-78
PROD. W Brown (DP) — DATE 6-7-78

TITLE
digital
RXØ1 PLENUM/FAN ASSY.

SIZE	CODE	NUMBER	REV
B	DD	7015622-0	

DIST.

DRB 106A

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	MP 00656	FIELD MAINTENANCE PRINT SET (MP)	-
	B-TC-7015622-0-1	FIELD MAINTENANCE PRINT SET (TC)	-
1	E-UA-7015622-0	PLENUM, FAN ASSY	E/M
	D-IA-7013474-0-0	CABLE, PLENUM ADAPTOR	E/M
	E-MD-7420552-0-0	PLENUM	M
	C-IC-7013503-0-2	PLENUM INTERCONNECTOR DIAGRAM	E
	D-IA-7420846-0-0	INSERT, PLENUM	M
	A-SP-3700867-0-0	RXØ1 SUB-ASSY. PACKAGING KIT	M

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE	SHEET	SIZE	CODE	NUMBER	REV
RXØ1 PLENUM FAN ASSY.	2 OF 2	B	DD	7015622-0	

DRB 108A

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B-DD-11/03-0	DRAWING DIRECTORY 11/03 (sheet 1 only)
E-UA-11/03-0-0	UNIT ASSEMBLY 11/03
C-PL-11/03-0-0	UNIT ASSEMBLY 11/03 (PL)
C-MU-11/03-0-3	MODULE UTILIZATION
C-MU-11/03-0-4	MODULE UTILIZATION
C-MU-11/03-0-5	MODULE UTILIZATION
A-PL-11/03-0-6	PROCESSOR VARIATION LIST
A-PL-11/03-0-1	SHIPPING LIST
A-PL-KEV11-0-0	EIS/FIS
B-DD-BA11-M	BA11-M FIELD MAINTENANCE PRINT SET (COMPLETE)

THE FOLLOWING PRINT SETS ARE SHIPPED WITH THIS PRODUCT.
THEY ARE NOT INCLUDED IN THIS PRINT SET. REFER TO A-PL-11/03-0-1.

MP00049	KD11-F FIELD MAINTENANCE PRINT SET WITH VARIATIONS AA,AB,BA,BB,CA,CB,DA,DB, EA,EB,FA,FB,GA,GB,HA,HB,KA,KB,MA,MB,KC
MP00495	KD11-HA FIELD MAINTENANCE PRINT SET WITH VARIATIONS SE,SF,SC,SD
B-DD-MMV11-A	MMV11-A FIELD MAINTENANCE PRINT SET (COMPLETE) WITH VARIATIONS BA,BB,DA,DB,FA,FB,HA,HB
MP00259	MSV11-C FIELD MAINTENANCE PRINT SET WITH VARIATIONS KA,KB,MA,MB
MP00566	MSV11-D FIELD MAINTENANCE PRINT SET WITH VARIATIONS SE,SF,SC,SD,KC
MP00055	DLV11 FIELD MAINTENANCE PRINT SET WITH VARIATIONS AA,AB,BA,BB,CA,CB,DA,DB

UNIT VARIATIONS

VAR	TITLE
11/03-AA	KD11-F, BA11-MA, DLV11, 115V
11/03-AB	KD11-F, BA11-MB, DLV11, 230V
11/03-BA	KD11-J, BA11-MA, DLV11, 115V
11/03-BB	KD11-J, BA11-MB, DLV11, 230V
11/03-CA	KD11-L, BA11-MA, DLV11, 115V
11/03-CB	KD11-L, BA11-MB, DLV11, 230V
11/03-DA	KD11-M, BA11-MA, DLV11, 115V
11/03-DB	KD11-M, BA11-MB, DLV11, 230V
11/03-EA,	KD11-F, BA11-MA, 115V
11/03-EB	KD11-F, BA11-MB, 230V
11/03-FA	KD11-J, BA11-MA, 115V
11/03-FB	KD11-J, BA11-MB, 230V
11/03-GA	KD11-L, BA11-MA, 115V
11/03-GB	KD11-L, BA11-MB, 230V
11/03-HA	KD11-M, BA11-MA, 115V
11/03-HB	KD11-M, BA11-MB, 230V
11/03-KA	KD11-R, BA11-MA, 115V
11/03-KB	KD11-R, BA11-MB, 230V
11/03-MA	KD11-S, BA11-MA, 115V
11/03-MB	KD11-S, BA11-MB, 230V
11/03-SE,	KD11-HA, KEV11, MSV11-DD, BA11-MA, 115V
11/03-SF	KD11-HA, KEV11, MSV11-DD, BA11-MB, 230
11/03-SC	KD11-HA, KEV11, MSV11-DC, BA11-MA, 115V
11/03-SD	KD11-HA, KEV11, MSV11-DC, BA11-MB, 220V
11/03-KC	KD11-H, KEV11, MSV11-DD, BA11-MA, 115V

REVISIONS			
REV.	CHANGE NO.	CHK	
J	11/03-ML010	RS	REVISED & REDRAWN
K	1103-ML011	DN	
L	1103-ML012	Lma	

USED ON OPTION/MODEL: 11/03

SHEET 1 OF 3

DRN. P. RILEY	DATE 7/14/75	TITLE: DRAWING DIRECTORY PDP 11/03
CHK'D. D.HEALY	DATE 9/10/75	
PROJ. ENG. A.COHAN	DATE 10/16/75	
PROD. D.DEROME	DATE 10/16 75	

digital

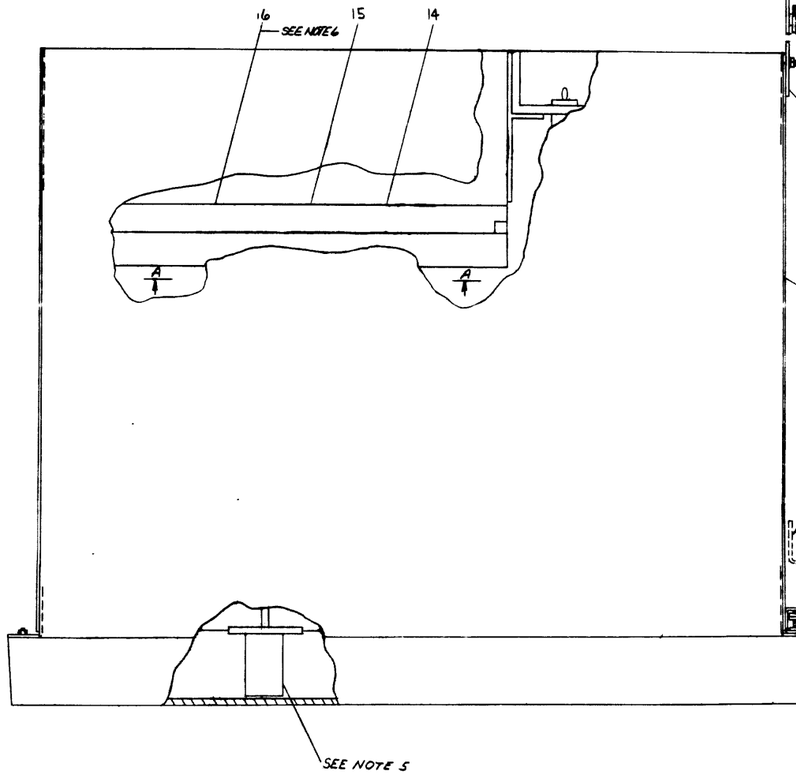
SIZE	CODE	NUMBER	REV
B	DD	11/03-0	L

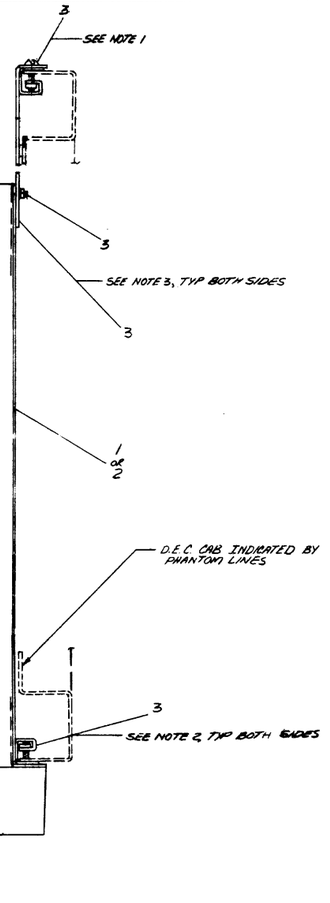
D-

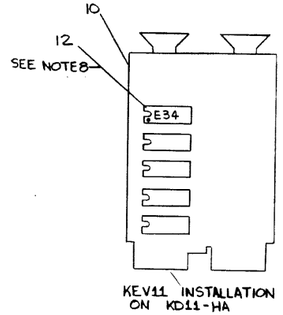
MP-N1103-C0

DRB 106A

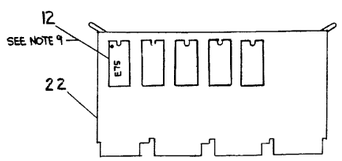
LEGEND		
NUMBER	VARIATION	
11/03-AA	KDII-F, BAII-MA, DLVII	115V
11/03-AB	KDII-F, BAII-MB, DLVII	230V
11/03-BA	KDII-J, BAII-MA, DLVII	115V
11/03-BB	KDII-J-BAII-MB, DLVII	230V
11/03-CA	KDII-L, BAII-MA, DLVII	115V
11/03-CB	KDII-L, BAII-MB, DLVII	230V
11/03-DA	KDII-M, BAII-MA, DLVII	115V
11/03-DB	KDII-M, BAII-MA, DLVII	230V
11/03-EA	KDII-F, BAII-MA	115V
11/03-EB	KDII-F, BAII-MB	230V
11/03-FA	KDII-J, BAII-MA	115V
11/03-FB	KDII-J, BAII-MB	230V
11/03-GA	KDII-L, BAII-MA	115V
11/03-GB	KDII-L, BAII-MB	230V
11/03-HA	KDII-M, BAII-MA	115V
11/03-HB	KDII-M, BAII-MB	230V
11/03-KA	KDII-R, BAII-MA	115V
11/03-KB	KDII-R, BAII-MB	230V
11/03-MA	KDII-S, BAII-MA	115V
11/03-MB	KDII-S, BAII-MB	230V
11/03-SE	KDII-HA, KEVII, MSVII-DD, BAII-MA, 115V	
11/03-SF	KDII-HA, KEVII, MSVII-DD, BAII-MB, 230V	
11/03-SC	KDII-HA, KEVII, MSVII-DC, BAII-MA, 115V	
11/03-SD	KDII-HA, KEVII, MSVII-DC, BAII-MB, 230V	
11/03-KC	KDII-H, KEVII, MSVII-DD, BAII-MA, 115V	



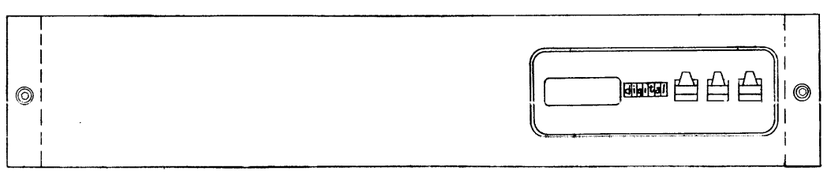




KEV11 INSTALLATION ON KD11-HA



KEV11 INSTALLATION ON KD11-H



NOTES:
1. TO BE INSTALLED BY CUSTOMER. TYP BOTH SIDES.
2. REMOVE BEZEL FROM FRONT OF ITEM #1 OR 2. REMOVE 2 NUTS ON EACH SIDE (FRONT ONLY) & REPLACE WITH NUT #10-32 (D.E.C. CAB) PART OF ITEM #3 KIT.
3. ATTACH MTG. BRKT, PART OF ITEM #3 (REAR ONLY).
4. FOR MODULE UTILIZATION SEE C-MU-11/03-0-3, C-MU-11/03-B-4 & C-MU-11/03-E-5.
5. ASSEMBLE MODULE HOLDER ASSEMBLY SUPPLIED IN UA-BA11M TO MODULES AS SHOWN.
6. AMPERAGE RATING ON SERIAL NO. TAG (ITEM #16) TO BE AS FOLLOWS: FOR 115V. SYSTEMS: 2 AMPS; FOR 230V SYSTEMS: 1 AMP. (NOTE THAT THIS IS A TYPICAL VALUE FOR THE BASIC SYSTEM.)
7. FOR VARIATIONS 11/03-SE AND 11/03-SF, THE BACKPLANE ETCH BOARD, 54-11648, (PART OF ITEM 1 OR 2) MUST BE ETCH REV. E OR LATER FOR PROPER OPERATION OF RUN LIGHT. IF IT IS NECESSARY TO USE AN EARLIER REVISION BACKPLANE A WIRE MUST BE CONNECTED BETWEEN BACKPLANE PINS A01F1 AND C01H1.
8. INSTALL ITEM 12 ONTO ITEM 10 AS SHOWN FOR VARIATIONS 11/03-SE AND 11/03-SF. 11/03-SC, 11/03-SD MAKE SURE DOT ON IC IS LOCATED AS SHOWN OR VOLTAGE WILL BE REVERSED.
9. INSTALL ITEM 12 ONTO ITEM 22 AS SHOWN FOR VARIATION 11/03-KC. MAKE SURE DOT ON IC IS LOCATED AS SHOWN OR VOLTAGE WILL BE REVERSED.

FOR PARTS LIST SEE: C-PL-11/03-0-0

DESCRIPTION	DWG./PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
DRN. JH 8-7-75	FIRST USED ON 11/03	
CHK'D JH 8/14/75		
ENG. JH 8/14/75		
PROJ. ENG. JH 8/14/75	TITLE UNIT ASSEMBLY 11/03	
PROG. JH 8/14/75		
NEXT HIGHER ASSY. B-DD-11/03-0	SIZE E	CODE UA
SCALE NONE	NUMBER 11/03-0-0	M
SHEET 1 OF 1	DIST.	
THIRD ANGLE PROJECTION		
DO NOT SCALE DWG		
MATERIAL SEE PARTS LIST		
FINISH		

CHG	CHANGE NO.	DATE	BY
A	11/03-00001	11-14-75	J. BIRO
B	11/03-00002	11-24-75	A. ADAMS
C	11/03-00003	11-26-75	J. BIRO
D	11/03-00004	11-26-75	J. BIRO
E	11-03-000009	12-2-75	J. BIRO
F	11/03-00006	12-4-75	J. BIRO
G	11/03-00007	12-5-75	J. BIRO
H	11/03-00008	12-5-75	R. LEWIS
J	11/03-M0010	1-20-76	R. LEWIS
K	11/03-M0011	1-20-76	R. LEWIS
L	11/03-M0012	1-20-76	R. LEWIS
M	11/03-M0013	2-5-76	R. LEWIS
N	11/03-M0014	2-5-76	R. LEWIS
P	11/03-M0015	2-5-76	R. LEWIS
R	11/03-M0016	2-5-76	R. LEWIS
S	11/03-M0017	2-5-76	R. LEWIS
T	11/03-M0018	2-5-76	R. LEWIS
U	11/03-M0019	2-5-76	R. LEWIS
V	11/03-M0020	2-5-76	R. LEWIS
W	11/03-M0021	2-5-76	R. LEWIS
X	11/03-M0022	2-5-76	R. LEWIS
Y	11/03-M0023	2-5-76	R. LEWIS
Z	11/03-M0024	2-5-76	R. LEWIS
AA	11/03-M0025	2-5-76	R. LEWIS
BB	11/03-M0026	2-5-76	R. LEWIS
CC	11/03-M0027	2-5-76	R. LEWIS
DD	11/03-M0028	2-5-76	R. LEWIS
EE	11/03-M0029	2-5-76	R. LEWIS
FF	11/03-M0030	2-5-76	R. LEWIS
HH	11/03-M0031	2-5-76	R. LEWIS
JJ	11/03-M0032	2-5-76	R. LEWIS
KK	11/03-M0033	2-5-76	R. LEWIS
LL	11/03-M0034	2-5-76	R. LEWIS
MM	11/03-M0035	2-5-76	R. LEWIS
NN	11/03-M0036	2-5-76	R. LEWIS
PP	11/03-M0037	2-5-76	R. LEWIS
RR	11/03-M0038	2-5-76	R. LEWIS
SS	11/03-M0039	2-5-76	R. LEWIS
TT	11/03-M0040	2-5-76	R. LEWIS
UU	11/03-M0041	2-5-76	R. LEWIS
VV	11/03-M0042	2-5-76	R. LEWIS
WW	11/03-M0043	2-5-76	R. LEWIS
XX	11/03-M0044	2-5-76	R. LEWIS
YY	11/03-M0045	2-5-76	R. LEWIS
ZZ	11/03-M0046	2-5-76	R. LEWIS
AAA	11/03-M0047	2-5-76	R. LEWIS
BBB	11/03-M0048	2-5-76	R. LEWIS
CCC	11/03-M0049	2-5-76	R. LEWIS
DDD	11/03-M0050	2-5-76	R. LEWIS
EEE	11/03-M0051	2-5-76	R. LEWIS
FFF	11/03-M0052	2-5-76	R. LEWIS
HHH	11/03-M0053	2-5-76	R. LEWIS
JJJ	11/03-M0054	2-5-76	R. LEWIS
KKK	11/03-M0055	2-5-76	R. LEWIS
LLL	11/03-M0056	2-5-76	R. LEWIS
MMM	11/03-M0057	2-5-76	R. LEWIS
NNN	11/03-M0058	2-5-76	R. LEWIS
PPP	11/03-M0059	2-5-76	R. LEWIS
RRR	11/03-M0060	2-5-76	R. LEWIS
SSS	11/03-M0061	2-5-76	R. LEWIS
TTT	11/03-M0062	2-5-76	R. LEWIS
UUU	11/03-M0063	2-5-76	R. LEWIS
VVV	11/03-M0064	2-5-76	R. LEWIS
WWW	11/03-M0065	2-5-76	R. LEWIS
XXX	11/03-M0066	2-5-76	R. LEWIS
YYY	11/03-M0067	2-5-76	R. LEWIS
ZZZ	11/03-M0068	2-5-76	R. LEWIS
AAAA	11/03-M0069	2-5-76	R. LEWIS
BBBB	11/03-M0070	2-5-76	R. LEWIS
CCCC	11/03-M0071	2-5-76	R. LEWIS
DDDD	11/03-M0072	2-5-76	R. LEWIS
EEEE	11/03-M0073	2-5-76	R. LEWIS
FFFF	11/03-M0074	2-5-76	R. LEWIS
HHHH	11/03-M0075	2-5-76	R. LEWIS
JJJJ	11/03-M0076	2-5-76	R. LEWIS
KKKK	11/03-M0077	2-5-76	R. LEWIS
LLLL	11/03-M0078	2-5-76	R. LEWIS
MMMM	11/03-M0079	2-5-76	R. LEWIS
NNNN	11/03-M0080	2-5-76	R. LEWIS
PPPP	11/03-M0081	2-5-76	R. LEWIS
RRRR	11/03-M0082	2-5-76	R. LEWIS
SSSS	11/03-M0083	2-5-76	R. LEWIS
TTTT	11/03-M0084	2-5-76	R. LEWIS
UUUU	11/03-M0085	2-5-76	R. LEWIS
VVVV	11/03-M0086	2-5-76	R. LEWIS
WWWW	11/03-M0087	2-5-76	R. LEWIS
XXXX	11/03-M0088	2-5-76	R. LEWIS
YYYY	11/03-M0089	2-5-76	R. LEWIS
ZZZZ	11/03-M0090	2-5-76	R. LEWIS
AAAAA	11/03-M0091	2-5-76	R. LEWIS
BBBBB	11/03-M0092	2-5-76	R. LEWIS
CCCCC	11/03-M0093	2-5-76	R. LEWIS
DDDDD	11/03-M0094	2-5-76	R. LEWIS
EEEEE	11/03-M0095	2-5-76	R. LEWIS
FFFFF	11/03-M0096	2-5-76	R. LEWIS
HHHHH	11/03-M0097	2-5-76	R. LEWIS
JJJJJ	11/03-M0098	2-5-76	R. LEWIS
KKKKK	11/03-M0099	2-5-76	R. LEWIS
LLLLL	11/03-M0100	2-5-76	R. LEWIS
MMMMM	11/03-M0101	2-5-76	R. LEWIS
NNNNN	11/03-M0102	2-5-76	R. LEWIS
PPPPP	11/03-M0103	2-5-76	R. LEWIS
RRRRR	11/03-M0104	2-5-76	R. LEWIS
SSSSS	11/03-M0105	2-5-76	R. LEWIS
TTTTT	11/03-M0106	2-5-76	R. LEWIS
UUUUU	11/03-M0107	2-5-76	R. LEWIS
VVVVV	11/03-M0108	2-5-76	R. LEWIS
WWWWW	11/03-M0109	2-5-76	R. LEWIS
XXXXX	11/03-M0110	2-5-76	R. LEWIS
YYYYY	11/03-M0111	2-5-76	R. LEWIS
ZZZZZ	11/03-M0112	2-5-76	R. LEWIS
AAAAAA	11/03-M0113	2-5-76	R. LEWIS
BBBBBB	11/03-M0114	2-5-76	R. LEWIS
CCCCCC	11/03-M0115	2-5-76	R. LEWIS
DDDDDD	11/03-M0116	2-5-76	R. LEWIS
EEEEEE	11/03-M0117	2-5-76	R. LEWIS
FFFFFF	11/03-M0118	2-5-76	R. LEWIS
HHHHHH	11/03-M0119	2-5-76	R. LEWIS
JJJJJJ	11/03-M0120	2-5-76	R. LEWIS
KKKKKK	11/03-M0121	2-5-76	R. LEWIS
LLLLLL	11/03-M0122	2-5-76	R. LEWIS
MMMMMM	11/03-M0123	2-5-76	R. LEWIS
NNNNNN	11/03-M0124	2-5-76	R. LEWIS
PPPPPP	11/03-M0125	2-5-76	R. LEWIS
RRRRRR	11/03-M0126	2-5-76	R. LEWIS
SSSSSS	11/03-M0127	2-5-76	R. LEWIS
TTTTTT	11/03-M0128	2-5-76	R. LEWIS
UUUUUU	11/03-M0129	2-5-76	R. LEWIS
VVVVVV	11/03-M0130	2-5-76	R. LEWIS
WWWWWW	11/03-M0131	2-5-76	R. LEWIS
XXXXXX	11/03-M0132	2-5-76	R. LEWIS
YYYYYY	11/03-M0133	2-5-76	R. LEWIS
ZZZZZZ	11/03-M0134	2-5-76	R. LEWIS
AAAAAAA	11/03-M0135	2-5-76	R. LEWIS
BBBBBBB	11/03-M0136	2-5-76	R. LEWIS
CCCCCCC	11/03-M0137	2-5-76	R. LEWIS
DDDDDDD	11/03-M0138	2-5-76	R. LEWIS
EEEEEEE	11/03-M0139	2-5-76	R. LEWIS
FFFFFFF	11/03-M0140	2-5-76	R. LEWIS
HHHHHHH	11/03-M0141	2-5-76	R. LEWIS
JJJJJJJ	11/03-M0142	2-5-76	R. LEWIS
KKKKKKK	11/03-M0143	2-5-76	R. LEWIS
LLLLLLL	11/03-M0144	2-5-76	R. LEWIS
MMMMMMM	11/03-M0145	2-5-76	R. LEWIS
NNNNNNN	11/03-M0146	2-5-76	R. LEWIS
PPPPPPP	11/03-M0147	2-5-76	R. LEWIS
RRRRRRR	11/03-M0148	2-5-76	R. LEWIS
SSSSSSS	11/03-M0149	2-5-76	R. LEWIS
TTTTTTT	11/03-M0150	2-5-76	R. LEWIS
UUUUUUU	11/03-M0151	2-5-76	R. LEWIS
VVVVVVV	11/03-M0152	2-5-76	R. LEWIS
WWWWWWW	11/03-M0153	2-5-76	R. LEWIS
XXXXXXX	11/03-M0154	2-5-76	R. LEWIS
YYYYYYY	11/03-M0155	2-5-76	R. LEWIS
ZZZZZZZ	11/03-M0156	2-5-76	R. LEWIS
AAAAAAAA	11/03-M0157	2-5-76	R. LEWIS
BBBBBBBB	11/03-M0158	2-5-76	R. LEWIS
CCCCCCCC	11/03-M0159	2-5-76	R. LEWIS
DDDDDDDD	11/03-M0160	2-5-76	R. LEWIS
EEEEEEEE	11/03-M0161	2-5-76	R. LEWIS
FFFFFFFF	11/03-M0162	2-5-76	R. LEWIS
HHHHHHHH	11/03-M0163	2-5-76	R. LEWIS
JJJJJJJJ	11/03-M0164	2-5-76	R. LEWIS
KKKKKKKK	11/03-M0165	2-5-76	R. LEWIS
LLLLLLLL	11/03-M0166	2-5-76	R. LEWIS
MMMMMMMM	11/03-M0167	2-5-76	R. LEWIS
NNNNNNNN	11/03-M0168	2-5-76	R. LEWIS
PPPPPPPP	11/03-M0169	2-5-76	R. LEWIS
RRRRRRRR	11/03-M0170	2-5-76	R. LEWIS
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TTTTTTTT	11/03-M0172	2-5-76	R. LEWIS
UUUUUUUU	11/03-M0173	2-5-76	R. LEWIS
VVVVVVVV	11/03-M0174	2-5-76	R. LEWIS
WWWWWWWW	11/03-M0175	2-5-76	R. LEWIS
XXXXXXXX	11/03-M0176	2-5-76	R. LEWIS
YYYYYYYY	11/03-M0177	2-5-76	R. LEWIS
ZZZZZZZZ	11/03-M0178	2-5-76	R. LEWIS
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CCCCCCCCC	11/03-M0181	2-5-76	R. LEWIS
DDDDDDDDD	11/03-M0182	2-5-76	R. LEWIS
EEEEEEEEE	11/03-M0183	2-5-76	R. LEWIS
FFFFFFFFF	11/03-M0184	2-5-76	R. LEWIS
HHHHHHHHH	11/03-M0185	2-5-76	R. LEWIS
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NNNNNNNNN	11/03-M0190	2-5-76	R. LEWIS
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UUUUUUUUU	11/03-M0195	2-5-76	R. LEWIS
VVVVVVVVV	11/03-M0196	2-5-76	R. LEWIS
WWWWWWWWW	11/03-M0197	2-5-76	R. LEWIS
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BBBBBBBBBB	11/03-M0202	2-5-76	R. LEWIS
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EEEEEEEEEE	11/03-M0205	2-5-76	R. LEWIS
FFFFFFFFFF	11/03-M0206	2-5-76	R. LEWIS
HHHHHHHHHH	11/03-M0207	2-5-76	R. LEWIS
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AAAAAAAAAAA	11/03-M0223	2-5-76	R. LEWIS
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EEEEEEEEEEE	11/03-M0227	2-5-76	R. LEWIS
FFFFFFFFFFF	11/03-M0228	2-5-76	R. LEWIS
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VVVVVVVVVVV	11/03-M0240	2-5-76	R. LEWIS
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EEEEEEEEEEEE	11/03-M0249	2-5-76	R. LEWIS
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VVVVVVVVVVVV	11/03-M0262	2-5-76	R. LEWIS
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AAAAAAAAAAAAA	11/03-M0267	2-5-76	R. LEWIS
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EEEEEEEEEEEEE	11/03-M0271	2-5-76	R. LEWIS
FFFFFFFFFFFFF	11/03-M0272	2-5-76	R. LEWIS
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UUUUUUUUUUUUU	11/03-M0283	2-5-76	R. LEWIS
VVVVVVVVVVVVV	11/03-M0284	2-5-76	R. LEWIS
WWWWWWWWWWWWW	11/03-M0285	2-5-76	R. LEWIS
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YYYYYYYYYYYYY	11/03-M0287	2-5-76	R. LEWIS
ZZZZZZZZZZZZZ	11/03-M0288	2-5-76	R. LEWIS
AAAAAAAAAAAAAA	11/03-M0289	2-5-76	R. LEWIS
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EEEEEEEEEEEEEE	11/03-M0293	2-5-76	R. LEWIS
FFFFFFFFFFFFFF	11/03-M0294	2-5-76	R. LEWIS
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UUUUUUUUUUUUUU	11/03-M0305	2-5-76	R. LEWIS
VVVVVVVVVVVVVV	11/03-M0306	2-5-76	R. LEWIS
WWWWWWWWWWWWWW	11/03-M0307	2-5-76	R. LEWIS
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YYYYYYYYYYYYYY	11/03-M0309	2-5-76	R. LEWIS
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FFFFFFFFFFFFFFF	11/03-M0316	2-5-76	R. LEWIS
HHHHHHHHHHHHHHH	11/03-M0317	2-5-76	R. LEWIS
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KKKKKKKKKKKKKKK	11/03-M0319	2-5-76	R. LEWIS
LLLLLLLLLLLLLLL	11/03-M0320	2-5-76	R. LEWIS
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PPPPPPPPPPPPPPP	11/03-M0323	2-5-76	R. LEWIS
RRRRRRRRRRRRRRR	11/03-M0324	2-5-76	R. LEWIS
SSSSSSSSSSSSSSS	11/03-M0325	2-5-76	R. LEWIS
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UUUUUUUUUUUUUUU	11/03-M0327	2-5-76	R. LEWIS
VVVVVVVVVVVVVVV	11/03-M0328	2-5-76	R. LEWIS
WWWWWWWWWWWWWWW	11/03-M0329	2-5-76	R. LEWIS
XXXXXXXXXXXXXXX	11/03-M0330	2-5-76	R. LEWIS
YYYYYYYYYYYYYYY	11/03-M0331	2-5-76	R. LEWIS
ZZZZZZZZZZZZZZZ	11/03-M0332	2-5-76	R. LEWIS
AAAAAAAAAAAAAAAA	11/03-M0333	2-5-76	R. LEWIS
BBBBBBBBBBBBBBBB	11/03-M0334	2-5-76	R. LEWIS
CCCCCCCCCCCCCCCC	11/03-M0335	2-5-76	R. LEWIS
DDDDDDDDDDDDDDDD	11/03-M0336	2-5-76	R. LEWIS
EEEEEEEEEEEEEEEE	11/03-M0337	2-5-76	R. LEWIS
FFFFFFFFFFFFFFFF	11/03-M0338	2-5-76	R. LEWIS
HHHHHHHHHHHHHHHH	11/03-M0339	2-5-76	R. LEWIS
JJJJJJJJJJJJJJJJ	11/03-M0340	2-5-76	R. LEWIS
KKKKKKKKKKKKKKKK	11/03-M0341	2-5-76	R. LEWIS
LLLLLLLLLLLLLLLL	11/03-M0342	2-5-76	R. LEWIS
MMMMMMMMMMMMMMMM	11/03-M0343	2-5-76	R. LEWIS
NNNNNNNNNNNNNNNN	11/03-M0344	2-5-76	R. LEWIS
PPPPPPPPPPPPPPPP	11/03-M0345	2-5-76	R. LEWIS
RRRRRRRRRRRRRRRR	11/03-M0346	2-5-76	R. LEWIS
SSSSSSSSSSSSSSSS	11/03-M0347	2-5-76	R. LEWIS
TTTTTTTTTTTTTTTT	11/03-M0348	2-5-76	R. LEWIS
UUUUUUUUUUUUUUUU	11/03-M0349	2-5-76	R. LEWIS
VVVVVVVVVVVVVVVV	11/03-M0350	2-5-76	R. LEWIS
WWWWWWWWWWWWWWWW	11/03-M0351	2-5-76	R. LEWIS
XXXXXXXXXXXXXXXX	11/03-M0352	2-5-76	R. LEWIS
YYYYYYYYYYYYYYYY	11/03-M0353	2-5-76	R. LEWIS
ZZZZZZZZZZZZZZZZ	11/03-M0354	2-5-76	R. LEWIS
AAAAAAAAAAAAAAAAA	11/03-M0355	2-5-76	R. LEWIS
BBBBBBBBBBBBBBBBB	11/03-M0356	2-5-76	R. LEWIS
CCCCCCCCCCCCCCCCC	11/03-M0357	2-5-76	R. LEWIS
DDDDDDDDDDDDDDDDD	11/03-M0358

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ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	11/03-AA	11/03-AE	11/03-BA	11/03-BE	11/03-CA	11/03-CE	11/03-DA	11/03-DE	11/03-EA	11/03-EB	11/03-FA	11/03-FB	11/03-GA	11/03-GB	11/03-HA	11/03-HE	11/03-KA	11/03-KB	11/03-MA	11/03-MB	11/03-SE	11/03-SF	11/03-SC	11/03-SD	11/03-KC
1.	E-UA-BA11-M-Ø	BA11-MA	BOX,FRAME, +P.S.ASSY.,115V	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
2.	E-UA-BA11-M-Ø	BA11-MB	BOX,FRAME, +P.S.ASSY.,23Øv	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-
3.	A-PL-7011609-0-0	7011609	MOUNTING BRACKET KIT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.	A-PL-KD11-F-0	KD11-F	PROC/4K RAM MEM	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	A-PL-KD11-J-0	KD11-J	PROC/4K CORE MEM	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6.	C-UA-KD11-L-0	KD11-L	PROC/4K RAM MEM/KEV11	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
7.	C-UA-KD11-M-0	KD11-M	PROC/4K CORE MEM/KEV11	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
8.	A-PL-KD11-R-0	KD11-R	PROC/16K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-
9.	C-UA-KD11-S-0	KD11-S	PROC/16K MOS MEM/KEV11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
10.	A-PL-KD11-HA-0	KD11-HA	DOUBLE HEIGHT PROC/NO MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-
11.	A-PL-MSV11-D-0	MSV11-DD	32K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1
12.	A-PL-KEV11-0-0	KEV11	EIS/FIS MICROM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1
13.	A-PL-DLV11-0-0	DLV11	SERIAL LINE UNIT	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	A-DC-7416197-0-0	7416197-02	UL DECAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15.	A-DC-7409478-0-0	7409478-00	PATENT DECAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16.	A-PS-3613210-0-0	3613210-00	SERIAL NUMBER TAG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17.	A-SP-3700215-0-0	3700215-00	PACKAGING INSTRUCTIONS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18.	C-MU-11/03-0-3		MODULE UTILIZATION	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	-	-	-	-	-	-	-	-	-
19.	C-MU-11/03-0-4		MODULE UTILIZATION	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	-	-	-	-	-	-	-
20.	C-MU-11/03-0-5		MODULE UTILIZATION	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	REF	REF	REF	REF	REF	REF	REF	REF	REF
21.	A-PL-MSV11-D-0	MSV11-DC	16K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
22.	A-PL-KD11-H-0	KD11-H	PROC/NO MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

REVISIONS		
CHK	CHANGE NO.	REV.
-	11/03-ML010	K
ORIGINATED		
BU	1103-ML011	L
R. LEWIS		
Ira	1103-ML012	M
R. LEWIS		

DRN		1 Sep 78
CHK'D		21 Sep 78
ENG.		25 Sep 78
PROJ. ENG.		25 Sep 78
PROD.		25 Sep 78
NEXT HIGHER ASSY.	B-DD-11/03-0	
SCALE		
SHEET	1 OF 1	

FIRST USED ON: 11/03

digital

TITLE: UNIT ASSY. 11/03

SIZE	CODE	NUMBER	REV.
C	PL	11/03-0-0	M

DIST.

DEC FORM NO. DRC 110 A

B.L.M. P-1147

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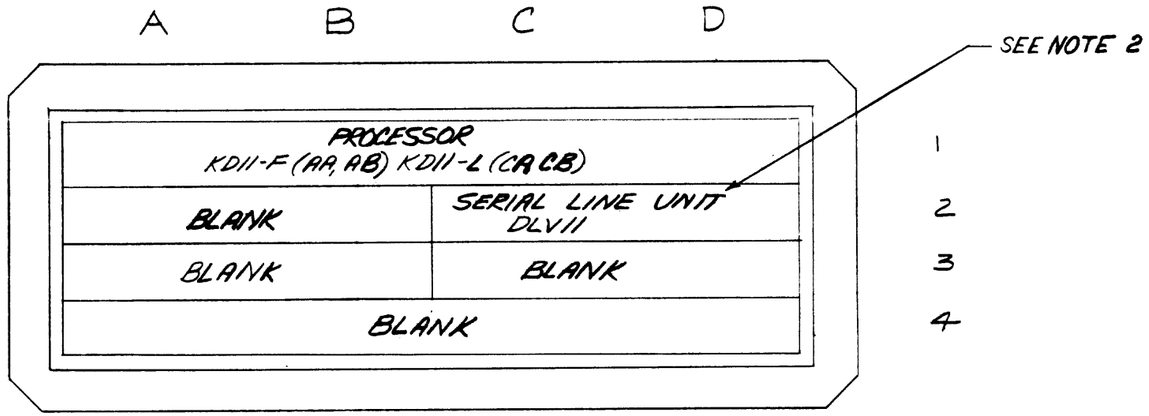
NOTES:
1. THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-AA, 11/03-AB, 11/03-CA, 11/03-CB, 11/03-EA, 11/03-EB, 11/03-GA, 11/03 GB
2. 11/03-EA, 11/03-EB, 11/03-GA, AND 11/03-GB DO NOT INCLUDE DLV-11.



VIEW FROM MODULE SIDE OF BACKPLANE

REVISIONS	CHANGE NO.	CHK	
A	11/03-00001	JB	J. Biro 25 NOV 75

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/03		PARTS LIST		

DIMENSIONAL TOLERANCE
DIMENSIONS ARE MILLIMETERS / INCHES UNLESS OTHERWISE SPECIFIED

MILLIMETERS	INCHES	ANGLES
X.XX = ± 0.10 X.X = ± 0.5 X = ± 2,	.XXX = ± .005 .XX = ± .02 .X = ± .1	±0° 30'

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN.		DATE 9 SEP 75
CHK'D		DATE
ENG.		DATE 9/22/75
PROJ. ENG.		DATE 9/23/75
PROD.		DATE 9/10/75
NEXT HIGHER ASSY.	B-DD-11/03-0	
SCALE	—	
SHEET	1 OF 1	

digital

TITLE: MODULE UTILIZATION (11/03)

SIZE	CODE	NUMBER	REV.
C	MU	11/03-0-3	A

DIST.

DEC FORM NO. SRC 100-9

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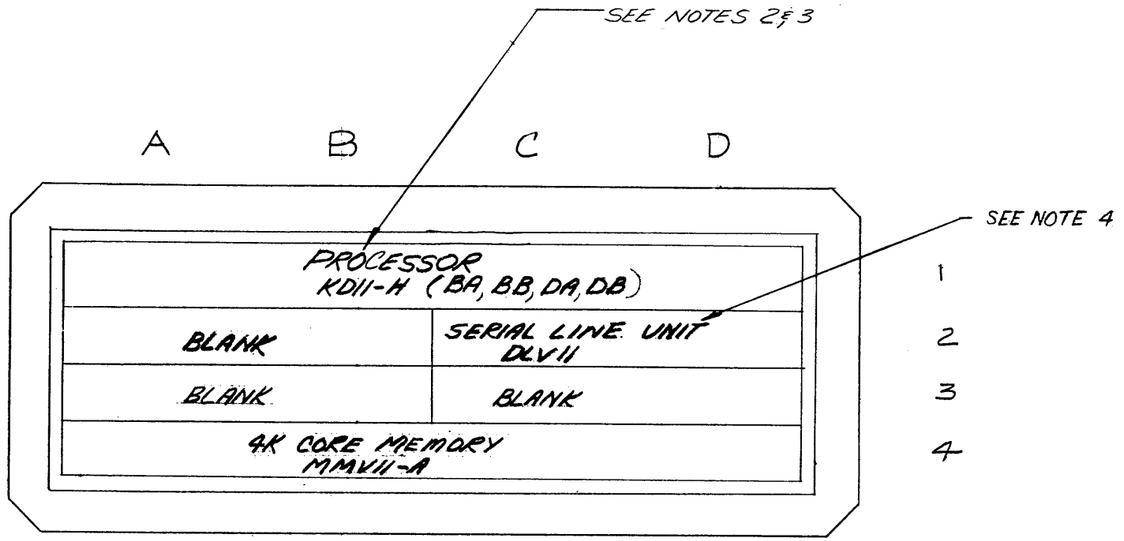
NOTES:

1. THIS MODULE UTILIZEATION WILL BE USED FOR: 11/03-BA, 11/03-BB, 11/03-DA, 11/03-DB 11/03-FA, 11/03-FB, 11/03-HA, 11/03-HB.
2. KDII-H WITH MMVII-A BECOMES KDII-J.
3. KDII-H WITH MMVII-A AND KEVII BECOMES KDII-M.
4. 11/03-FA, 11/03-FB, 11/03-HA, AND 11/03-HB DO NOT INCLUDE DLVII.



VIEW FROM MODULE SIDE OF BACKPLANE

REVISIONS			
	CHK	CHANGE NO.	REV.
		11/03-00001	A
		J. BIRO 25 AUG 75	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/03		PARTS LIST		

DIMENSIONAL TOLERANCE
DIMENSIONS ARE MILLIMETERS / INCHES
UNLESS OTHERWISE SPECIFIED

MILLIMETERS	INCHES	ANGLES
X.XX = ±0.10	.XXX = ±.005	±0° 30'
X.X = ±0.5	.XX = ±.02	
X = ±2	.X = ±.1	

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL #

FINISH #

DRN.		DATE 9 SEP 75
CHK'D.		DATE
ENG.		DATE 9/23/75
PROD. ENG.		DATE 9/23/75
PROD.		DATE 9/17/75

NEXT HIGHER ASSY. B-DD-11/03-0

SCALE #

SHEET 1 OF 1

digital

TITLE
MODULE UTILIZATION
(11/03)

SIZE	CODE	NUMBER	REV.
C	MU	11/03-0-4	A

DIST.

DEC FORM NO. MC 100-8

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THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-KA, 11/03-KB, 11/03-MA, 11/03-MB

	A B	C D
1	PROCESSOR KD11-H	
2	16 K MOS MEMORY MSV11-CD	
3	BLANK	BLANK
4	BLANK	BLANK

THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-SE, 11/03-SF, 11/03-SC 1103-SD

	A B	C D
1	PROCESSOR KD11-HA AND KEV11	MOS MEMORY MSV11-DD OR MSV11-DC
2	BLANK	BLANK
3	BLANK	BLANK
4	BLANK	BLANK

VIEW FROM MODULE SIDE OF BACKPLANE

THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-KC

	A B	C D
1	PROCESSOR KD11-H AND KEV11	
2	BLANK	MOS MEMORY MSV11-DD
3	BLANK	BLANK
4	BLANK	BLANK

VIEW FROM MODULE SIDE OF BACKPLANE

REVISIONS

REV.	CHANGE NO.			
A	11/03-00006	B. Chiasson 31 MAR. 77	J. BIRO	J. Biro 6 APR 77
B	11/03-00007	24 Aug 77	D. BENNETT	D Bennett 1 SEPT 77
C	11/03-ML010	1 Sep '78	R. LEWIS	RE Cum 25 Sept 78
D	11/03-ML011	G. Lozapio 21 NOV 78	R. LEWIS	RE Cum 5 Dec 78
E	11/03-ML012	19 Oct 79	R. LEWIS	RE Cum 25 Oct 79

MAKEPEACE P-1658
DEC FORM NO. DRC 100-C

DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'

SURFACE QUALITY IN ✓ MICROINCHES

QUANTITY & VARIATION

~~CLASS OF ACCURACY (CHECK ONE)~~	OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
PREFERRED ☐	±.012	±.016	±.025	±.04	±.063	±0.1

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL —/—/—
FINISH —/—/—

DRN.	Bob Pellerin	30 DEC 76
CHK'D		30 DEC 76
ENG.	John Biro	4 Jan 77
PROJ. ENG.	J Biro	4 Jan 77
PROD.		11 FEB 77

NEXT HIGHER ASSY.
B-DD-11/03-0
SCALE —/—/—
SHEET 1 OF 1

FIRST USED ON 11/03

digital

TITLE
MODULE UTILIZATION
(11/03)

SIZE	CODE	NUMBER	REV.
C	MU	11/03-0-5	E

DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY [illegible]	CHECKED [illegible]	SECTION
DATE 25 Apr 19	DATE 25 Apr 19	
ENG [illegible]	PROD [illegible]	ISSUED SECT.
DATE 25 Apr 19	DATE 25 Apr 19	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION											
			KD11-F	KD11-H	KD11-J	KD11-L	KD11-M	KD11-N	KD11-R	KD11-S	KD11-HA			
1.	B-PL-M7264-AA-0	Processor with 4K RAM	1	-	-	1	-	-	-	-	-			
2.	B-PL-M7264-YA-0	Processor with no RAM	-	1	1	-	1	1	1	1	-			
3.	D-UA-MMV11-A-0	4K CORE Memory	-	-	1	-	1	-	-	-	-			
4.	A-PL-MSV11-CD-0	16K MOS Memory	-	-	-	-	-	-	1	1	-			
5.	A-PL-KEV11-0-0	EIS/FIS	-	-	-	1	1	1	-	1	-			
6.	B-PL-M727Ø-0-0	DOUBLE HEIGHT PROCESSOR WITH NO RAM	-	-	-	-	-	-	-	-	1			
		NOTE: This is a reference document only,												
		listing processor variations covered by the												
		11/03 Field Maintenace Print Set. For more												
		detailed information, refer to individual												
		option prints.												

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
11/03 Processor Variation List	B-DD-11/03-0	A	PL	11/03-0-6	A	11/03-ML0Ø1Ø
	SHEET 1 OF 1	DIST.				

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

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY WALT SIZER	CHECKED WALT SIZER	SECTION 1
DATE 9/29/75	DATE 9/29/75	
ENG ARNOLD COHAN	PROD DON DEROME	ISSUED SECT. 2
DATE 10/17/75	DATE 10/17/75	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION											
			11/03-AA	11/03-AB	11/03-BA	11/03-BB	11/03-CA	11/03-CB	11/03-DA	11/03-DB	11/03-EA	11/03-EB	11/03-FA	11/03-FB
~~1~~	~~EK-LSI11-TM~~	~~LSI-11, PDP-11/03 USER'S MANUAL~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~
~~2~~	~~EB-04870-75~~	~~LSI-11, 11/03 PROCESSOR HANDBOOK~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~
3	EH-04779-75	LSI-11 PROGRAMMING CARD	*	*	*	*	*	*	*	*	*	*	*	*
4	ZJV01-RB	LSI-11 BASIC DIAGNOSTIC KIT	*	*	*	*	*	*	*	*	*	*	*	*
5	MP-11/03	PDP-11/03 CUSTOMER PRINT SET	1	1	1	1	1	1	1	1	1	1	1	1
6	A-PL-7011609-0-0	11/03 MOUNTING BRACKET KIT	1	1	1	1	1	1	1	1	1	1	1	1
~~7~~	~~EB-06583-76~~	~~MICROCOMPUTER HANDBOOK~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~
8	EB-15114-78	MICROCOMPUTER PROCESSORS HANDBOOK	*	*	*	*	*	*	*	*	*	*	*	*
9	EB-15115-78	MEMORIES AND PERIPHERALS HANDBOOK	*	*	*	*	*	*	*	*	*	*	*	*
10	MP00049	FD11-F FIELD MAINTENANCE PRINT SET	1	1	1	1	1	1	1	1	1	1	1	1
11	MP00495	FD11-HA FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	-	-	-	-
12	B-DD-MMV11-A (COMPLETE)	MMV11-A FIELD MAINTENANCE PRINT SET	-	-	1	1	-	-	1	1	-	-	1	1
13	MP00259	MSV11-C FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	-	-	-	-
14	MP00566	MSV11-D FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	-	-	-	-
15	MP00055	DLV11 FIELD MAINTENANCE PRINT SET	1	1	1	1	1	1	1	1	-	-	-	-
		* NOTE: THESE ITEMS ARE ONLY TO BE SHIPPED WITH FIRST SHIP TO CUSTOMER.												

TITLE	ASSY NO.	SIZE	CODE	NUMBER	R	ECO NO
PDP 11/03 SHIPPING LIST	NONE	A	PL	11/03-0-1	D	11/03 ML011
	SHEET 1 OF 2	DIST				

DEC FORM DEC 16 (325) 1031 N870
DRA 110

ML

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY WALT SIZER	CHECKED WALT SIZER	SECTION 2
DATE 9/29/75	DATE 9/29/75	
ENG ARNOLD COHAN	PROD DON DEROME	ISSUED SECT. 2
DATE 10/17/75	DATE 10/17/75	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION											
			11/03-GA	11/03-GB	11/03-HA	11/03-HB	11/03-KA	11/03-KB	11/03-MA	11/03-MB	11/03-SE	11/03-SF	11/03-SC	11/03-SD
~~1~~	~~EK-LSI11-TM~~	~~LSI-11, PDP-11/03 USER'S MANUAL~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	-	-	-	-
~~2~~	~~EB-04870-75~~	~~LSI-11, 11/03 PROCESSOR HANDBOOK~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	-	-	-	-
3	EH-04779-75	LSI-11 PROGRAMMING CARD	*	*	*	*	*	*	*	*	*	*	*	*
4	ZJV01-RB	LSI-11 BASIC DIAGNOSTIC KIT	*	*	*	*	*	*	*	*	*	*	*	*
5	MP-11/03	PDP-11/03 CUSTOMER PRINT SET	1	1	1	1	1	1	1	1	1	1	1	1
6	A-PL-7011609-0-0	11/03 MOUNTING BRACKET KIT	1	1	1	1	1	1	1	1	1	1	1	1
~~7~~	~~EB-06583-76~~	~~MICROCOMPUTER HANDBOOK~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	~~*~~	-	-	-	-
8	EB-15114-78	MICROCOMPUTER PROCESSORS HANDBOOK	*	*	*	*	*	*	*	*	*	*	*	*
9	EB-15115-78	MEMORIES AND PERIPHERALS HANDBOOK	*	*	*	*	*	*	*	*	*	*	*	*
10	MP00049	FD11-F FIELD MAINTENANCE PRINT SET	1	1	1	1	1	1	1	1	-	-	-	-
11	MP00495	FD11-HA FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	1	1	1	1
12	B-DD-MMV11-A (COMPLETE)	MMV11-A FIELD MAINTENANCE PRINT SET	-	-	1	1	-	-	-	-	-	-	-	-
13	MP00259	MSV11-C FIELD MAINTENANCE PRINT SET	-	-	-	-	1	1	1	1	-	-	-	-
14	MP00566	MSV11-D FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	1	1	1	1
15	MP00055	DLV11 FIELD MAINTENANCE PRINT SET	-	-	-	-	-	-	-	-	-	-	-	-
		* NOTE: THESE ITEMS ARE ONLY TO BE SHIPPED WITH FIRST SHIP TO CUSTOMER.												

TITLE	ASSY NO.	SIZE	CODE	NUMBER	R	ECO NO
PDP 11/03 SHIPPING LIST	NONE	A	PL	11/03-0-1	D	11/03 ML011
	SHEET 2 OF 2	DIST				

DEC FORM DEC 16 (325) 1031 N870
DRA 110

ML

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY R. RILEY	CHECKED D. HEALY	SECTION 1	
DATE 7/11/75	DATE 9/8/75		
ENG Arnold D. Glen	PROD Dan DeRosa	ISSUED SECT. 1	
DATE 10/17/75	DATE 10-16-75		

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION KEV11-0
~~1~~	~~23091A5-01~~	~~MICROM MOS CHIP~~	~~1~~
2	23003B5	MICROM MOS CHIP	1
3	A-PS-9905812-0-0	BOX, PAPER SET-UP WITH FOAM	1
		IF 23003B5 IS NOT AVAILABLE,	
		USE 23091A5-01.	

TITLE MICROM EIS, FIS OPTION	ASSY NO. NONE	SIZE A	CODE PL	NUMBER KEV11-Ø-Ø	REV. D	ECO NO. KEV11-00005
	SHEET 1 OF 1	DIST.				

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

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

SEQUENCE		SEQUENCE
B-DD-BA11-M	DRAWING DIRECTORY BA11-M (SHEET 1 ONLY)	
E-UA-BA11-M-0	BOX, FRAME, AND P.S. ASSY	
D-AD-7011841-0-0	FRAME AND P.S. ASSY	
D-UA-H9270-A-0	FRAME ASSY	
E-UA-H9270-0-0	FRAME	
D-AD-7011145-0-0	BACKPLANE ASSY	
D-CS-5411648-0-1	BACKPLANE	
E-UA-H780-0-0	POWER SUPPLY	
C-PL-H780-0-0	POWER SUPPLY	
D-UA-5411776-0-0	REGULATOR	
B-PL-5411776-0-0	REGULATOR	
D-CS-5411776-0-1	REGULATOR	
D-CS-5411808-0-1	MASTER CONSOLE	
D-CS-5412143-0-1	SLAVE CONSOLE	
A-PL-BA11-M-1	SHIPPING LIST	

THIS IS PRINT SET ☐☐☐☐

UNIT VARIATIONS		PRINT SET
VAR	TITLE	1
BA11-MA	3.5 BOX, H927Ø-A & H78Ø-A	X
BA11-MB	3.5 BOX, H927Ø-A & H78Ø-B	X
BA11-MC	3.5 BOX, NO FRAME OR P.S.	X
BA11-ME	3.5 BOX, H9270-A & H780-E	X
BA11-MF	3.5 BOX, H9270-A & H780-F	X

REVISIONS		
DATE	CHG. NO.	REV
JAN 76	BA11-M-1	A
FEB 76	BA11-M-2	B
5-76	BA11-M-3	C
5-76	BA11-M-4	D
8-76	BA11-M-5	E
2-77	BA11-M-6	F
4-77	BA11-M-7	H
3-78	BA11M-9	J
8-78	BA11M-1Ø	K

USED ON OPTION/MODEL	
11/Ø3	

SHEET 1 OF 3

DRN. M. BAPTISTE	DATE 8/4/75	TITLE: DRAWING DIRECTORY BA11-M
CHK'D. D. HEALY	DATE 9/10/75	
PROJ ENG.	DATE 10/16/75	
PROD.	DATE 10/16/75	SIZE B / CODE DD / NUMBER BA11-M / REV K
FIELD SERV.	DATE 10/17/75	DIST

EN-01062-1-A-16-R92-(325)

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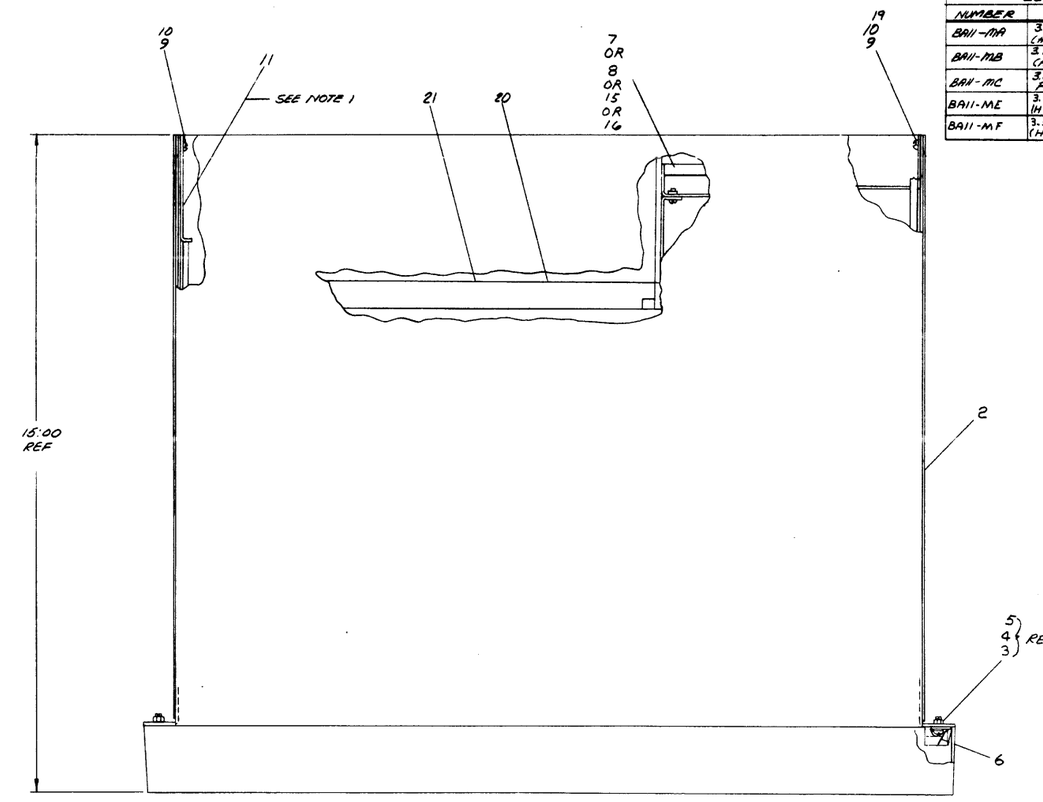

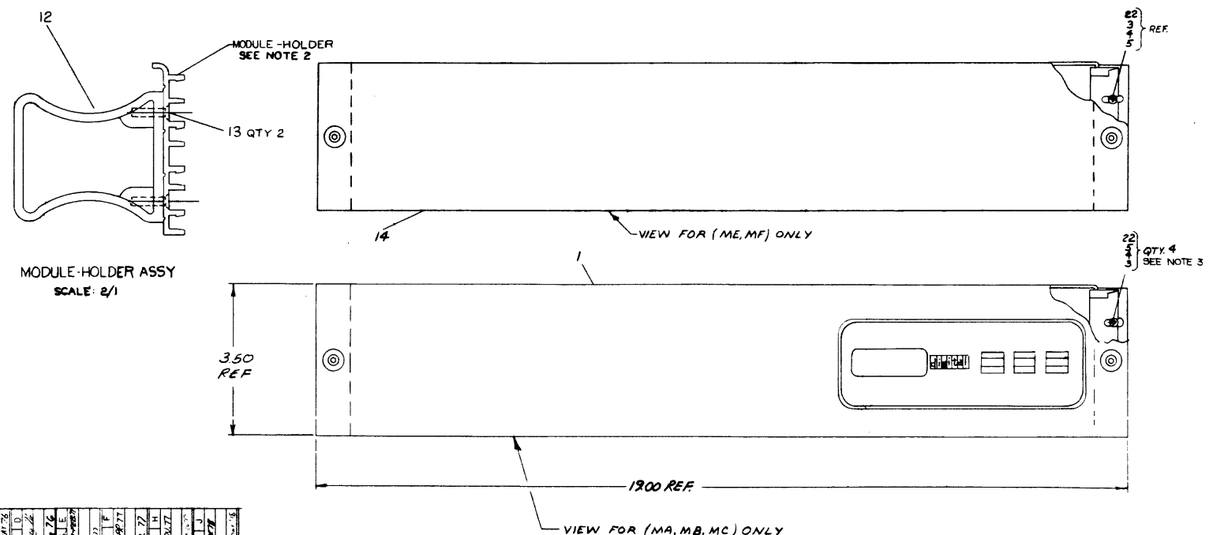

LEGEND	
NUMBER	VARIATION
BA11-MA	3.5 BOX + FRAME & P.S. ASSY (H9270-A + H780-A) 115 V
BA11-MB	3.5 BOX + FRAME & P.S. ASSY (H9270-A + H780-A) 230 V
BA11-MC	3.5 BOX NO FRAME OR POWER SUPPLY
BA11-ME	3.5 BOX + FRAME & P.S. ASSY (H9270-A + H780-E) 115 V
BA11-MF	3.5 BOX + FRAME & P.S. ASSY (H9270-A + H780-F) 230 V

NOTES:

1. TO BE ASSEMBLED AFTER ITEM 7, OR 8 OR 15 OR 16 IS INSTALLED.
2. ASSEMBLE MODULE HOLDER 12078B-03 SUPPLIED IN UA-H9270 TO HANDLE ITEM 12 WITH SCREWS ITEM 13.
3. TO INSURE PROPER ALIGNMENT OF BEZEL MOUNTING HARDWARE, ITEM 4 MUST HAVE BENT TABS FLUSH AGAINST BA11-M BOX (ITEM 2) AND MUST BE FASTENED WITH THE PROPER PAN HD SCREW CALLED FOR.
4. MASTER/SLAVE CABLE CONNECTIONS
   THE SLAVE CONSOLE INCLUDED IN THE BA11 ME/MF EXPANDER BOX ALLOWS POWER UP/DOWN FROM A MASTER 11/03. FOR SYSTEMS WITH ONE EXPANDER BOX, THIS IS DONE BY CONNECTING THE 70086612-6A CABLE SUPPLIED WITH THE BA11 ME/MF BETWEEN CONNECTOR J2 ON THE MASTER 11/03 CONSOLE TO J2 ON THE BA11 ME/MF CONSOLE. FOR EXPANSION TO A SECOND BA11 ME/MF EXPANDER BOX, THERE ARE TWO APPROACHES DEPENDING ON THE REVISION OF THE SLAVE CONSOLE. EARLIER SYSTEMS WITH ETCH REVISIONS B SLAVE CONSOLE (IDENTIFIED BY HAVING TWO PLUGS J1, J2) REQUIRE USE OF A BC03Y-16 THREE PLUG CABLE. ONE END OF THE CABLE IS CONNECTED TO J2 ON THE 11/03. THE CENTER PLUG ON THE CABLE IS TO BE CONNECTED TO J2 ON THE FIRST BA11 ME/MF AND THE FAR END OF THE BC03Y-16 IS CONNECTED TO J2 ON THE SECOND BA11 ME/MF. THE BC03Y-16 CABLE MUST BE ORDERED SEPARATELY. LATER BA11 ME/MF BOXES WITH ETCH REVISION C SLAVE CONSOLE (IDENTIFIED BY HAVING THREE PLUGS J1, J2, AND J3) USE TWO 70086612-6A CABLES. THE FIRST CABLE IS CONNECTED BETWEEN J2 ON THE 11/03 CONSOLE TO J2 ON THE FIRST BA11 ME/MF. THE SECOND CABLE IS CONNECTED BETWEEN J3 ON THE FIRST BA11 ME/MF TO J2 ON THE SECOND BA11 ME/MF. TWO EXPANDER BOXES ARE THE MAXIMUM ALLOWABLE CONFIGURATION.

4	4	4	4	4	WASHER, FLAT #10	9006664	22
1	1	–	–	–	SERIAL NO. TAG	3613210	21
1	1	–	–	–	UL DECAL	7416197-02	20
1	1	1	1	1	WASHER, FLAT #8	9006660	19
1	1	1	1	1	BEZEL PROTECTOR	12112795	18
1	1	1	–	–	PACK INST CUST/INTERPLANT 11/03 A-SP-3700235-0-0		17
1	–	–	–	–	FRAME & P.S. ASSY (H9270-A + H780-F)	D-AD-7011848-0	16
–	1	–	–	–	FRAME & P.S. ASSY (H9270-A + H780-E)	D-AD-7011849-20	15
1	1	–	–	–	BEZEL ASSY	D-AD-7011616-H0	14
2	2	2	2	2	SCR PL HD SELFTAP 6-32 × .25	9009796-0	13
1	1	1	1	1	HANDLE-MODULE HOLDER	C-PS-12129800	12
1	1	1	1	1	BRKT, RETAINER	B-MD-7M1005-00	11
2	2	2	2	2	WASHER, LOCK INT. TOOTH #8	9006634	10
2	2	2	2	2	SCREW, PM MD, PAN #8-32 × .38	9006037-1	9
–	–	–	1	–	FRAME & POWER SUPPLY ASSY (H9270-A + H780-D)	D-AD-7011841-H0	8
–	–	–	–	1	FRAME & POWER SUPPLY ASSY (H9270-A + H780A)	D-AD-7011841-0-0	7
2	2	2	2	2	BRKT, BEZEL RETAINER ASSY	B-AD-7011231-0-0	6
4	4	4	4	4	NUT, KEPS #10-32	9006565	5
4	4	4	4	4	WASHER, LOCK INT. TOOTH #10	9006635	4
4	4	4	4	4	SCREW, PM MD PAN #10-32 X .75	9006075-1	3
1	1	1	1	1	BOX ASSY	D-AD-7011116-00	2
–	–	–	1	1	BEZEL ASSY	D-AD-7011616-00	1
BA11-MA	BA11-MB	BA11-MC	BA11-ME	BA11-MF	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±	CLASS OF ACCURACY	NOMINAL DIMENSION RANGE INCHES					
SURFACE QUALITY	(CHECK ONE)	OVER 0 TO 6	OVER 6 TO 12	OVER 12 TO 24	OVER 24 TO 48	OVER 48 TO 96	OVER 96 TO 192
	MEDIUM	±.004	±.008	±.012	±.018	±.024	±.04
MICROINCHES	PREFERRED	±.012	±.016	±.025	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL: SEE PARTS LIST

FINISH

DRN. J. Sc. 9/71
CHK'D. 9/71
ENG.
PROJ. ENG. 9/71
PROG. 9/71
NEXT HIGHER ASSY. B-DD-BA11-M
SCALE: NONE
SHEET 1 OF 1

FIRST USED ON: 11/03

digital

TITLE: BOX, FRAME + P.S. ASSY (BA11-M)

SIZE: E | CODE: JA | NUMBER: BA11-M-0 | REV: J
DIST:

BA11-M-0

SYMBOL	ORIG.	REVISIONS	REV
	BA11-M-00100		A
	BA11-M-00002		B
	BA11-M-00003		C
	BA11-M-00005		D
	BA11-M-00006		E
	BA11-M-00007		F
	BA11-M-00008		H
	J1BA11M-00009		J

SEE FORM 19 SEE NO. 5

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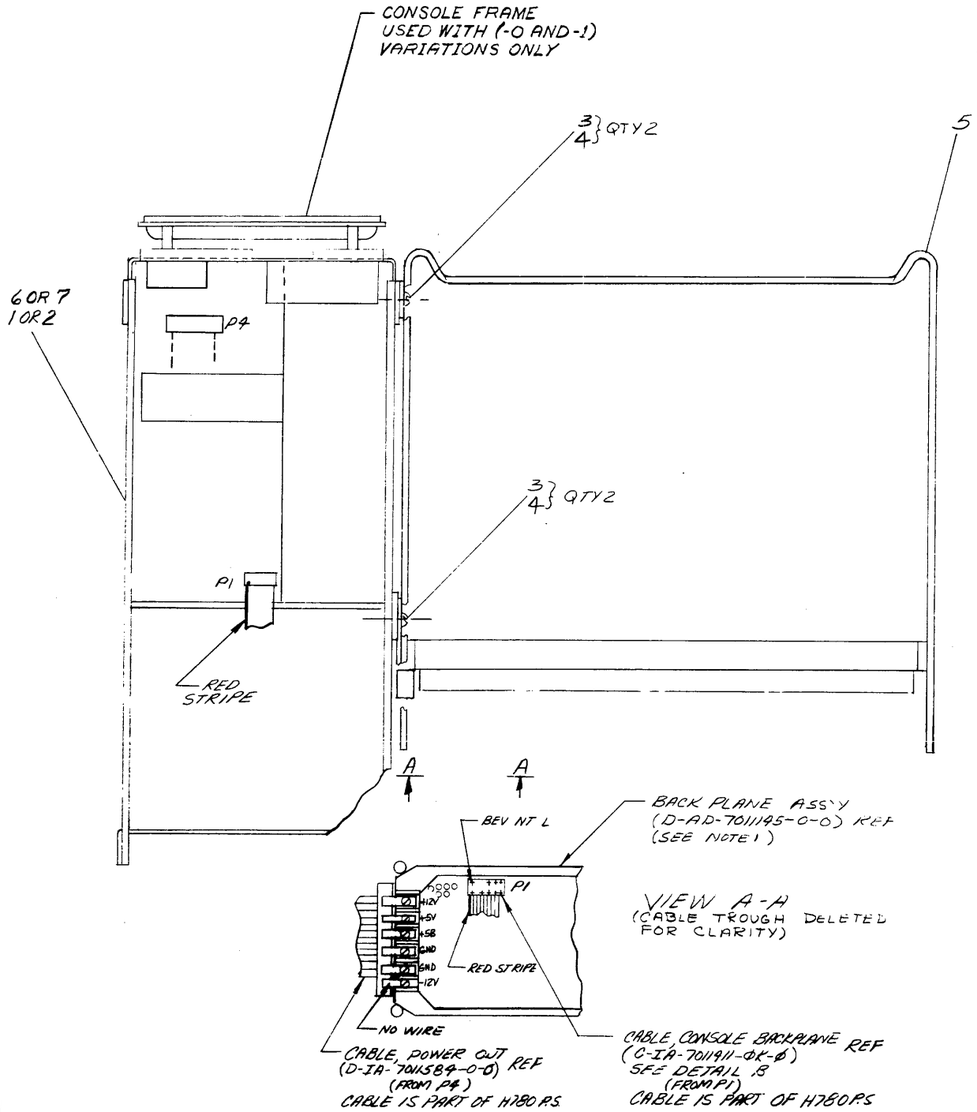
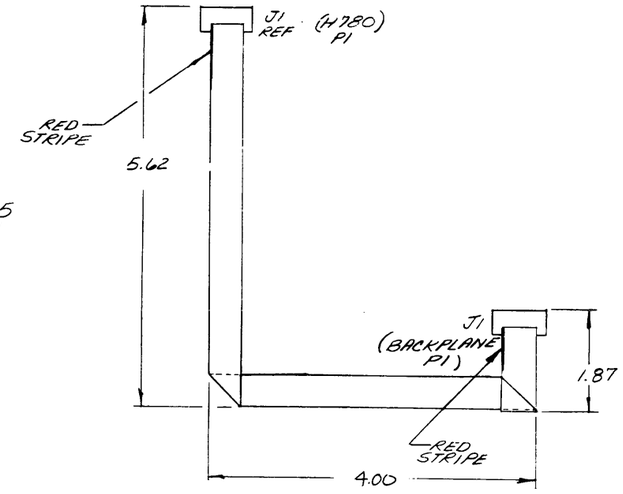
NOTES:
1. FOR WIRING INFO REFER TO D-AD-7011145-0-0



VIEW A-A
(CABLE TROUGH DELETED FOR CLARITY)



DETAIL B
CABLE FOLD ILLUSTRATION

1	–	–	–	H780-F SLAVE CON. 230V	E-UA-H780-F-Ø	7
–	1	–	–	H780-E SLAVE CON. 115V	E-UA-H780-E-Ø	6
1	1	1	1	FRAME ASSEMBLY	D-UA-H9270-A-Ø	5
4	4	4	4	WASHER, INT. TOOTH #8	9006634-0	4
4	4	4	4	SCREW, PH HD, PANH 8-32 X .38	9006037-1	3
–	–	1	–	POWER SUPPLY 230V	E-UA-H780-B-Ø	2
–	–	–	1	POWER SUPPLY 115V	E-UA-H780-A-Ø	1
7011841-3.0	7011841-2.0	7011841-1.0	7011841-0.0	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES: OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
SURFACE QUALITY IN MICROINCHES	MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
	PREFERRED ☐	±.012	±.016	±.025	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

DRN. 9-SEP-75
CHK. D. Gibbs 9-SEP-75
ENG. [illegible] 9/11/75
PROJ. ENG. [illegible] 9/23/75
PROD. [illegible] 7/11/75

FIRST USED ON 11/03

digital

TITLE FRAME & P.S. ASSY (H9270-A & H780)

NEXT HIGHER ASSY. B-DD-7011841-0-0

SIZE D | CODE AD | NUMBER 7011841-Ø-Ø | REV. A

SCALE NONE

SHEET / OF /

DIST.

REVISIONS			
CHK	CHANGE NO.	REV.	
J.BIRO	7011841-00001	A	09-Feb-76
D. Gibbs			12-Feb-76

B.L.N. 7-76

DEC FORM NO. DRD 100-C

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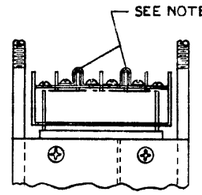
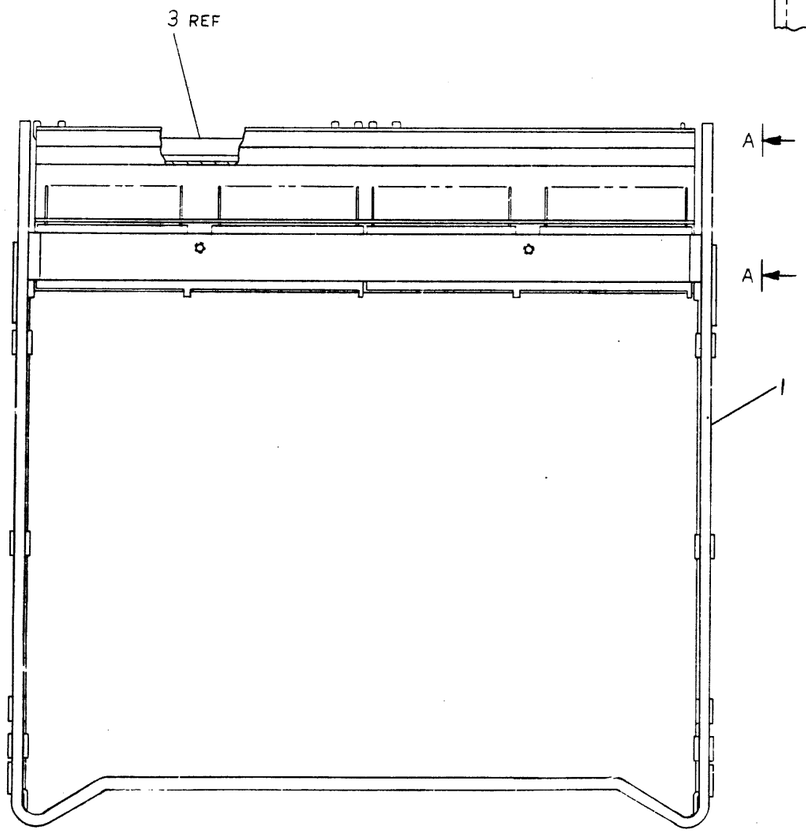
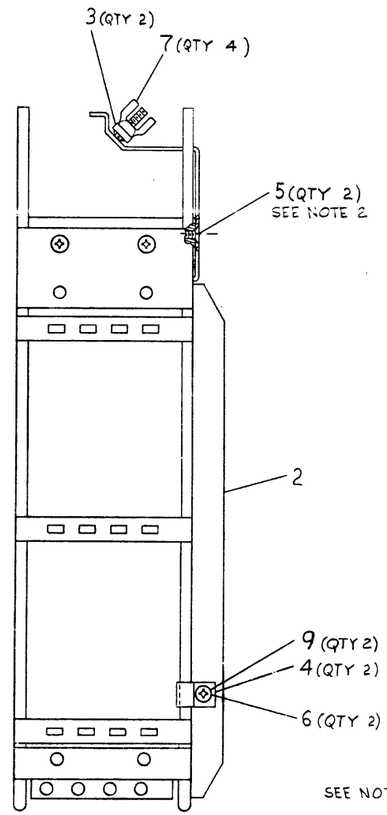


VIEW A-A





NOTES:

1. BEFORE ASSEMBLING CABLE THROUGH (7413849) TO H9270-0-0, REMOVE JUMPERS (9007589), QUANTITY 2, FROM TERMINAL BLOCK. REPLACE SCREWS TO TEMINAL BLOCK.
2. MANUFACTURING HAS THE OPTION TO USE 100° FLAT HEAD SCREW NO. 9008904-2 PLUS THREAD LOCKING COMPOUND NO. 9009321 IN PLACE OF SCREW CALLED FOR.

2	WASHER, LOCK, SPLIT #6	9007801-00	9
~~1~~	~~PACKAGING INSTRUCTIONS H9270 A SP-3700266-0-0~~		~~8~~
4	NUT, WING #6-32	9009711	7
2	SCR, PHL. PAN HD. #6-32 X .25	9006020-1	6
2	SCR, PHL FLAT HD 100°CSK #6-32 X .31	9009730	5
2	CLAMP	C-MD-7416425-0-0	4
2	BAR, CABLE STRAIN RELIEF	B-MD-7413846-0-0	3
1	TROUGH, CABLE	D-IA-7413849-0-0	2
1	UNIT ASSY H9270	E-UA-H9270-0-0	1
	DESCRIPTION	DWG./PART NO.	ITEM NO.

SEE NOTE 2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES					
		OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
SURFACE QUALITY IN MICROINCHES	MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
	PREFERRED ☑	±.012	±.016	±.025	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

DRN. J. Glendye	5-2-75	FIRST USED ON 1/03
CHK'D D. Bennett	7/1/75	digital
ENG. P. Porreca	6/24/75	TITLE FRAME ASSY
PROJ. ENG. [illegible]	7/31/75	
PROD. Wayne Bell	7/1/75	
NEXT HIGHER ASSY.		
B-DD-H9270-A	SIZE D	CODE UA NUMBER H9270-A-0 REV. F
SCALE 1/1		
SHEET 1 OF 1	DIST.	

REVISIONS			
CHK	CHANGE NO.		REV.
PD	H9270-A-00001	Initial release	A
S. Pasco	H9270A-00002	2 SCR'S	B
A. ADAMS	H9270A-00003	2-6-76	C
M.E. LEWANDOWSKI	H9270-A-00004	Finish + Finish	D
P. PORRECA	H9270-A-00005	5/17/76	E
D. BENNETT	H9270-A-00006	4 MAY 77	F
P. PORRECA		2 AUG 77	

DEC FORM NO. P.U. 100-

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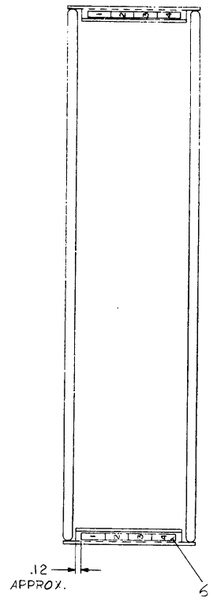
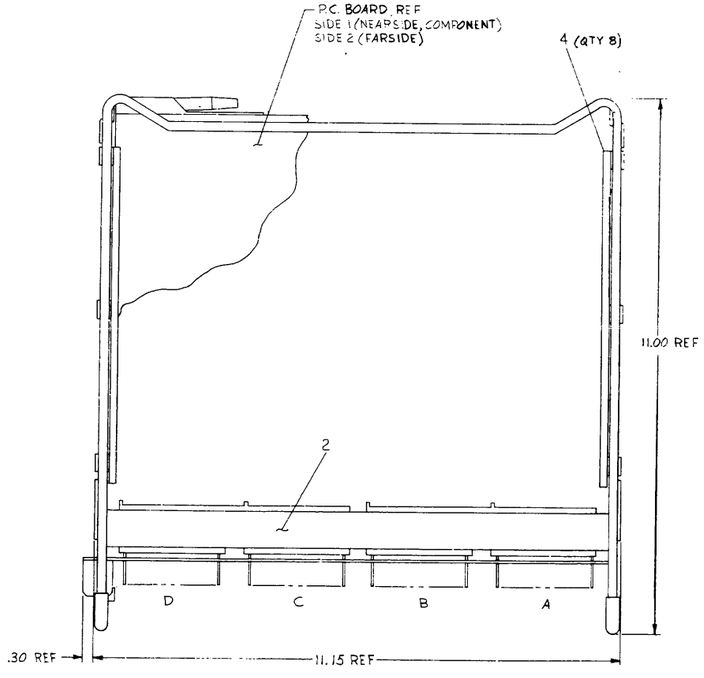
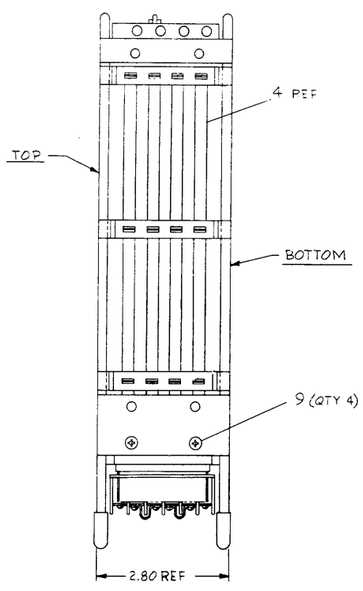
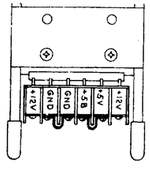
8

SCALE: NONE









	1	PACK INST H927Ø	A-SP-3700206-0-0	10
	4	SCR., PH. HD. FL NYLOC	9009730	9
	1	MODULE HOLDER	A-SP-1209856-03	8
	~~1~~	~~PWR DISTRIB. DECAL~~	~~A-DC-7414333-0-0~~	~~7~~
	2	SLOT NUMBERING DECAL	A-DC-7414311-0-0	6
	~~1~~	~~AWT REV STATUS LABEL~~	~~A-DC-7411881-0-0~~	~~5~~
	8	CARD GUIDE WHITE	A-PS-1212405-0-0	4
	~~4~~	~~SCR., FL. HD. 4-36 x .31~~	~~9000404-2~~	~~3~~
	1	BACK PLANE ASSY	D-AD-7011145-0-0	2
	1	CARD FRAME ☒ MODULE	E-IA-7011047-0-0	1

H927Ø-0-Ø

DESCRIPTION | DWG./PART NO. | ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30' | CLASS OF ACCURACY (CHECK ONE): MEDIUM ☐ PREFERRED ☐ | SURFACE QUALITY IN MICROINCHES ✓ | NOMINAL DIMENSION RANGE INCHES: OVER TO 6 | OVER 6 TO 12 | OVER 12 TO 24 | OVER 24 TO 48 | OVER 48 TO 96 | OVER 96 TO 192

QUANTITY & VARIATION

DRN. M. BAPTISTE	4-15-75	FIRST USED ON	11Ø3
CHK'D. D. HEALY	7-7-75		
ENG. J. WALLS	7-7-75	TITLE	UNIT ASSY H927Ø
PROJ. ENGR. E. CORD	7-7-75		
PROD. D. DE ROME	7-8-75		
NEXT HIGHER ASSY:			
SCALE 1/1		SIZE E	CODE UA
SHEET 1 OF 1		NUMBER H927Ø-0-Ø	REV F

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

REV		
F	0007	11-FEB-77
	C. & REDRAWN	
	SENNETT	28-FEB-77

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WIRE TABLE

ITEM NO	DESCRIPTION AWG.	COLOR	FROM POINT	FROM CONN.	FROM WITH	TO	SIGNAL	REMARKS
15	30	GREEN		DOIM1	WIRE WRAP	PIN 5 OF STAKED IN PINS (GND) WITH ONE TURN OF WIRE WRAP THEN SOLDER TACK	GND	SEE NOTES 6 & 7

NOTES:

~~1. INSERT ITEM 6 ON P.C. BOARDS (ITEM 3) BEFORE INSTALLING ON BACKPLANE~~

~~2. ALL WIRE WRAP EXCEPT THAT GOING TO THE TERMINAL LUG MUST BE APPLIED BEFORE THE AWT.~~

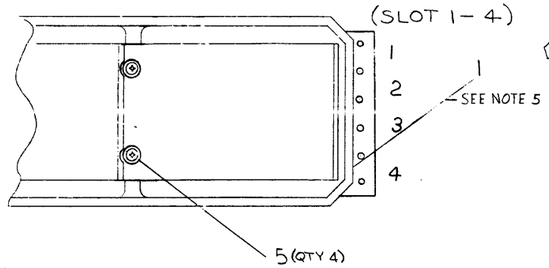
3. AWT SHOULD BE RUN BEFORE ITEMS 4 & 10 ARE ATTACHED.

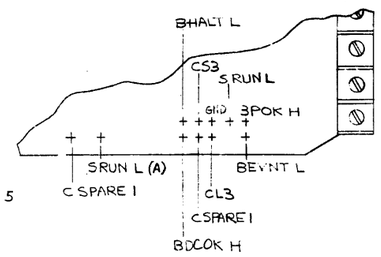
4. #1210258 IS AN ALLOWABLE SUBSTITUTION WHEN NO 1210258-01'S ARE AVAILABLE.

5. SAND CAST FRAME, NO. C-MD-7413493, CAN BE USED IN PLACE OF DIE CAST VERSION IF SUPPLY PROBLEM EXISTS.

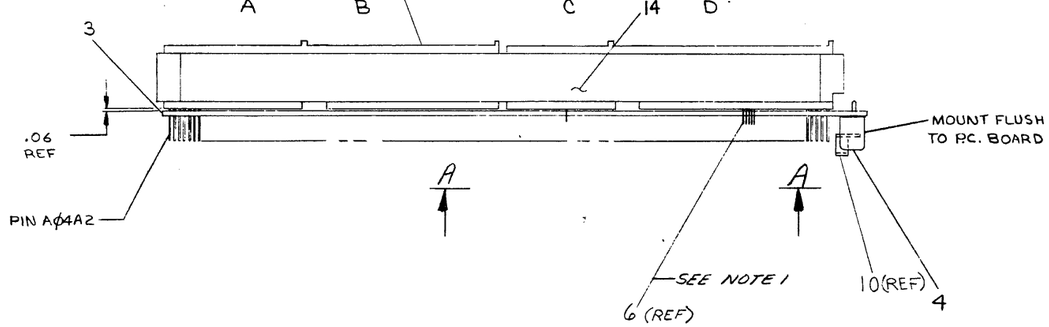
6. IT IS IMPERATIVE THAT THE CONNECTION TO THE STAKED IN PIN BE MADE AS CLOSE TO THE ETCH BOARD AS POSSIBLE TO ALLOW A CONNECTOR TO SLIP DOWN ONTO THE PIN.

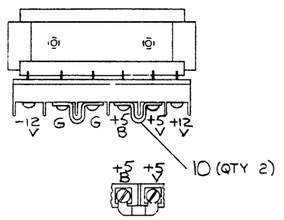
7. THIS WIRE IS REQUIRED ON 7011145'S BUILT WITH ETCH REVISION D BOARDS ONLY.





VIEW A-A





A/R	DESCRIPTION	DWG./PART NO.	ITEM NO.
	WIRE #30 AWG SOLID GRN	9105740-55	15
1	AWT REV STATUS LABEL	74-11881	14
~~3"~~	~~WIRE #30 AWG SOLID (GRN)~~	~~9105740-55~~	~~13~~
~~2FT~~	~~WIRE #22 AWG SOLID (GRN)~~	~~9107688-55~~	~~12~~
~~1~~	~~TERM, RING INS. (RED)~~	~~9006781~~	~~11~~
2	JUMPER	9007569	10
REF	AWT ETCH LIST	K-WL-7011145-0-1	9
REF	AWT REV STATUS	A-WT-7011145-0	8
REF	CIRCUIT SCHEMATIC	D-CS-5411698-0-1	7
~~11~~	~~PINS STAKING P.C. BD~~	~~9009147~~	~~6~~
4	SCREW, FIL HD POSI DR #6-32 X 1/2	9006120-6	5
1	CARRIER TERM BOARD (CRAM)	1212484-2	4
1	ETCH CIRCUIT BOARD ASSY.	5411698-0-1	3
* 2	288 PIN BLOCK (SLOTTED)	1210253-01	2
1	FRAME, BACKPLANE	C-MD-7413888-00	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 20'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES: OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
SURFACE QUALITY IN MICROINCHES	MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
	PREFERRED ☐	±.012	±.016	±.025	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

DRN. M. Custer 6-7-75
CHK'D D. Noah 7/7/75
ENG. G. Wallo 7-7-75
PROJ. ENG. [illegible] 7-7-75
PROD. [illegible] 7-5-75
NEXT HIGHER ASSY.
E-UA-H9270-0-0
SCALE NONE
SHEET 1 OF 1

FIRST USED ON 11/93

digital

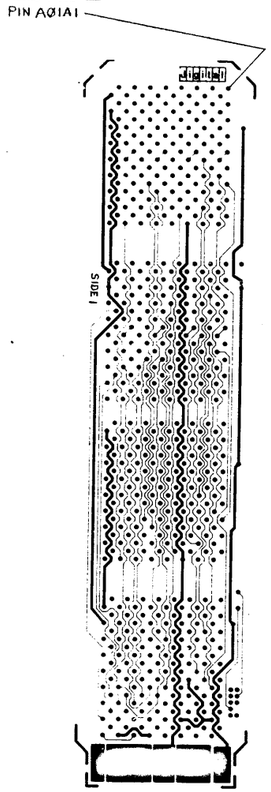
TITLE
BACK PLANE ASS'Y

SIZE D | CODE AD | NUMBER 7011145-0-0 | REV. H | DIST.

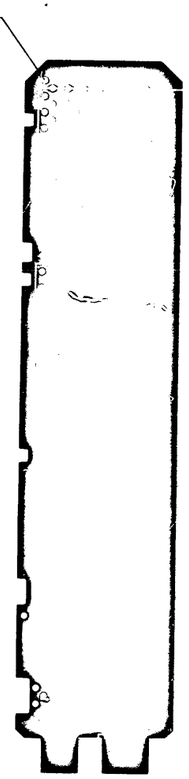
REVISIONS CHK	CHANGE NO.	REV.
[illegible]	H9270-00001	A
M.E. LEWANDOWSKI	H9270-00003	B
M.E. LEWANDOWSKI	7011145-00002	C
M.E. LEWANDOWSKI	H9270-00007	E
D. BENNETT	H9270-00008	F
M.E. LEWANDOWSKI	7011145-00004	H

NOTES:

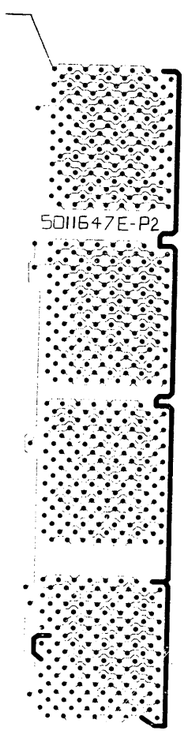
1978



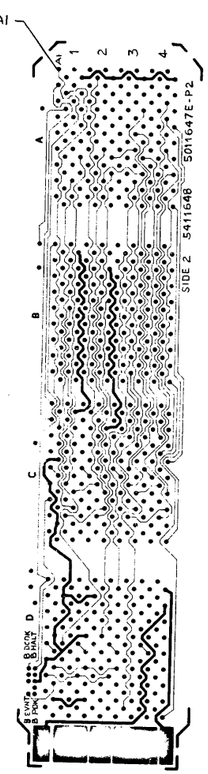
LAYER 1 POSITIVE



LAYER 2 NEGATIVE



LAYER 3 POSITIVE



LAYER 4 POSITIVE

IC TYPE	GND	-5V

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

IC PIN LOCATIONS

REF		DRILL & ETCH DRAWING	D-MD-5011647-0-0	7
11		PIN STAKING (P C BOARD)	9009149	6
REF		AWT-REV STATUS	A-WT-7011145-Ø	5
REF		MODULE ECO HISTORY	B-MH-5411648-Ø6	4
REF		ASSY/DRILL HOLE LAYOUT	E-AH-5411648-Ø-5	3
REF		X Y COORDINATE HOLE LOCATION	K-CO-5411648-Ø-4	2
1		ETCHED CIRCUIT BOARD	5Ø11647	1
QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO

PARTS LIST

FIRST USED ON OPTION MODEL: H9270

ETCH BOARD REV: E-P2

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REVISIONS	ENGR. NO.	CHK	
F	5411648-AE005	J. CURTIS	5-29-79
E	5411648-4-4A	M.E. LEWANDOWSKI	7-7-78
D		M.E. Lewandowski	7-7-78
C		D.H. Simmons	6-24-78
B		M.E. LEWANDOWSKI	5-3-78
A		D.H. Simmons	4-24-78

DRN. D.H. Simmons	DATE 4-24-78	digital
CHK'D M.E. Lewandowski	DATE 5/3/78	TITLE CIRCUIT SCHEMATIC BACKPLANE
ENG. M.E. Lewandowski	DATE 7/7/78	
PROJ. ENG. M.E. Lewandowski	DATE 7/7/78	
PROD. M.E. Lewandowski	DATE 7/7/78	
NEXT HIGHER ASSY D-AD-7011145-Ø-Ø		SIZE CODE D CS 5411648-Ø-1 REV. F
SCALE 1/1		
SHEET 1 OF 1		DIST

DCS 5411648-Ø-1 F

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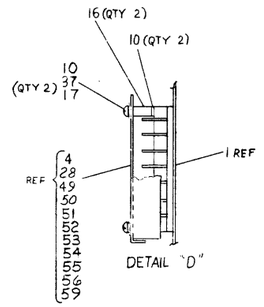
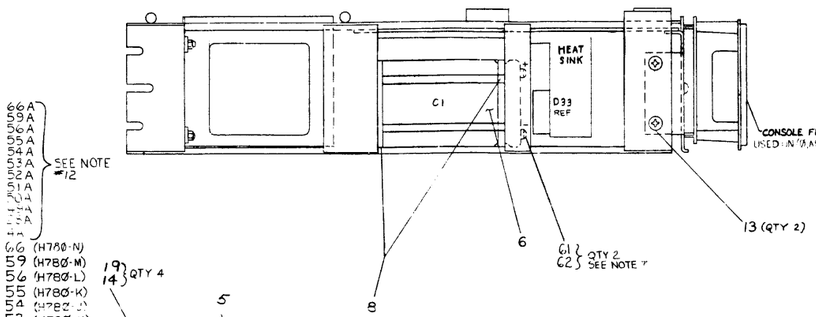
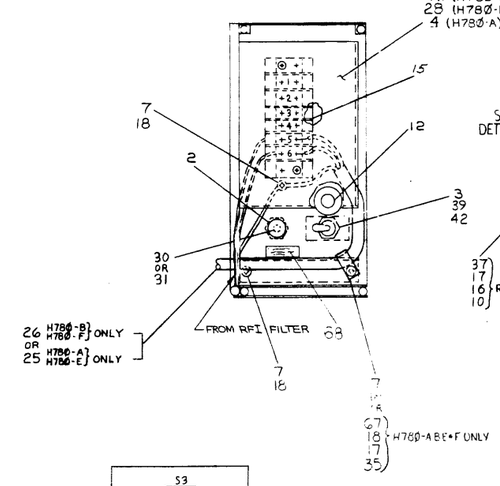
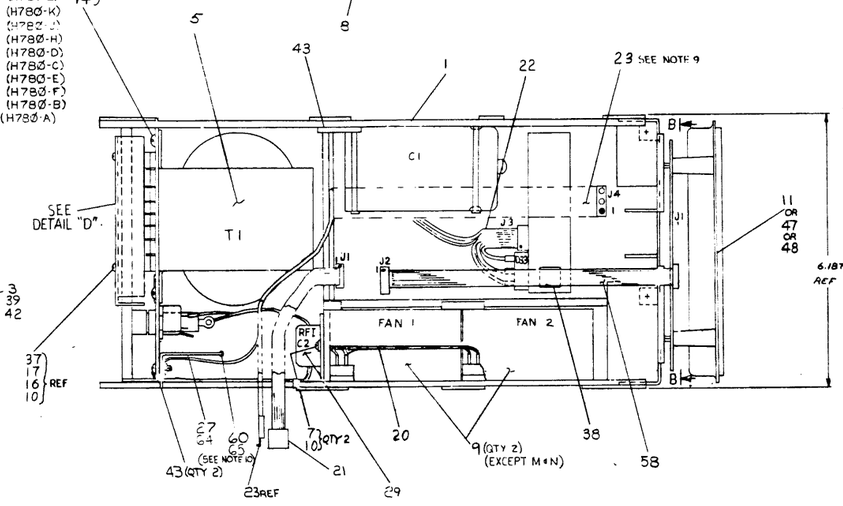
LEGEND	
NUMBER	VARIATION
H78Ø-Ø	H78Ø W/NO LINE CORD 115V / 23ØV
H78Ø-A	H78Ø MASTER CONSOLE LINE CORD 115V
H78Ø-B	H78Ø WITH MASTER CONSOLE 23ØV LINE CORD
H78Ø-C	H78Ø / NO CNSL. & NO LINE CORD
H78Ø-E	H78Ø 115V SLAVE CONSOLE LINE CORD
H78Ø-F	H78Ø 23ØV SLAVE CONSOLE LINE CORD
H78Ø-D	H78Ø 23ØV/NO CNSL & NO LINE CORD
H78Ø-H	H78Ø 115V MASTER CONSOLE NO LINE CORD
H78Ø-J	H78Ø 23ØV MASTER CONSOLE NO LINE CORD
H78Ø-K	H78Ø 115V SLAVE CONSOLE NO LINE CORD
H78Ø-L	H78Ø 23ØV SLAVE CONSOLE NO LINE CORD
H78Ø-M	H78Ø 115V NO CONSOLE NO FANS NO LINE CORD
H78Ø-N	H78Ø 23ØV NO CONSOLE NO FANS NO LINE CORD

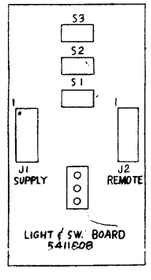
NOTES:
1. FOR 12ØV: 2 JUMPERS, ITEM #24, 5 AMP FUSE, ITEM #30, SHIELD (12ØV) ITEM #4, AND POWER CORD ITEM #25 ARE REQUIRED TO BE INSTALLED PER THIS DRAWING.
2. FOR 24ØV: 1 JUMPER ITEM #24, 2.5 AMP FUSE, ITEM #31, SHIELD (24ØV) ITEM #28 AND POWER CORD, ITEM #26 ARE REQUIRED TO BE INSTALLED PER THIS DRAWING.
3. FOR WIRING DIAGRAM SEE SHEET 2.
4. SLIP ITEM #40 OVER FAN WIRES BEFORE SOLDERING & SLIP SHRINK TUBING OVER SOLDER CONN & SHRINK IN PLACE-4 PLACES. ANY COLOR SHRINK OK.
5. SLIP 1 INCH OF ITEM #41 (ANY COLOR) OVER CONNECTING WIRES BEFORE SOLDERING TO FUSE HOLDER. AFTER TERMINATION IS COMPLETE, SLIP TUBING OVER JOINT AND SHRINK.
6. VIEW B-B WHICH IS PART OF ITEM #11 IS SAME FOR ITEM 47 EXCEPT THERE ARE NO SWITCHES IN THIS ASSY. DISREGARD VIEW B-B FOR H78Ø-C VARIATION.
7. REPLACE HARDWARE FURNISHED WITH CAP (IF ANY) BY ITEMS 61, 62.
8. USE FLAT WASHER (ITEM 17) AS BEARING SURFACE ON CABLE CLAMP FOR POWER CORD AT TOP OF UL SHIELD (ITEM 35)
9. CONNECT GROUND LUG FROM ITEM 23 UNDER REF NUT ITEM 18 HOLDING THE BOTTOM OF THE UL SHIELD
10. USE ADHESIVE, PERMA BOND 240 OR EQUIVALENT, TO SECURE ITEM 60.
11. FOR OPTIONS M & N NO FANS (ITEM 9) ARE USED. ALSO FAN HARNESS (ITEM 20) IS REPLACED BY MODIFIED FAN HARNESS (ITEM 34).
12. STAMP (ALTERNATE PARTS) WITH H78Ø/ VARIATION AS APPLICABLE.



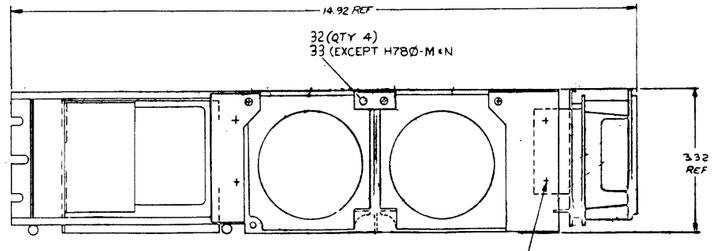








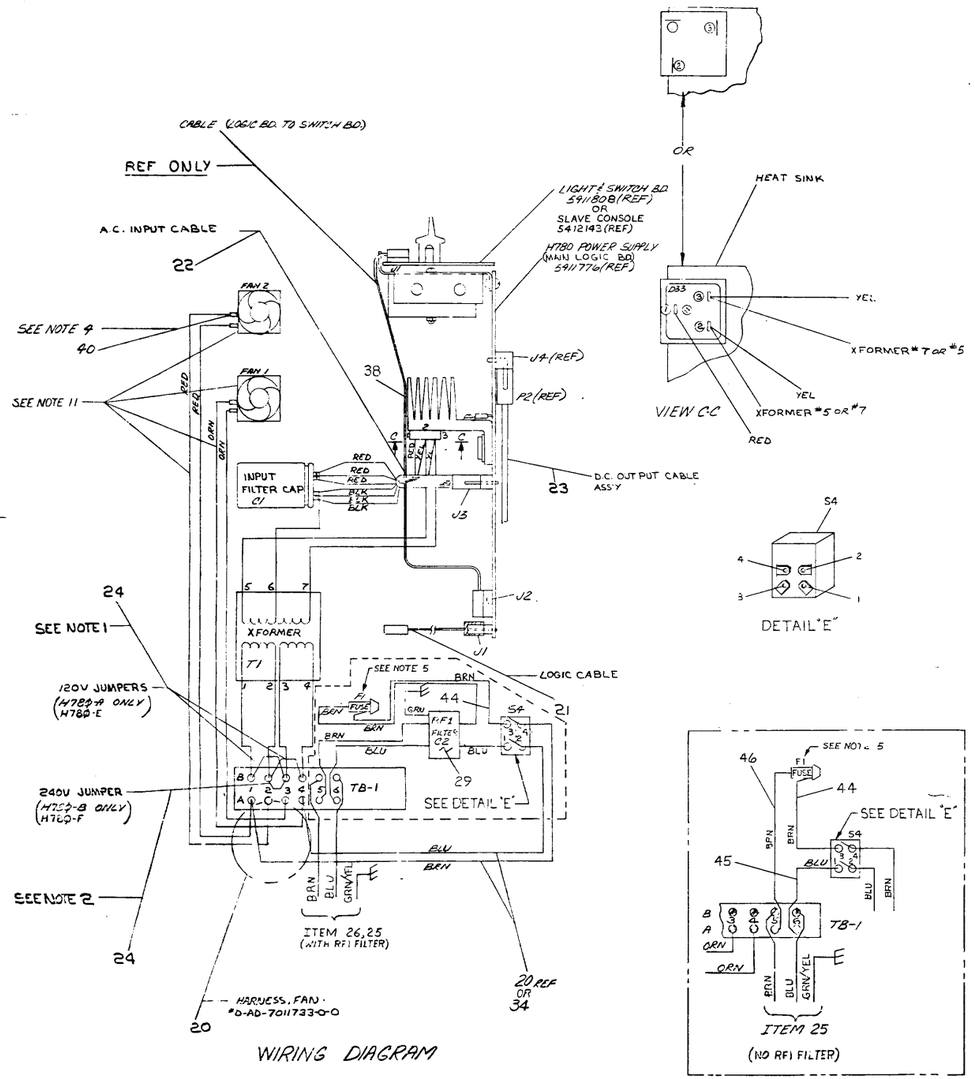
VIEW B-B
(P.C. BOARD ONLY)
SEE NOTE 6



SEE C-PL-H78Ø-Ø-Ø FOR PARTS LIST

SIZE	PARTS LIST	H78Ø Ø Ø	REV B

TITLE: POWER, SUPPLY ASSY H78Ø



TITLE	POWER SUPPLY ASSY H780-0-0	CODE	NUMBER	REV.
		E UA	H780-0-0	P
SCALE NONE	SHEET 2 OF 2			

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Item No.	Dwg./Part No.	Description	H780 Ø	H780-A	H780 B	H780-C	H780-E	H780-F	H780-D	H780-H	H780-J	H780-K	H780-L	H780-M	H780-N
1	E-IA-7011283-0-0	Chassis, Assy, Power Supply	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1212893-00	Fuse Holder 20A, 300V PNL MT	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1204722	Toglle Switch D.P.S.T.	1	1	1	1	1	1	1	1	1	1	1	1	1
4	C-IA-7414416-0	Shield P.S. (H780A)	-	1	-	-	-	-	-	-	-	-	-	-	-
5	C-IA-7011667-0-0	Transformer Assy	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1009966	Capacitor, 19,000 MFD, 40V	1	1	1	1	1	1	1	1	1	1	1	1	1
7	9006022-1	Screw Phl Hd Pan #6-32x.38	3	2	4	3	2	4	5	3	5	3	5	3	3
8	9009617	Tie Cable .19W x 11.0	2	2	2	2	2	2	2	2	2	2	2	2	2
9	1210719	Fan, Boxer 35 CFM 115V	2	2	2	2	2	2	2	2	2	2	2	–	-
10	9006633	Washer, Int. Tooth #6	2	4	6	4	4	6	6	4	6	4	6	4	4
11	D-AD-7011569-0-0	Regulator Assy	1	1	1	-	-	-	-	1	1	-	-	-	-
12	9007016	Gromet Rubber .50 I.D.	1	1	1	1	1	1	1	1	1	1	1	1	1
13	9000039-01	Screw FL. Hd. #8-32 x .25 x 100	2	2	2	2	2	2	2	2	2	2	2	2	2
14	9006565	Nut, Kep 10-32	4	4	4	4	4	4	4	4	4	4	4	4	4
15	9006905	Terminal Block 6 Pos.	1	1	1	1	1	1	1	1	1	1	1	1	1
16	9006844	Spacer Threaded #6-32 x 3/8	2	2	2	2	2	2	2	2	2	2	2	2	2
17	9006653	Washer, Flat .156 ID x .380.D.	-	2	3	2	3	3	2	2	2	2	2	2	2
18	9006560	Nut, Kep #6-32	3	3	3	3	3	3	3	3	3	3	3	3	3
19	9006071-3	Scr. Ph. Hd Truss #10-32 x .38	4	4	4	4	4	4	4	4	4	4	4	4	4
20	D-IA-7011733-0-0	Harness, Fan	1	1	1	1	1	1	1	1	1	1	1	-	-
21	C-IA-7011411-ØK-0	Cable, Logic	1	1	1	1	1	1	1	1	1	1	1	1	1
22	D-IA-7011658-0-0	Harness, Input	1	1	1	1	1	1	1	1	1	1	1	1	1
23	D-IA-7011584-0-0	Cable, DC Output	1	1	1	1	1	1	1	1	1	1	1	—	—
24	B-IA-7414691-0-0	Jumper	-	2	1	2	2	1	1	2	1	2	1	2	1
25	C-IA-7012075-1-0	Cable, Input Power 115V	-	1	-	-	1	-	-	-	-	-	-	-	-
26	C-IA-7012075-0-0	Cable, Input Power 240V	-	-	1	-	-	1	-	-	-	-	-	-	-
27	B-MD-7414712-0-0	Shield, U.L.	1	1	1	1	1	1	1	1	1	1	1	1	1
28	C-IA-7414416-1	Shield P.S. (H780 B)	-	-	1	-	-	-	-	-	-	-	-	-	-
29	C-IA-7011668-0-0	Filter	-	-	1	-	-	1	1	-	1	-	1	-	—
30	9007221	Fuse 5 Amp 250V	-	1	-	1	1	-	-	1	-	1	-	1	-
31	9008387	Fuse 2.5 Amp 250V	-	-	1	-	-	1	1	-	1	-	1	-	1
32	9006011-2	Scr. Ph. 82° FL. Hd #4-40 x .38	4	4	4	4	4	4	4	4	4	4	4	-	-
33	9006557	Nut, Kep #4-40	4	4	4	4	4	4	4	4	4	4	4	-	-
34	D-IA-7011733-01	HARNESS. FAN (MODIFIED)	–	–	–	–	–	–	–	–	–	–	–	1	1
35	9007082	Clamp .31 I.D.	-	1	1	-	1	1	-	-	-	-	-	-	-
36															
37	9006020-1	Scr. Ph. Hd. Pan #6-32 x .25	-	2	2	2	2	2	2	2	2	2	2	2	2
38	9007834-00	Tape Double Sided	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
39	9009314-01	LabEL Switch (On-Off)	1	1	1	1	1	1	1	1	1	1	1	1	1
40	9107305	Tubing, Shrink	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
41	91-07253	Tube, Shrink	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
42	9009782-00	Ring Locking	1	1	1	1	1	1	1	1	1	1	1	1	1
43	9007880	Cable Tie	1	1	3	1	1	3	-	1	-	1	-	1	1

REVISIONS	CHK	CHANGE NO.	REV.
	JC	H780-00004 ORIGINATED	D
		H780-00005	E
	K.T.	H780-00006	F
		F. KEARNS	
	JC	H780-00007	H
		F. KEARNS	
	J.C.	H780-00008	J
		D. BENNETT	
		H780-00009	K
	K.T.	H780-00010	L
		M. QUADRI	
	J.A.	H780-00011	M
		M. QUADRI	
		H780-ML012	N
		M. QUADRI	
		H780-ML013	P
		M. QUADRI	

DRN. M. Baptiste	6/27/75	FIRST USED ON 11/03
CHK'D D. Healy	9/3/75	TITLE Power Supply Assy H780
ENG. R. Martel	9/17/75	
PROJ. ENG. M. Koutoupoulos	9/17/75	
PROD. D. DeRome	9/17/75	
NEXT HIGHER ASSY. E-UA-BA11-M-Ø		SIZE C, CODE PL, NUMBER H78Ø-Ø-Ø, REV. P
SCALE None		DIST.
SHEET 1 OF 2		

digital

REV. P | NUMBER H780-0-0 | SIZE C | CODE PL

DEC FORM NO. DRC 110 A

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Item No.	Dwg./Part No.	Description	H780-9	H780-A	H780-B	H780-C	H780-E	H780-F	H780-D	H780-H	H780-J	H780-K	H780-L	H780-M	H780-N
44	B-IA-7415282-0-0	Jumper, Fuse -SW	1	1	1	1	1	1	1	1	1	1	1	1	1
45	B-IA-7415281-0-0	Jumper, TB-SW	1	1	-	1	1	-	-	1	-	1	-	1	1
46	B-IA-7415283-0-0	Jumper, TB-Fuse	1	1	-	1	1	-	-	1	-	1	-	1	1
47	D-AD-7011569-1-0	Regulator Assy	-	-	-	-	1	1	-	-	-	1	1	-	-
48	D-AD-7011569-2-0	Regulator Assy	-	-	-	1	-	-	1	-	-	-	-	1	1
49	C-IA-7414416-3	Shield, PS, H78ØF	-	-	-	-	-	1	-	-	-	-	-	-	-
50	C-IA-7414416-2	Shield, PS, H78ØE	-	-	-	-	1	-	-	-	-	-	-	-	-
51	C-IA-7414416-4	Shield, PS, H78ØC	-	-	-	1	-	-	-	-	-	-	-	-	-
52	C-IA-7414416-5	Shield, PS, H78ØD	-	-	-	-	-	-	1	-	-	-	-	-	-
53	C-IA-7414416-6	Shield, PS, H78ØH	-	-	-	-	-	-	-	1	-	-	-	-	-
54	C-IA-7414416-7	Shield, PS, H78ØJ	-	-	-	-	-	-	-	-	1	-	-	-	-
55	C-IA-7414416-8	Shield, PS, H78ØK	-	-	-	-	-	-	-	-	-	1	-	-	-
56	C-IA-7414416-9	Shield, PS, H78ØL	-	-	-	-	-	-	-	-	-	-	1	-	-
57	A-SP-3700263-01	Packaging Instructions	-	-	-	1	-	-	1	1	1	1	1	1	1
58	7008612-0M	Cable, Console	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
59	C-IA-7414416-10	Shield, PS, H78ØM	-	-	-	-	-	-	-	-	-	-	-	1	-
60	9007035	Grommet, Caterpillar 2.75 in	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
61	9006636-00	Washer, Int. .380 OD	2	2	2	2	2	2	2	2	2	2	2	2	2
62	9006071-01	Scr., Pan Phil 10-32 x 3/8	2	2	2	2	2	2	2	2	2	2	2	2	2
63	9006036-01	Scr., Pan Hd. PHIL. 8-32 X 5/16	-	-	-	2	-	-	2	2	2	2	2	2	2
64	9009255	Label, POWER SUPPLY	1	1	1	1	1	1	1	1	1	1	1	1	1
65	4901230	Perma Bond, Adhesive 240	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
66	C-IA-7414416-0-11	Shield, PS, H78ØN	-	-	-	-	-	-	-	-	-	-	-	-	1
67	9006024-1	SCREW, PHL. PAN HD. 6-32 X .50	-	1	1	-	1	1	-	-	-	-	-	-	-
68	3613211-01	Decal, Preprinted, CSA	1	1	1	1	1	1	1	1	1	1	1	1	1
	ALTERNATE PARTS LIST														
4A	C-IA-7414416-12	SHIELD, P.S. 115V		1											
28A	C-IA-7414416-13	SHIELD, P.S. 230V			1										
49A	C-IA-7414416-13	SHIELD, P.S. 230V						1							
50A	C-IA-7414416-12	SHIELD, P.S. 115V					1								
51A	C-IA-7414416-12	SHIELD, P.S. 115V				1									
52A	C-IA-7414416-13	SHIELD, P.S. 230V							1						
53A	C-IA-7414416-12	SHIELD, P.S. 115V								1					
54A	C-IA-7414416-13	SHIELD, P.S. 230V									1				
55A	C-IA-7414416-12	SHIELD, P.S. 115V										1			
56A	C-IA-7414416-13	SHIELD, P.S. 230V											1		
59A	C-IA-7414416-12	SHIELD, P.S. 115V												1	
66A	C-IA-7414416-13	SHIELD, P.S. 230V													1

REVISIONS

REV.	CHANGE NO.	CHK

DRN	M. Baptiste	6/27/75
CHK'D	D. Healy	9/3/75
ENG.	R. Martel	9/17/75
PROJ. ENG.	M Koulopoulos	9/17/75
PROD	D. DeRome	9/17/75

NEXT HIGHER ASSY.
E-UA-BAlI-M-Ø

SCALE None

SHEET 2 OF 2

FIRST USED ON 11/03

digital

TITLE
Power Supply Assy H78Ø

SIZE	CODE	NUMBER	REV.
C	PL	H78Ø-Ø-Ø	P

DIST.

SIZE C | CODE PL | NUMBER H780-0-0 | REV. P

DEC FORM NO. DRC 110 *

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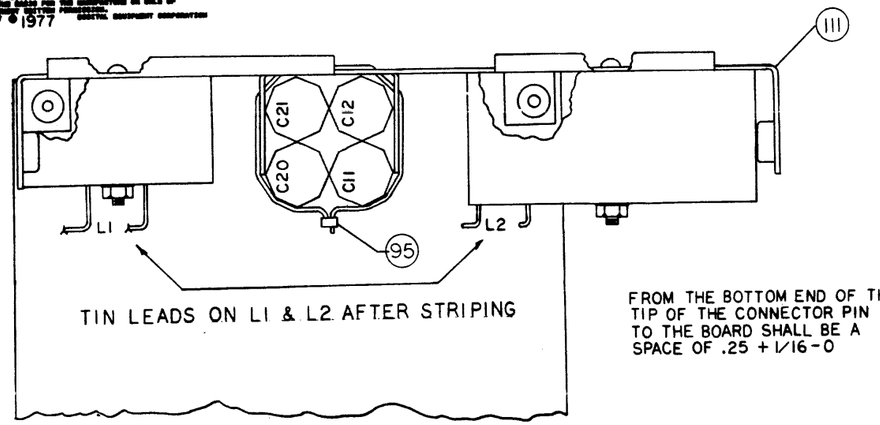
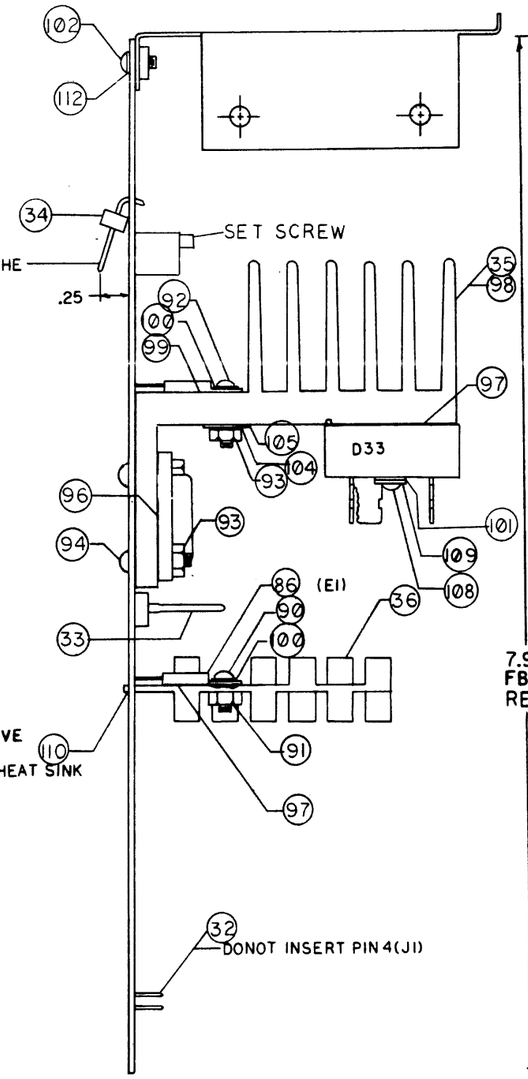
COMPONENT SIDE VIEW

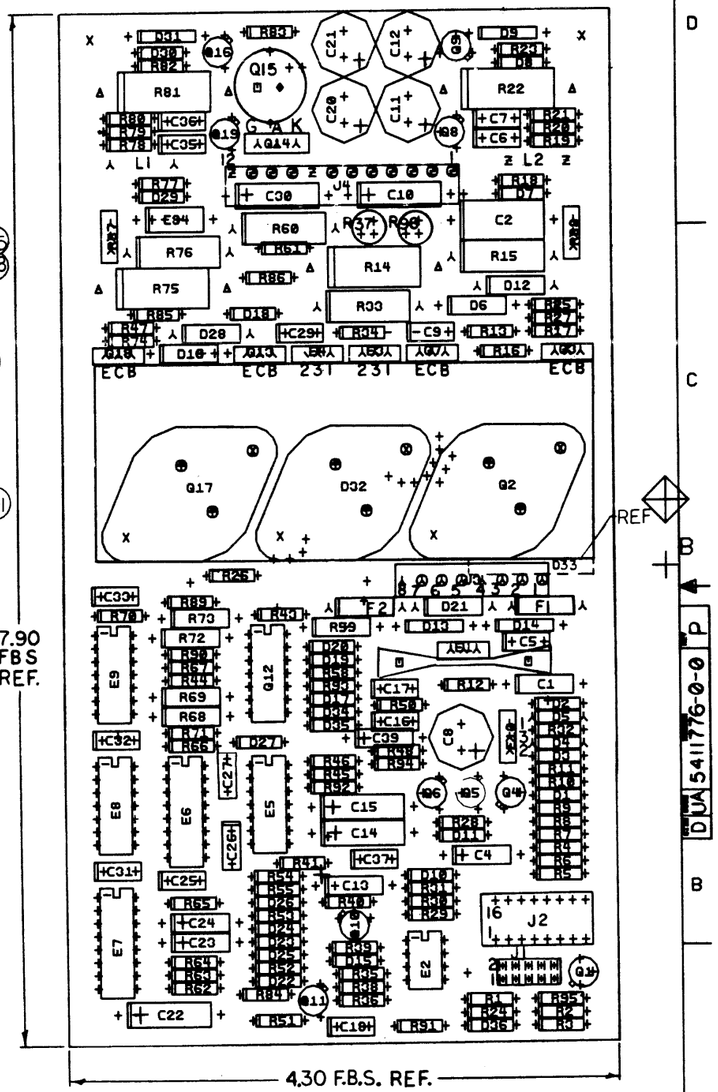


TIN LEADS ON L1 & L2 AFTER STRIPING

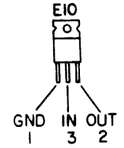
TOP VIEW OF CHOKE & BRACKET ASSY. MTG. TO BRD.



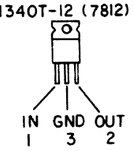
FROM THE BOTTOM END OF THE TIP OF THE CONNECTOR PIN TO THE BOARD SHALL BE A SPACE OF .25 + 1/16 - 0



LM320-15 (7915) E10



LM340T-5.0 (7805) E1, E3
LM340T-12 (7812) E4



NOTES:
1. B HOLES .094±.005 [+.000 -.005] MAYNARD ONLY
2. R37 & R96 USE METAL TYPE ONLY
3. MOUNT J4 ON SIDE 2

CH	CHANGE NO	REV
	ORIGINATE E-5411776-0011	M1
	5411776-13	N
	W.QUADRI	
	5411776-14	P
	W.QUADRI	

ETCH REV. D-P3
P.C. DESIGN DATA BASE REV. DP3

SIGNATURES	DATE
DRN. Andy Ouellette	6-27-77
CHK'D.	
ENG.	
PROJ. ENG. Mario Quiroz	
PROD. R	
SCALE 2/1	
SHT. OF 3	
NEXT HIGHER ASSY. B-DD-5411776-0	

digital

TITLE H780 POWER SUPPLY

SIZE	CODE	NUMBER	REV
D	UA	5411776-0-0	P

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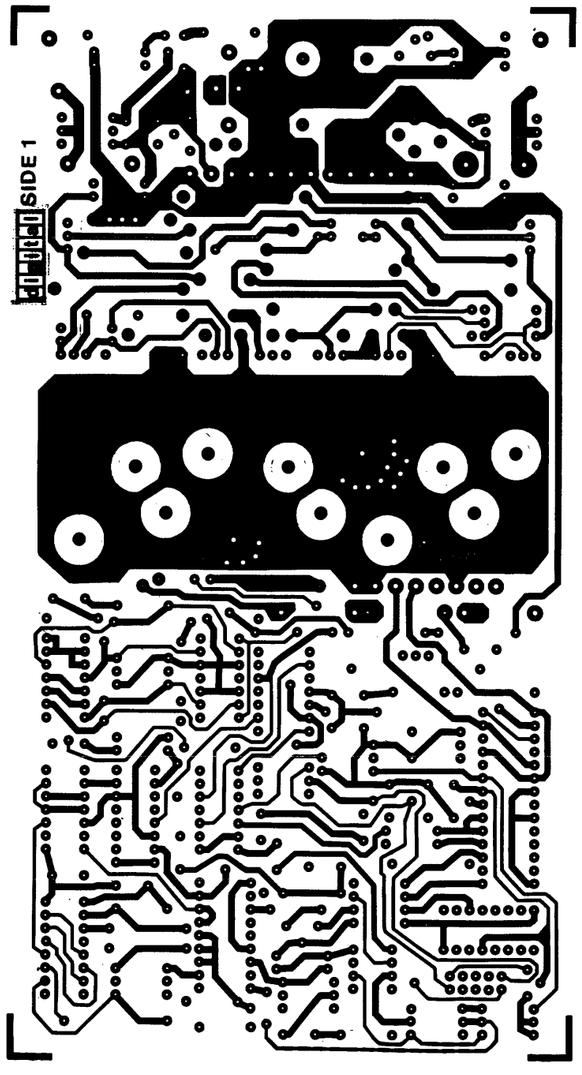
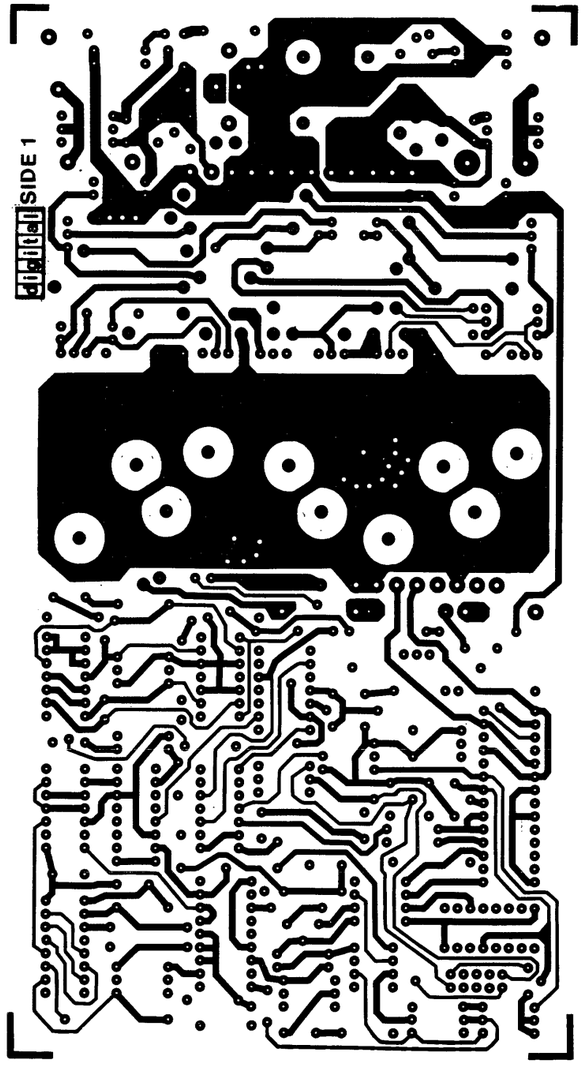
5011775D-P3 5411776



5011775D-P3 5411776



VIEWED FROM SIDE 1

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
H790 POWER SUPPLY	D	UA	5411776-0-0	P
SCALE 2:1 SHEET 2 OF 3	DIST			

DUA 5411776-0-0 P

C FORM NO 117

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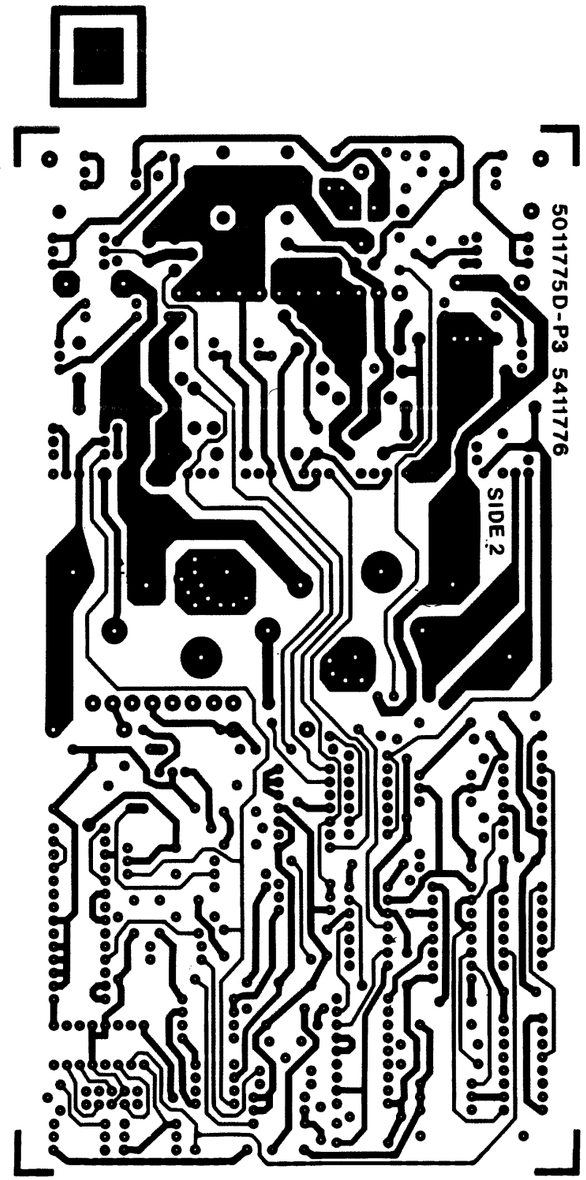

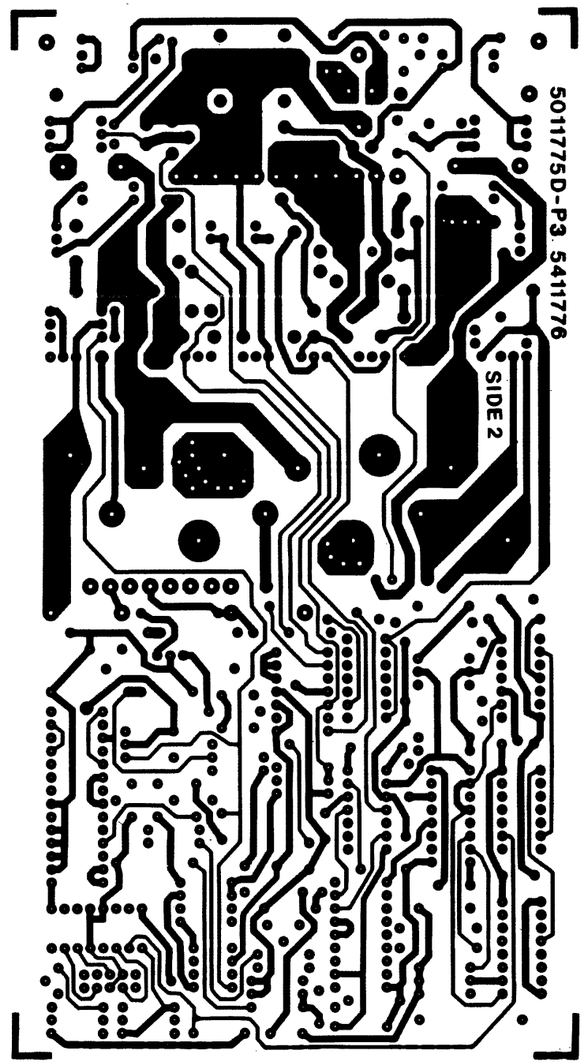

VIEWED FROM SIDE 2

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	SIZE	CODE	NUMBER	REV.
H780 POWER SUPPLY	D	UA	5411776 -0-0	P
SCALE 2:1 SHEET 3 OF 3	DIST			

DUA 5411776-0-0 P

AUTOMATED BY PRTLST.1D(10) — P A R T S L I S T — SHEET A1 OF A3

LINE	ITEM		DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
1	1			5011775-00	54-11776	1	
2	2			1000064-00	3.9MFD 10V 10% 150D S.TA	1	C23
3	3			1000076-00	39 MFD 10V 10% 150D S.TA	3	C10,C22,C30
4	4	*		1001610-00	.01 MFD 50V -20+80 Z5U AXIAL	6	C6,C7,C26,C27,C35,C36
5	5			1002180-00	.15 MFD 35V 20% 150D S.TA	1	C1
6	6			1014506-02	180 MFG 50V HX AL EL	1	C8
7	7			1014506-01	1200 MFG 6.3V HX AL EL	3	C11,C12,C21
8	8			1005306-00	6.8MFD 35V 10% S.TANT	2	C14,C15
9	9			1009964-00	.68 MFD 35V 10% 150D S.TA	4	C4,C13,C24,C39
10	10			1010031-05	.47 MFD 50V 10% M.POLYCARB	1	C2
11	11			1010274-00	.22 MFD 50V -20+80 Z5U CER	2	C9,C29
12	12			1014506-00	560 MFG 20V HX AL EL	1	C20
13	13			1010031-02	.10 MFD 50V 10% M.POLYCARB	1	C34
14	14			1010274-02	1 MFD 50V X% 2C023 CER.	9	C5,C16-C18,C31-C33,C37,C25
15	15			1111205-00	SCREENED VZ= 5.7 2% .40W	1	D9
16	16			1100113-00	D 662 OS 600PCB(STABISTOR)	5	D7,D29,D30,D34,D35
17	17			1100114-00	D 664 QS\75PCB PIV= 25V SP	13	D10,D11,D15,D17,D19,D22-D27,D20, CONT D36
18	18			1102808-00	1N 752A VZ= 5.6 5% .40W	1	D6
19	19			1105275-00	D 672 TR= 15NS PIV= 60V SI	4	D1-D3,D8
20	20			1103441-00	1N 756A VZ= 8.2 5% .40W P	1	D14
21	21			1109988-00	1N 964B VZ= 13.0 5% .40W	1	D31
22	22			1112594-00	A115F PIV= 50 I= 3A	2	D12,D28
23	23			1114004-00	UES2601 R PIV= 50 I=30A D05	1	D32
24	24			1110967-00	1N 4005 PIV=600 I= 1A D041 SI	3	D4,D5,D18
25	25			1112588-00	RECT,SILICON PIV=100 I=1	1	D33
26	26			1102421-00	1N 753A VZ= 6.2 5% .40W P	1	D13
27	27			1105652-00	1N 4751 VZ= 30.0 10% 1W Y	1	D16
28	28			1114435-00	1N 5338B VZ= 5.1 5% 5W	1	D21
29	29	*		1209070-00	FUSE, SUB-MINI, 5.000A, 125V, R	1	F2

REVISION HISTORY			BASIC PART NO: 5411776											
ENG	ECO NUMBER	REV	SECTION A OF A	DRN: L.PETERSON	DATE: 17-FEB-78		D	I	G	I	T	A	L
P.G	00013	N	SECTION.VARIATION INDEX	CHK'D: C.H.	DATE: 17-FEB-78	TITLE PARTS LIST							
R.R	00014	P	[A] 00			H780 POWER SUPPLY							
GC	5411776-ML015	R	[B]										
			[C]	DES.ENG: F.KEANS	DATE: 17-FEB-78								
			[D]										
			[E]			DOCUMENT NUMBER							
			[F]	RESP.ENG.: F.KEANS	DATE: 17-FEB-78								
			[H]			SIZE	CODE	NUMBER		REV			
			[J]										
			[K]	MFG.ENG.: R.POWERS	DATE: 17-FEB-78	K	PL	5411776-0-DBP		R			
			[L]										
			[M]	ASSEMBLY NUMBER:	TOP DOCUMENT NUMBER:	FILE NAME:		EDIT #					
			[N]			Z1147R.PLS		14					

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LINE	ITEM		DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00		REFERENCE DESIGNATOR
30	30			1210929-00	FUSE, SUB-MINI, 15.000A, 32V, A	1		F1
31	31			1211813-02	SOCKET 16PIN IC LOW PROFILE,	1		J2
32	32			9009149-00	PIN, STAKING, P.C. BOARD, .025 X	1		J1
33	33			1212619-00	HEADER.156 8POS STRAIGHT	1		J3
34	34			1212204-02	HEADER.156 12POS RT ANGLE	1		J4
35	35			1212485-00	HEAT SINK,EXTRUSION	1		
36	36			1212531-00	HEAT SINK,TO-3,ALUM,DIAMOND SHAP	1		
37	37			1300197-00	33.0 .25 W 5.0 % CC	2		R25,R26
38	38			1300202-00	47.0 .25 W 5.0 % CC	3		R19,R20,R79
39	39			1300229-00	100.0 .25 W 5.0 % CC	1		R78
40	40			1300295-00	330.0 .25 W 5.0 % CC	1		R47
41	41			1300316-00	470.0 .25 W 5.0 % CC	4		R43,R44,R89,R90
42	42			1300391-00	1.50 K .25 W 5.0 % CC	2		R21,R80
43	43			1300426-00	2.70 K .25 W 5.0 % CC	2		R24,R95
44	44			1301401-00	750.0 .25 W 5.0 % CC	2		R17,R86
45	45			1300447-00	4.70 K .25 W 5.0 % CC	4		R18,R63,R70,R71
46	46			1300479-00	10.0 K .25 W 5.0 % CC	19		R4,R7,R11,R94,R29,R35,R41,R84,
							CONT	R45,R46,R53,R54,R1,R58,R62,R67,
							CONT	R77,R92,R50
47	47			1300496-00	15.0 K .25 W 5.0 % CC	4		R13,R64-R66
48	48			1300539-00	120.0 K .25 W 5.0 % CC	1		R38
49	49			1301317-00	10.0 .25 W 5.0 % CC	3		R27,R36,R74
50	50			1301425-00	300.0 .25 W 5.0 % CC	1		R30
51	51			1301927-00	560.0 2.0 W 5.0 % CC	2		R14,R75
52	52			1301972-00	270.0 .25 W 5.0 % CC	1		R91
53	53			1302177-00	47.0 K .25 W 5.0 % CC	2		R39,R55
54	54			1302388-00	2.0 K .25 W 5.0 % CC	2		R34,R61
55	55			1305129-00	8 K 1/4W 1% RN55D-F 100PPM	1		R32
56	56			1305336-00	200.0 K .25 W 1.0 % RN55D-F10	2		R2,R31
57	57			1303312-00	10.0 K 1/4W 1% RN55D-F 100PPM	7		R3,R5,R6,R8,R9,R51,R52
58	58			1300365-00	1.0 K .25 W 5.0 % CC	4		R16,R23,R82,R85
59	59			1301424-00	680.0 .25 W 5.0 % CC	1		R10
60	60			1303313-00	12.1 K 1/4W 1% RN55D-F 100PPM	2		R40,R93
61	61			1305428-00	1.0 2.0 W 5.0 % WW	1		R60
62	62			1310876-02	.06 5.0 W 3.0 % WW	1		R81
63	63			1300364-00	1.0 K .50 W 5.0 % CC	1		R59
64	64			1309422-00	5.10 .25 W 5.0 % CC	1		R83
65	65			1309811-00	500.0 .50 W10.0 % POT	2		R87,R88
66	66			1309729-00	15.0 1.0 W 5.0 % CC	2		R15,R76
67	67			1310876-00	.02 5.0 W 3.0 % WW	1		R22
68	68			1300440-00	3.30 K .50 W 5.0 % CC	4		R68,R69,R72,R73
69	69			1303114-00	1.0 K 1/4W 1% RN55D-F 100PPM	3		R12,R28,R48
70	70			1309150-13	20.0 K .50 W10.0 % POT	2		R37,R96
71	71			1505867-00	2N 4441 SCR@ 50V & 8A	1		Q14
72	72	*		1510015-00	4008 NPN 600MW SI4COREDR	1		Q12
73	73			1510196-00	2N 5302/HSNPN 200WC SI 60 40 M	2		Q2,Q17
74	74	*		1512652-00	2N 6490 PNP 50W SI 60 40	2		Q3,Q18
75	75			1510421-00	D 44C8 NPN 30WT SI 60 20	2		Q7,Q13

D	I	G	I	T	A	L	TITLE	SECTION	SIZE	CODE	DOCUMENT NUMBER	REV
							H780 POWER SUPPLY	A OF A	K	PL	5411776-0-DBP	R

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
76	76		1510705-00	XA 05 NPN 500MW SI 60 50 P	3	Q1,Q4,Q11
77	77		1510706-00	XA 55 PNP 500MW SI 60 50 P	1	Q10
78	78		1510877-00	2N 6028 UJT 300MW R67B	2	Q9,Q16
79	79		1510928-00	C32AX135 SCR@100V I=25A	1	Q15
80	80		1511686-00	DEC5433 FET N 350MW 10 25 1A	2	Q5,Q6
81	81		1510705-01	B 05 NPN 500MW SI 60 50	2	Q8,Q19
82	82		1905575-00	7400 NAND GATE-QUAD 2IN	1	E8
83	83		1910436-00	DEC 74123 ONE SHOT-DUAL,RETRIG	2	E6,E7
84	84		1911219-00	7438 NAND GATE-QUAD 2IN,B	1	E9
85	85		1912108-00	339 VOLT CMPRTR,QUAD	1	E5
86	86		1912536-00	DEC 7805 VOLT REG,FIX +5V	2	E1,E3
87	87		1912048-02	DEC 7812 VOLT REG,FIX +12V	1	E4
88	88		1912792-00	DEC 7915 VOLT REG,FIX -15V	1	E10
89	89		1914156-00	LM 393 VOLT.COMPARATOR DUAL	1	E2
90	90		9006011-01	SCREW,PAN,PHIL, 4-40X 3/8 S	1	
91	91		9006557-00	NUT,KEP , 4-40X 1/4 AF	1	
92	92		9006025-01	SCREW,PAN ,PHIL, 6-32X 5/8	6	
93	93		9008185-00	NUT,KEP , 6-32X1/4 AF	12	
94	94		9006024-01	SCREW,PAN ,PHIL, 6-32X 1/2	6	
95	95		9007032-00	TIE, CABLE, TYPE 101	1	
96	96		1213071-02	INSULATOR,RUBBER SILICONE SM	3	
97	97		9008268-00	COMPOUND, THERMAL JOINT	A/R	
98	98		9009255-00	LABEL, POWER SUPPLY, 2-15/16 " L	1	
99	99		1213071-08	INSULATOR,RUBBER,THERMAL	1	
100	100		9009769-00	WASHER, RECTANGULAR .405X.225X.0	7	
101	101		9006660-00	WASHER, FLAT, .375 O.D. X .187 I	1	
102	102		9008301-01	SCREW,PAN ,PHIL, 4-40X 1/4	2	
103	103	"BLANK"			0	
104	104		9006653-00	WASHER, FLAT, .375 O.D. X .156 I	6	
105	105		9006708-00	WASHER, NYLON, FLAT #8 .375 OD	6	
106	106		9008957-00	*** THIS ITEM IS NOT USED ***	-	
107	107		9007801-00	*** THIS ITEM IS NOT USED ***	-	
108	108		9006042-01	SCREW,PAN ,PHIL, 8-32X 7/8	1	
109	109		9008072-00	WASHER, LOCK, EXTERNAL TOOTH #8	1	
110	110		4901230-00	CEMENT, ACRYLIC RESIN (ETHYL CYA	A/R	
111	111	C-AD-7011583-0-0		BRACKET&CHOKE ASSY.	1	
112	112		9006655-00	WASHER, FLAT, .312 O.D. X .125 I	2	
113	113		1303201-00	3.9 1W 10%	1	R33

114 NOTE: *ALTERNATE PARTS LIST:
115 NOTE: ITEM 4 (P/N 1001610-00) CAN BE REPLACED BY (P/N 1001610-01)
116 NOTE: ITEM 72 (P/N 1510015-00) CAN BE REPLACED BY (P/N 1511102-00)
117 NOTE: ITEM 29 (P/N 1209070-00) CAN BE REPLACED BY (P/N 1205747-00)
118 NOTE: ITEM 74 (P/N 1512652-00) CAN BE REPLACED BY (P/N 1510708-00)

D	I	G	I	T	A	L	TITLE	SECTION A OF A
							H780 POWER SUPPLY	

SIZE	CODE	DOCUMENT NUMBER	REV
K	PL	5411776-0-DBP	R

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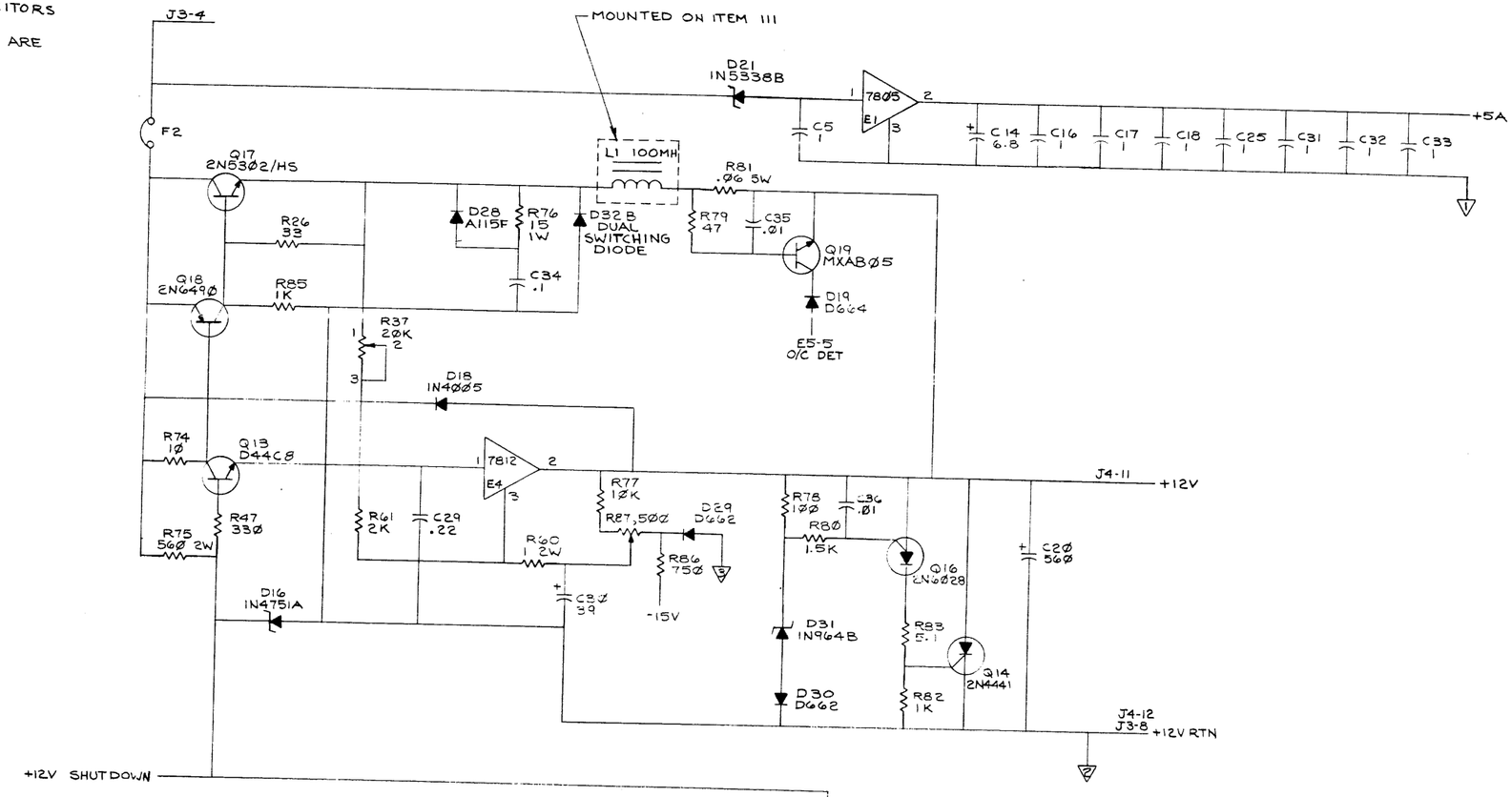
NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE 1/4 W, 5% ; ALL CAPACITORS ARE IN μF.
2. COMPONENTS SHOWN IN DASHED LINES ARE EXTERNAL TO THE P.C. BOARD.



LM339	E5	12		3
LM393	E2		8	4
IC TYPE		GND	+5V	-15V +28V

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

IC PIN LOCATIONS

DEC 70000 NO. 000 135-0

HIGHEST REF. DES.
C39 D36 E10 Q19 R96 T1 L2
REF. DES. DELETED
C3, C19, C28, C35
R42, R47, R49, R56, R57

REV.	CHANGE NO.	CHK	REVISIONS
N	5411776-000N3	F. KEARNS	7-22-77
P	5411776-000P11	M. QUADRI	7-27-77

FIRST USED ON OPTION MODEL

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST
ETCH BOARD REV. D

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.	DEC NO.	EIA NO.

DRN. David Hunt	DATE	7-22-77
CHK'D.	DATE	7-27-77
ENG.	DATE	7-27-77
PROJ. ENG. M. QUADRI	DATE	7-27-77
PROD. R. James	DATE	7-26-77

NEXT HIGHER ASSY: D-AD-7011569-0-D
SCALE
SHEET 1 OF 3

digital

TITLE: H78Ø POWER SUPPLY

SIZE	CODE	NUMBER	REV.
D	CS	5411776-Ø-1	P

DIST.

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* CAPACITOR C1 LOCATED IN WIREFORM ASSY. (SEE NOTE 2 SHEET 1 OF 3)

J1
1 PWR OK H
2 BEVENT L
3
4 KEY
5
6
7
8
9
10 DC OK H

J2
1 +5A
2 DC ON H
3 S RUN L
4 BEVENT L
5 GROUND
6 CL3
7 CS3
8
9 +5A
10
11
12
13 GROUND
14 DC OK LED H
15
16 B HALT L

A.C. IN
S1
F3
FAN
FAN
J3-5
J3-2
J3-4
J3-6
J3-3
J3-7
J3-8
D4 IN4005
D5 IN4005
D33 NSS3582
C1 19K
C8 180
C15 0.8
LM320
-15V

D3 D672
D2 D672
R32 8K 1/8W 1%
R12 1K 1%
C1 .15
R48 1K 1%
R55 47K
R41 10K
R64 15K
C23 3.9
339 E5
74123 E6
E6-3
CATHODE D34
R54 10K
R53 10K
D23 D664
D24 D664
74Φ8 E8
DC ON(H)
J2-2
R91 270
D26 D664
C13 .68
R40 12.1K 1%
R52 10K 1%
R51 10K 1%
E5-9
R70 4.7K
E9-10
E9-4
D27 D664
R9 10K 1%
R28 1K 1%
R8 10K 1%
R11 10K
R10 680
B EVENT L
J2-4
R94 10K
D1 D672
Q4 MXAA05
BASE OF Q1
R95 2.7K
COLLECTOR OF Q1

+5A
R1 10K
TO R95
TO Q4, COLLECTOR
Q1 MXAA05
J1-2 BEVENT
J1-9 B HALT L
B HALT L
J2-16

D17 D664
+5V
D35 D662
+12V
R50 10K
C37 1UF
D36 D664
R3 10K
393 E2
-15V
D34 D662
E6-12
R93 12.1K
C39 .68
339 E5
E5-7

D15 D664
R35 10K
D25 D664
Q11 MXAA05
R38 12K
R84 10K
D22 D664
C4 .68
R36 1K
R24 2.7K
R2 200K 1%
R5 10K 1%
R6 10K 1%
R92 10K
R31 200K 1%
D10 D664
R4 10K
R46 10K
Q5 SE108
J1-1 PWR OK H

R29 10K
R39 47K
Q10 MXAA55
R30 300
J2-14 DC OK LED H
D11 D664
R45 10K
Q6 SE108
J1-10 DC OK H
R7 10K

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
H780 POWER SUPPLY	D	CS	5411776-0-1	P
SCALE	SHEET 2 OF 3	DIST.		

DEC FORM NO. DRD 138

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J3-2
F1
Q2 2N5302/HS
R25 33
Q3 2N6490
R16 1K
R27 1Ø
Q7 D44CB
D6 1N752A
R13 15K
R14 56Ø 2W
MOUNTED ON ITEM 111
L2 6ØMH
D32A DUAL SWITCHING DIODE
D12 A115F
R15 15 1W
C2 .47
R22 .Ø2 5W
R2Ø 47
C6 .Ø1
Q8 MXAB05
D2Ø D664
R96 20K
R34 2.K
C9 .22
78Ø5 E3
R33 3.9 1W
C1Ø 39
R18 4.7K
R88 5ØØ
D7 D662
R17 75Ø -15V
R19 47
R21 1.5K
C7 .Ø1
D9 5.7V 2% ZENER
D8 D672
Q9 2N6Ø28A
Q15 C32AX135
R23 1K
C11 12ØØ
C12 12ØØ
C21 12ØØ
J4-1
J4-2
J4-3
J4-4
J4-5
+5V
J3-3
J3-8
J4-6
J4-7
J4-8
J4-9
J4-1Ø
J3-7
+5V RTN
+5A
R62 1ØK
C22 39
R63 4.7K
74123 E7
R65 15K
C24 .68
74123 E7
O/C DET
J3-4
R59 1K,½W
R58 1ØK
C26 .Ø1
LM339 E5
+28V
+5A
R67 1ØK
+5A
R66 15K
C27 .Ø1
74123 E6
D13 1N753A
D14 1N756A
R71 4.7K
+5A
E6-11
E9-9
E9-1Ø
E5-1
7438 E9
+28
R68 3.3K, ½W
Q12-C 4ØØ8
R93 47Ø
J2-5
74ØØ E8
74ØØ E8
74ØØ E8
7438 E9
+28V
R73 3.3K, ½W
Q12-D 4ØØ8
R89 47Ø
R72 3.3K, ½W
7438 E9
Q12-A 4ØØ8
R9Ø 47Ø
+12V SHUTDOWN

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 4PD 138

TITLE	SIZE	CODE	NUMBER	REV.
H78Ø POWER SUPPLY	D	CS	5411776-0-1	P.
SCALE	SHEET 3 OF 3	DIST.		

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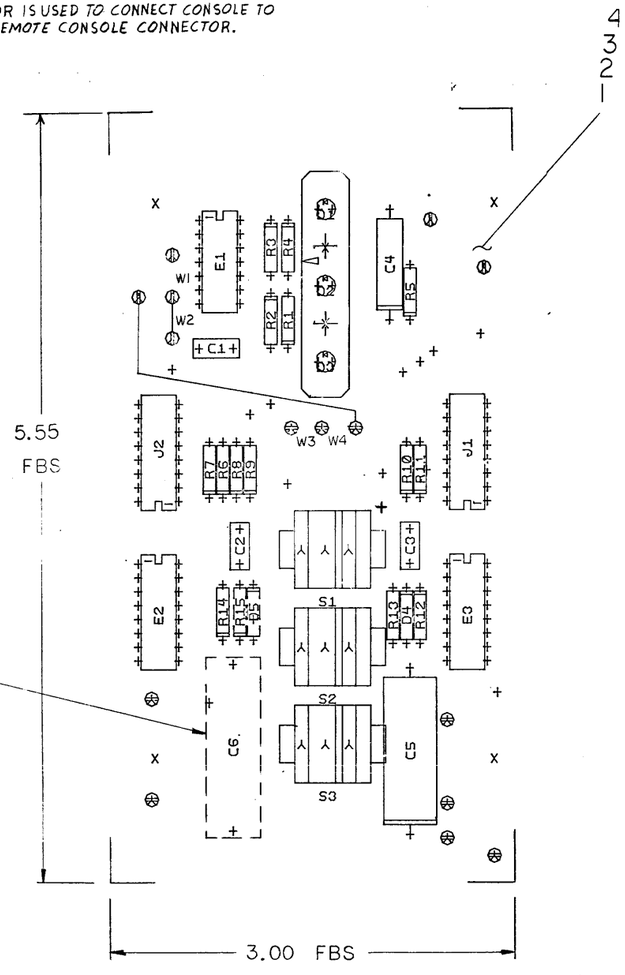
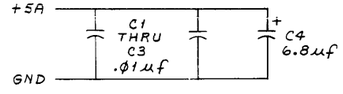
NOTES:

1. DOTTED COMPONENTS C6, D5 AND R15 ARE ENGINEERING OPTION. VALUE TO BE DETERMINED AT LATER DATE.
2. ADD GREEN WIRE ITEM 23 FROM TP2 SPLIT LUG TO W4 SPLIT LUG NEXT TO R10.
3. W1, W3, AND W4 ARE OPTIONAL JUMPERS NOT TO BE INSERTED AT THIS TIME.
4. J2 CONNECTOR IS USED TO CONNECT CONSOLE TO SLAVE UNIT REMOTE CONSOLE CONNECTOR.
5. J1 SUPPLY CONNECTOR IS USED TO CONNECT RIBBON CABLE TO J2 ON POWER SUPPLY REGULATOR BOARD. (CABLE P/N 7008612 0M)
6. W3 AND W4 JUMPERS ARE NOT USED. (OPTIONS)





QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011807	1
REF		X-Y COORDINATE HOLE LOC.	K-CO-5911808-0-1	2
REF		ASSY, DRILL. HOLE LAYOUT	D-AH-5911808-0-2	3
REF		MODULE HISTORY	B-MH-5911808-0-6	4
1	E1	IC DEC 7406	1910741	5
1	E3	IC DEC 74123	1910436	6
1	E2	IC DEC 8838	1911117	7
10	R1, R5, R7-R13, R4	RES. 2K, 1/4 W, 5%	1302388	8
2	R2, R3	RES. 220 Ω, 1/4 W, 5%	1300271	9
1	R14	RES. 39K, 1/4 W, 5%	1302514	10
2	J1, J2	IC SOCKET	1211813	11
1		L.E.D. HOLDER	1210940-2	12
3		SWITCH LEVERS	1210786	13
3	S1, S2, S3	SWITCH, S.P.D.T.	1210890	14
1	D4	DIODE D664	1100114	15
3	D1, D2, D3	DIODE, LIGHT EMITTING	1110864	16
1	C5	CAP., 22Mf, 10%, 50V	1011328	17
2		SCREW, PN.HD, SELF TAP #6X.25	9008230-1	18
15		SPLIT LUG	9006735	19
3	C1, C2, C3	CAP .01Mf 100V	1001610-01	20
1	C4	CAP, 6.8Mf 35V 10%	1005306	21
A/R	W2,	UNINSULATED #22 BUS WIRE	91 07560-01	22
A/R		WIRE, #30 AWG	9105740-55	23
1	R6	RES. 10K 1/8W 1%	1303312	24

I.C. DEC 74123	8	16
I.C. DEC 8838	8	16
IC TYPE	GND	+5A
GND AND 5A ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

REV.	CHANGE NO.	CHK	REVISIONS
D	5411808-00003		M.KOULOPOULOS 12 OCT 76
C	5411808-00002		J.BIRO 29 Apr 76
B	5411808-00001		M. KOULOPOULOS 12-11-75

FIRST USED ON OPTION MODEL: H780

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

PARTS LIST

ETCH BOARD REV. C

DRN.		DATE 5-22-75
CHK'D.	J. Vincent	DATE 9-8-75
ENG.		DATE 9-8-75
PROJ. ENG.		DATE 9-8-75
PROD.		DATE 9-8-75

NEXT HIGHER ASSY: D-AD-7011569-0-0

SCALE: —

SHEET 1 OF 2

digital

TITLE: LIGHTS & SWITCHES BOARD

SIZE	CODE	NUMBER	REV.
D	CS	5411808-0-1	D

DIST.

DEC FORM NO. DRD 135.8

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REMOTE (SEE NOTE 4) J2 — SUPPLY (SEE NOTE 5) J1

C DC OK H — D1 DC

C DC ON H

B HALT L

S RUN L

C SPARE 1

+5A

GND

CL3

CS3

C SPARE 2

C SPARE 3

C SPARE 4

C SPARE 5

C SPARE 6

+5A R7 2K, R9 2K, R8 2K, R6 10K 1/8W

+5A R1 2K, R12 2K, R13 2K

+5A D2 RUN, R2 22Ø

DC ON / DC OFF — S1

ENABLE / HALT — S2

8838 E2

TP4 TP5

7406 E1

W1 W2

+5A R14 39K, D4 D664, C5 22 mf

74123 E3

+5A R15, D5, C6

TP6 TP7 TP8 TP9

TP1 +5A R5 2K 7406 E1 +5A R4 2K 7406 E1 R3 22Ø +5A D3

W3 W4 SEE NOTE 6

LTC ON / LTC OFF — S3

TP2 TP3

7406 E1

+5A R11 2K, +5A R1Ø 2K

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 138

TITLE	SIZE	CODE	NUMBER	REV.
LIGHTS & SWITCHES BOARD	D	CS	5411808-0-1	D
SCALE	SHEET 2 OF 2		DIST.	

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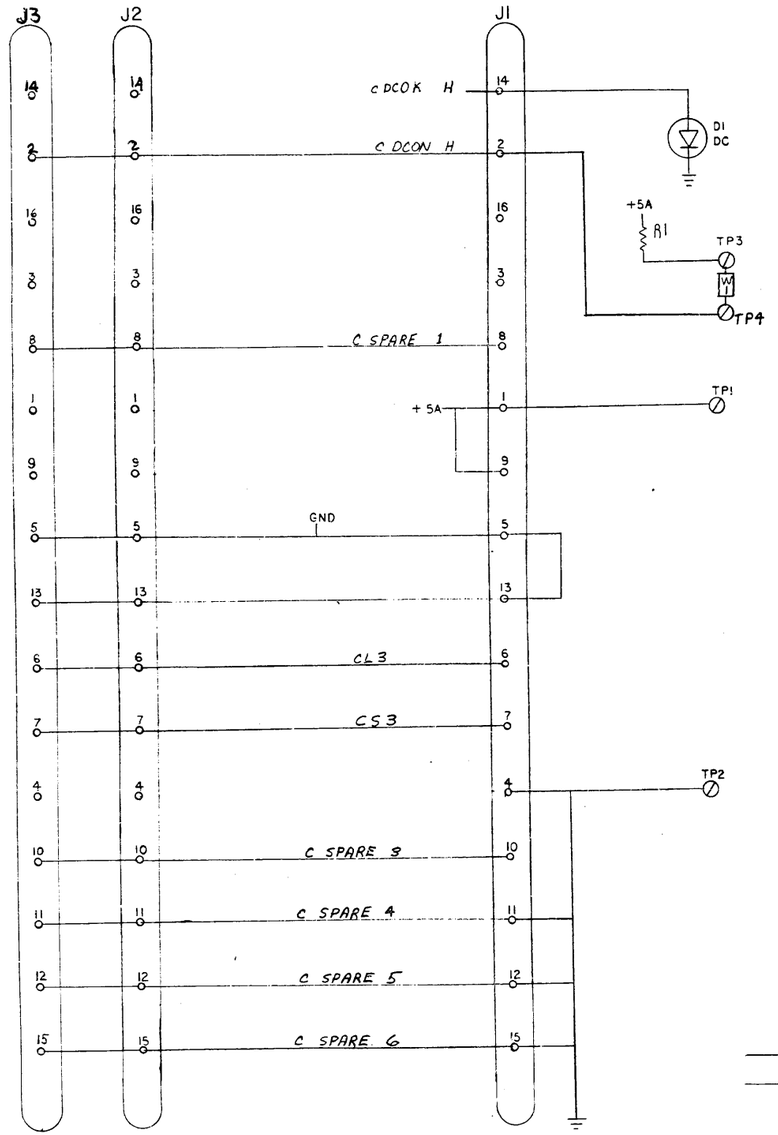
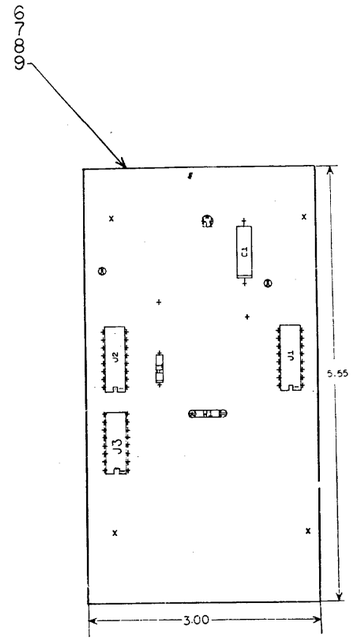
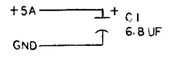
NOTES:







QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	W1	JUMPER INSULATED (22 AWG)	90-09185	10
1		ETCHED CIRCUIT BOARD	5012142	9
REF		X-Y COORDINATE HOLE LOC	K-CO-5412143-0-4	8
REF		ASSY/DRILL HOLE LAYOUT	D-AH-5412143-0-5	7
REF		MODULE HISTORY	B-MD-5412143-0-6	6
1	C1	CAP 6.8UF 35V 10%	10-05306	5
1	D1	DIODE LIGHT EMITTING	11-10864	4
3	J1, J2, J3	IC SOCKET	12-11813	3
1	R1	RES 68, 1/4W 5%	13-00219	2
4	TP1, TP2, TP3, TP4	SPLIT LUG	90-06735	1

PARTS LIST

FIRST USED ON OPTION MODEL

ETCH BOARD REV. C

IC TYPE	GND	+5V

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

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV.	CHANGE NO.	CHK
B	5412143-0001	JIM RICHARDS

DICK BENNETT

DRN. L REYNOLDS 2-15-74
CHK'D. E. GARSFALD 2-20-74
ENG. 2/21/74
PROJ. ENG. 2/21/74
PROD. 2/19/74
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 1

digital

TITLE SLAVE CONSOLE

SIZE D | CODE CS | NUMBER 5412143-0-1 | REV. B

DIST.

DEC FORM NO. DRD 135.B

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY R. Lewis	CHECKED R Lewis	SECTION 1
DATE 4 June 1976	DATE 4 June 76	
ENG John R Lewis	PROD R Stankard	ISSUED SECT. 1
DATE 4 June 76	DATE 4 June 76	

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION BAII-MA	BAII-MB	BAII-MC	BAII-ME	BAII-MF
1.	A-PL-7011609-0-0	MOUNTING BRACKET KIT	—	—	—	—	—
2.	7008612-6A	CABLE, KEYBOARD, 6FT	—	—	—	—	—

TITLE BAII-M SHIPPING LIST	ASSY NO. E-UA-BAII-M-Ø	SIZE A	CODE PL	NUMBER BAII-M-1	REV.
	SHEET 1 OF 1	DIST.			ECO NO.