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FIELD MAINTENANCE PRINT SET

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D-UA-M8014-0-0	RLV11 BUS CONTROL
K-PS-23017E2-0-0 (SHEETS 2-17 ONLY)	2048 1 9 ROM/PROM PATTERN SPEC.
K-PS-23219A1-0-0 (SHEET 2 ONLY)	32 X 8 ROM/PROM PATTERN SPEC.
K-PS-23218A1-0-0 (SHEET 2 ONLY)	32 X 8 ROM/PROM PATTERN SPEC.
D-TD-RLV11-0-4	TIMING DIAGRAM (RLV11)

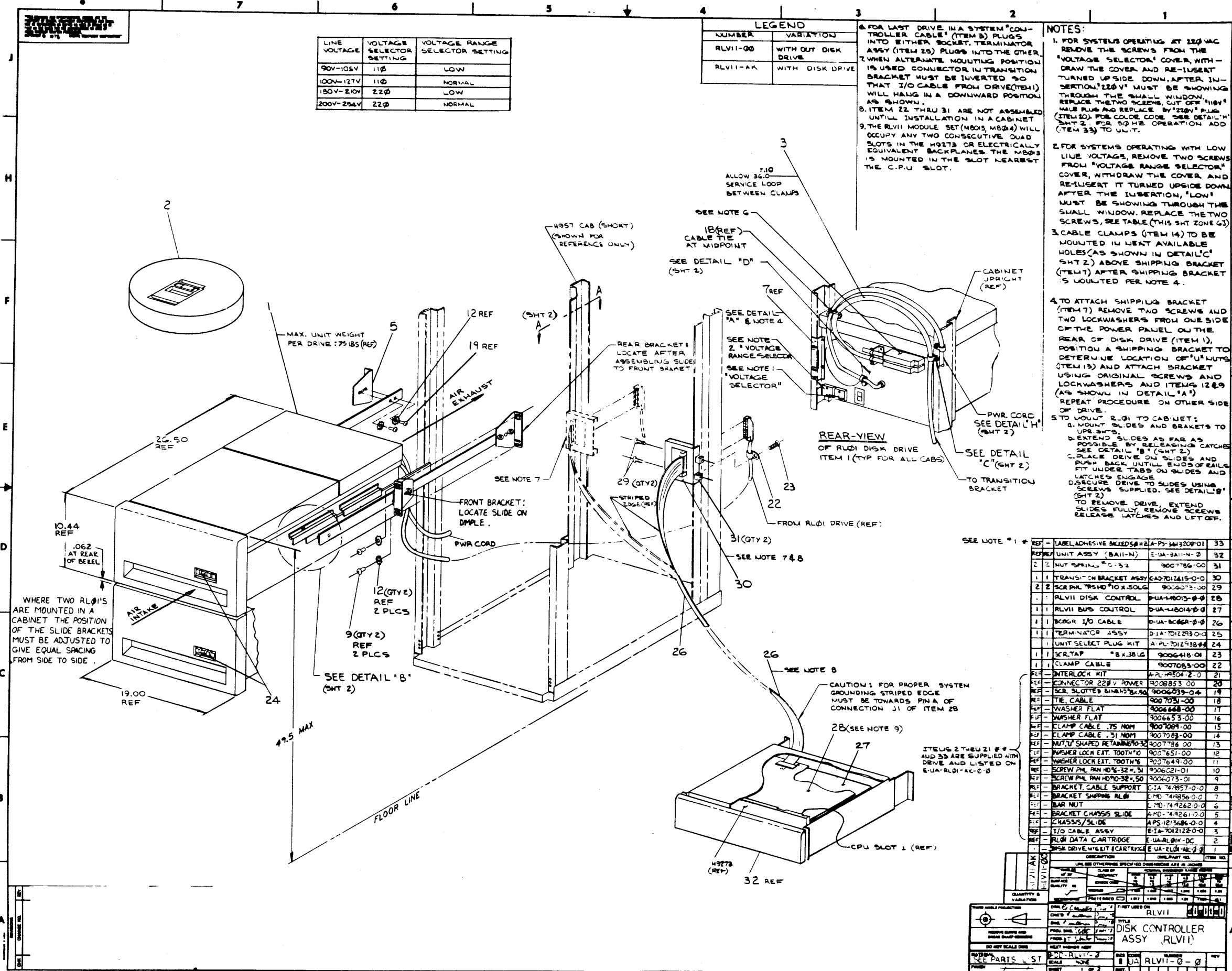
UNIT VARIATIONS COVERED BY THIS PRINT SET
RLV11-00
RLV11-AK

RLV11 Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MP00635

REVISIONS	DATE	11/78	CHG. NO.	RLV11-ML001	REV.	A	USED ON OPTION/MODEL RLV11	DRN. G. Drayton	DATE 3/78	CHK'D R. Hultman	DATE 5/78	FIELD SERV. P. Kotch	DATE 3/78	TITLE: RLV11	digital								
	SHEET I OF	1		SIZE	B	CODE										TC	NUMBER	RLV11-0-1	REV.	A			
	DIST.																						



LINE VOLTAGE	VOLTAGE SELECTOR SETTING	VOLTAGE RANGE SELECTOR SETTING
90V-105V	110	LOW
100V-127V	110	NORMAL
150V-210V	220	LOW
200V-254V	220	NORMAL

LEGEND	
NUMBER	VARIATION
RLVII-00	WITH OUT DISK DRIVE
RLVII-AK	WITH DISK DRIVE

6. FOR LAST DRIVE IN A SYSTEM CONTROLLER CABLE (ITEM 3) PLUGS INTO EITHER SOCKET, TERMINATOR ASSY (ITEM 25) PLUGS INTO THE OTHER.
 7. WHEN ALTERNATE MOUNTING POSITION IS USED CONNECTOR IN TRANSITION BRACKET MUST BE INVERTED SO THAT I/O CABLE FROM DRIVE (ITEM 1) WILL HANG IN A DOWNWARD POSITION AS SHOWN.
 8. ITEM 22 THRU 31 ARE NOT ASSEMBLED UNTIL INSTALLATION IN A CABINET.
 9. THE RLVII MODULE SET (MBO3, MBO4) WILL OCCUPY ANY TWO CONSECUTIVE QUAD SLOTS IN THE H9273 OR ELECTRICALLY EQUIVALENT BACKPLANE. THE MBO3 IS MOUNTED IN THE SLOT NEAREST THE C.P.U. SLOT.

NOTES:

- FOR SYSTEMS OPERATING AT 220 VAC REMOVE THE SCREWS FROM THE "VOLTAGE SELECTOR" COVER, WITHDRAW THE COVER AND RE-INSERT IT TURNED UPSIDE DOWN. AFTER INSERTION, "220V" MUST BE SHOWING THROUGH THE SMALL WINDOW. REPLACE THE TWO SCREWS, CUT OFF THE EXCESS AND REPLACE BY "220V" PLUG (ITEM 20) FOR COLOR CODE. SEE DETAIL "B" (SHT 2). FOR 50 HZ OPERATION ADD (ITEM 23) TO UNIT.
- FOR SYSTEMS OPERATING WITH LOW LINE VOLTAGE, REMOVE TWO SCREWS FROM "VOLTAGE RANGE SELECTOR" COVER, WITHDRAW THE COVER AND RE-INSERT IT TURNED UPSIDE DOWN. AFTER THE INSERTION, "LOW" MUST BE SHOWING THROUGH THE SMALL WINDOW. REPLACE THE TWO SCREWS, SEE TABLE (THIS SHT ZONE G).
- CABLE CLAMPS (ITEM 14) TO BE MOUNTED IN NEXT AVAILABLE HOLES (AS SHOWN IN DETAIL "C" (SHT 2)) ABOVE SHIPPING BRACKET (ITEM 7) AFTER SHIPPING BRACKET IS MOUNTED PER NOTE 4.
- TO ATTACH SHIPPING BRACKET (ITEM 7) REMOVE TWO SCREWS AND TWO LOCKWASHERS FROM ONE SIDE OF THE POWER PANEL ON THE REAR OF DISK DRIVE (ITEM 1), POSITION A SHIPPING BRACKET TO DETERMINE LOCATION OF UNITS (ITEM 13) AND ATTACH BRACKET USING ORIGINAL SCREWS AND LOCKWASHERS AND ITEMS 12 & 9 (AS SHOWN IN DETAIL "A") REPEAT PROCEDURE ON OTHER SIDE OF DRIVE.
- TO MOUNT RLII TO CABINETS:
 - MOUNT SLIDES AND BRACKETS TO UPS SWS.
 - EXTEND SLIDES AS FAR AS POSSIBLE BY RELEASE LATCHES CATCHES. SEE DETAIL "B" (SHT 2).
 - PLACE DRIVE ON SLIDES AND PUSH BACK UNTILL ENDS OF RAILS FIT UNDER TABS ON SLIDES AND LATCHES ENGAGE.
 - SECURE DRIVE TO SLIDES USING SCREWS SUPPLIED. SEE DETAIL "B" (SHT 2).
 - TO REMOVE DRIVE, EXTEND SLIDES FULLY, REMOVE SCREWS, RELEASE LATCHES AND LIFT OFF.

SEE NOTE #1 +

REF	QTY	PART NUMBER	DESCRIPTION	ITEM NO
REF	1	900701-00	UNIT ASSY (BAII-N)	32
2	2	900786-00	MUT SPRING C-33	31
1	1	900702-00	TRANSITION BRACKET ASSY	30
2	2	900603-00	SCR PHL TRSHD 10 X .50 LG	29
1	1	900403-00	RLVII DISK CONTROL	28
1	1	900404-00	RLVII BUS CONTROL	27
1	1	900405-00	BOGGR I/O CABLE	26
1	1	900406-00	TERMINATOR ASSY	25
1	1	900407-00	UNIT SELECT PLUG KIT	24
1	1	900408-01	SCR TAP *8 X .38 LG	23
1	1	900703-00	CLAMP CABLE	22
REF	1	900704-00	INTERLOCK KIT	21
REF	1	900853-00	CONNECTOR 220V POWER	20
REF	1	900603-04	SCR SLOTTED SHARD 8 X .50	19
REF	1	900705-00	TIE CABLE	18
REF	1	900668-00	WASHER FLAT	17
REF	1	900665-00	WASHER FLAT	16
REF	1	900706-00	CLAMP CABLE .75 NOM	15
REF	1	900707-00	CLAMP CABLE .51 NOM	14
REF	1	900778-00	MUT/1 SHARED RETAINING	13
REF	1	900761-00	WASHER LOCK EXT. TOOTH #0	12
REF	1	900764-00	WASHER LOCK EXT. TOOTH #6	11
REF	1	900602-01	SCREW PHL PAN HD #32 X .51	10
REF	1	900603-01	SCREW PHL PAN HD #32 X .50	9
REF	1	900409-00	BRACKET CABLE SUPPORT	8
REF	1	900410-00	BRACKET SHIPPING RLII	7
REF	1	900411-00	BAR NUT	6
REF	1	900412-00	BRACKET CHASSIS SLIDE	5
REF	1	900413-00	CHASSIS/SLIDE	4
REF	1	900414-00	I/O CABLE ASSY	3
REF	1	900415-00	RLII DATA CARTRIDGE	2
REF	1	900416-00	DISK DRIVE W/IT (CARTRIDGE)	1

CLASSIFICATION	CLASS OF SECURITY	GROUP	CONTROL	DATE	BY
SECRET	SECRET	SECRET	SECRET	1970	...

QUANTITY & VARIATION

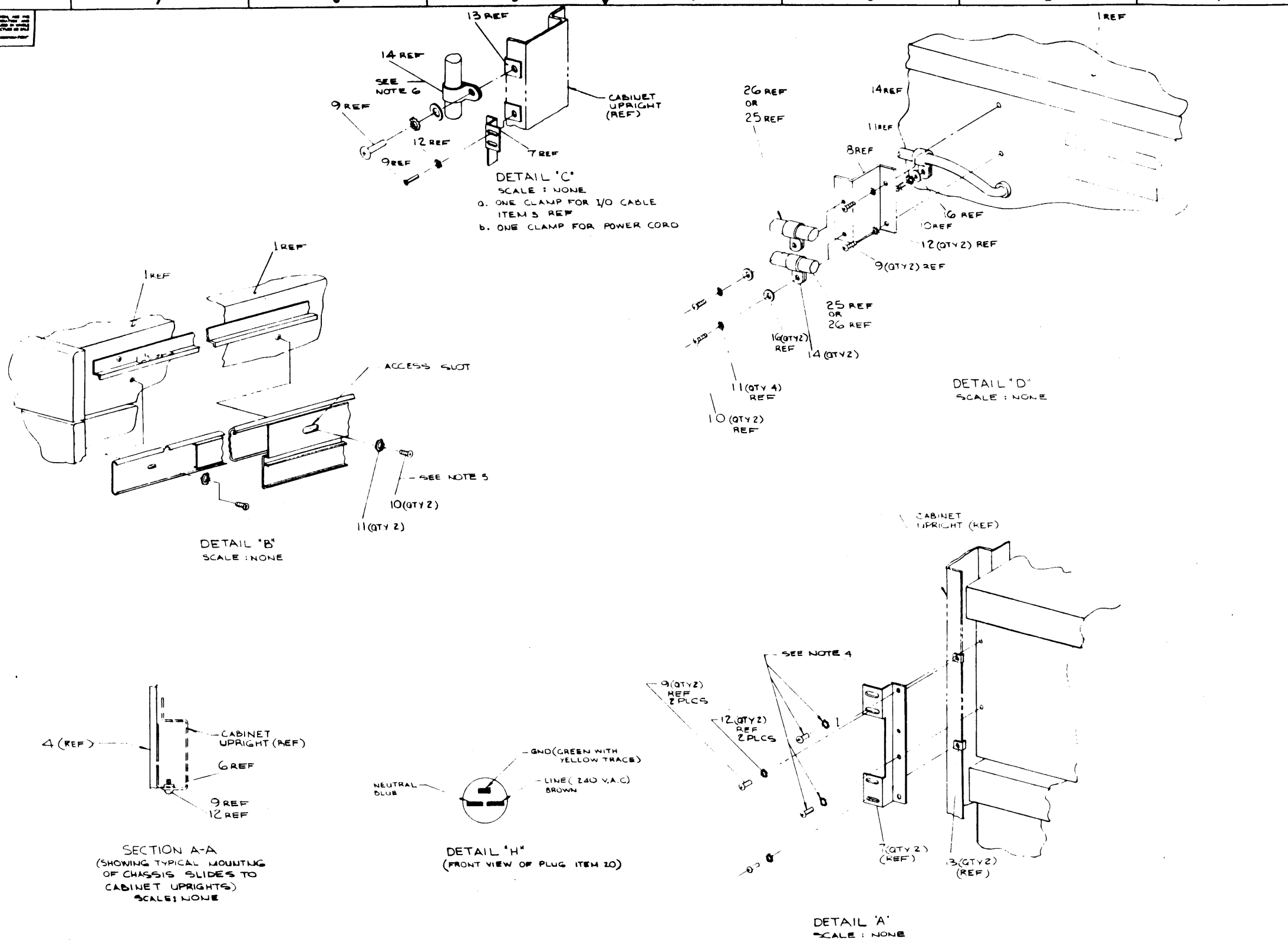
DISK CONTROLLER ASSY (RLVII)

REV: 00

DATE: 1970

BY: ...

THIS DRAWING AND ANY ATTACHED SHEETS ARE TO BE USED IN CONNECTION WITH THE DISK CONTROLLER (RLVII) DRAWING NUMBER EJA RLVII-0-0. THIS DRAWING IS A PART OF THE DISK CONTROLLER (RLVII) DRAWING NUMBER EJA RLVII-0-0. THIS DRAWING IS A PART OF THE DISK CONTROLLER (RLVII) DRAWING NUMBER EJA RLVII-0-0.



REV	DESCRIPTION	DATE	BY	CHK	TITLE	DRAWING NUMBER	SHEET	OF
					DISK CONTROLLER (RLVII)	EJA RLVII-0-0		

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 5-April-78

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	CHANGES VECTOR ADDRESS TO 16Q	MLØØ1	R. Lewis	11-74	R. Lewis	5 Dec 78

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ENG	APPD	SIZE CODE	NUMBER	REV
R. Lewis	R. Lewis	A	RLV11-Ø-2	A
SHEET 1 OF 6				

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

Table 1
M8Ø13 Jumper Configuration (See Fig. 2 for Jumper locations)

Jumper	EqØ=Pt.#23-XXXX2	EqØ=PT.#23-XXXX7
W1	Installed	Removed
W2	Removed	Installed
W3	Installed	Removed
W4	Removed	Installed

Table 2
M8Ø14 Switch settings for standard device address 174h00 and vector address 16Ø.
(For switch locations see Fig. 3)

Switch Position	SW2	SW1	Address Vector	
1	A12	on	off	V8
2	A11	on	off	V7
3	A10	off	on	V6
4	A9	off	on	V5
5	A8	on	on	V4
6	A7	off	off	V3
7	A6	off	off	V2
8	A5	off	off	
9	A4	off	off	
10	A3	off	off	

NOTE: ON = 1
For rocker type recessed switches the on position is such that the switch is depressed on the on side with the red stripe visible on the off side.

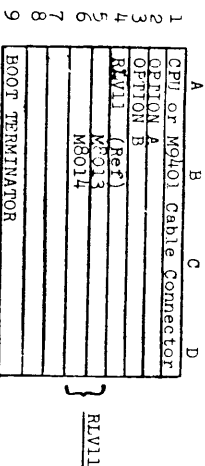


FIG. 1: H9273 Backplane Module Configuration

DEC FORM NO. ENØ1Ø22-16-N13-Ø13Ø11	SIZE CODE	NUMBER	REV
DRA 108	A	RLV11-Ø-2	A
SHEET 3 OF 6			

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

I. GENERAL

This procedure defines the configurations, module utilization, installation, acceptance and diagnostic startup criteria for the RLV11 Disk Controller. Refer to RØØ1 Service Manual (EK-RØØ1-5V) for drive acceptance procedure.

II. CONFIGURATION

A. Setup switches and jumpers as indicated in tables 1 and 2 for type of ROM, standard Device Address 1744ØØ, and Vector Address 16Ø. See Figures 2 and 3 for switch and jumper locations. For non standard device and Vector Address settings use Table 2 setting corresponding address or Vector switch on for a 1 off for a 0.

III. MODULE UTILIZATION

A. Allowable Backplanes

#9273 4X9 slot backplane for the 9A11-N or 11/Ø31 or an electrical equivalent with LSI-11 Bus on the A and B connectors and C/D interconnect bus on the C and D connectors.

B. Module Order

Modules are inserted in any two consecutive slots with the M8Ø13 inserted in the slot which is electrically closest to the CPU and the M8Ø14 inserted in the slot directly behind as in Figure 1.

C. System Guidelines

1. Always locate the RLV11 module set at a lower priority (further away from the CPU) than any volatile DMA devices, tape units, and the RKV11 as in Figure 1.

DEC FORM NO. ENØ1Ø22-16-N13-Ø13Ø11	SIZE CODE	NUMBER	REV
DRA 108	A	RLV11-Ø-2	A
SHEET 2 OF 6			

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

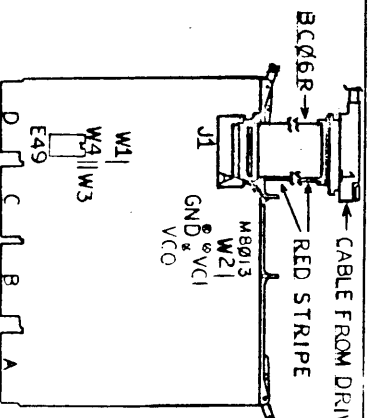


FIGURE 2: M8Ø13 JUMPER LOCATIONS

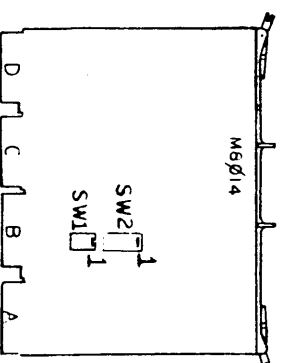


FIGURE 3: M8Ø14 SWITCH LOCATIONS

DEC FORM NO. ENØ1Ø22-16-N13-Ø13Ø11	SIZE CODE	NUMBER	REV
DRA 108	A	RLV11-Ø-2	A
SHEET 4 OF 6			

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

IV. ACCEPTANCE PROCEDURE

A. Equipment

1. Hardware

- a. BA11-N 11/03 system with a minimum of 16K of memory
- b. Console terminal (VT50, La36, etc.)
- c. RL01 Disk Drive

2. Diagnostics

<u>Program Name</u>	<u>Maindec</u>
CVRLAA0 RLV11 RL01 Diskless Test	AC-B107A-MC
CZRLAB0 RL11/RLV11 Controller Test (Part 1)	AC-E036B-MC
CZRLBB0 RL11/RLV11 Controller Test (Part 2)	AC-E040B-MC

B. Acceptance Criteria

<u>Program Name</u>	<u>Accept Time</u> (Error Free)
CVRLAA0	10 Passes
CZRLAB0	5 Passes
CZRLBB0	3 Passes

V. PROGRAM START PROCEDURE

A. Program Loading

Follow standard DEC procedures for program loading. Absolute Loader for paper tape. XXDP, UPD1, UPD2, UPD3 for other media.

B. Program Starting

Program start location is 200. Use standard DEC procedures. For LSI-11 with ODT Type 200 G.

C. Program Execution Procedure

1. Program Example for CVRLAA

After loading and starting program, it will respond at the console with the following. See diagnostic listing for more detailed explanation or if errors are encountered.

SIZE A	CODE SP	NUMBER RLV11-0-2	REV A
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ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE RLV11 FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

2. Program Response Operator Action

CVRLA (Program Name)

L-CIK (L) N? (Type Y carriage return for 11/03L with EDV11 RTC Enabled)

50HZ (L) N? (Type carriage return if system is not 50HZ)

LSI (L) N? (Type Y carriage return)

LPT (L) N? (Type carriage return)

MEM (K) (D)16? (Type carriage return)

DS-B (Type S T A carriage return)

Units (D) ? (Type 1 carriage return)

Unit 1
RL11 (L) Y? (Type N carriage return)

Bus Address (0)174400 ? (Type carriage return)

Vector (0) 330 ? (Type 160 carriage return)

BR Level (0) 5? (Type carriage return)

Drive (0) 0 ? (Type carriage return)

Change SW (L)? (Type N carriage return)

CVRLA EOP 1 (approximately 45 seconds)

Type C (Control/C) to end execution

SIZE A	CODE SP	NUMBER RLV11-0-2	REV A
------------------	------------	---------------------	----------

DRAWING NO.	NO. OF SHTS.	PART NO.	DESCRIPTION	REVISIONS																			
				B	C	D	E	F	H														
D-UA-M8Ø13-Ø-Ø	3		RLV11 DISK CONTROL	B	C	D	E	F	H														
K-PL-M8Ø13-Ø-DBP	3		RLV11 DISK CONTROL	B	C	D	E	F	H														
D-CS-M8Ø13-Ø-1	5		RLV11 DISK CONTROL	B	C	D	D	E	F														
D-MD-5Ø12962-Ø-Ø	3		DRILL AND ETCH DRAWING	B	B	B	B	B	B														
		5Ø12962	ETCHED BOARD	C	C	C	C	C	C														
K-PC-M8Ø13-Ø-DBC			P.C. DESIGN DATA BASE (CALDEC)	REF	C	C	C	C	C														

NOTES:

REVISIONS		C	D	E	F	H
DATE	CHG NO.	REV.				
4-78	00001	C				
8-78	MLØØ2	D				
9-78	MLØØ3	E				
11-78	MLØØ4	F				
12/78	MLØØ5	H				

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USED ON OPTION/MODEL RLV11	DRN. A, COLON 12-9-77	TITLE RLV11 DISK CONTROL
	CHG'D <i>[Signature]</i> 1/6/78	SIZE CODE B DD
	ENG. <i>[Signature]</i> 1-6-78	NUMBER M8Ø13-Ø
	PROD. <i>[Signature]</i> 1-6-78	REV. H
SHEET 1 OF 1		

ML

DRAWING NO.	NO. OF SHTS.	PART NO.	DESCRIPTION	REVISIONS																			
				A	B	C	D	E															
D-UA-M8Ø14-Ø-Ø	Ø		RLV11 BUS CONTROL	A	B	C	D	E															
K-PL-M8Ø14-Ø-DBP	2		RLV11 BUS CONTROL	A	B	C	D	E															
D-CS-M8Ø14-Ø-1	5		RLV11 BUS CONTROL	A	B	C	C	D															
D-MD-5Ø12963-Ø-Ø	5		DRILL & ETCH DRAWING	A	A	A	A	B															
		5012963	ETCHED CIRCUIT BOARD	E	B	B	B	C															
K-PC-M8Ø14-0-DBC			P.C. DESIGN DATA BASE	REF	-	A	B	C															
D-EC-5012963-0-0	2		ETCH CUT DRAWING	-	-	-	-	E															

NOTES:

REVISIONS		B	C	D	E
DATE	CHG NO.	REV.			
3-78	00001				
7-78	00002				
12/78	MLØØ3				
2-88	MLOO4				

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USED ON OPTION/MODEL RLV11	DRN. R. KOPPENAL	4 NOV 77	TITLE RLV11 BUS CONTROL
	CHK'D <i>[Signature]</i>	<i>1/6/83</i>	
	ENG. <i>[Signature]</i>		
	PROD. <i>[Signature]</i>		
	SIZE B	CODE DD	NUMBER M8Ø14-Ø
			REV. E
	SHEET 1 OF 1		

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REV	CHANGE NO	DATE	BY	APP	REASON
1	1	10/1/73	W. J. DUNIGAN		INITIAL DESIGN
2	1	10/1/73	W. J. DUNIGAN		REVISED TO SHOW
3	1	10/1/73	W. J. DUNIGAN		REVISED TO SHOW
4	1	10/1/73	W. J. DUNIGAN		REVISED TO SHOW
5	1	10/1/73	W. J. DUNIGAN		REVISED TO SHOW
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8	1	10/1/73	W. J. DUNIGAN		REVISED TO SHOW

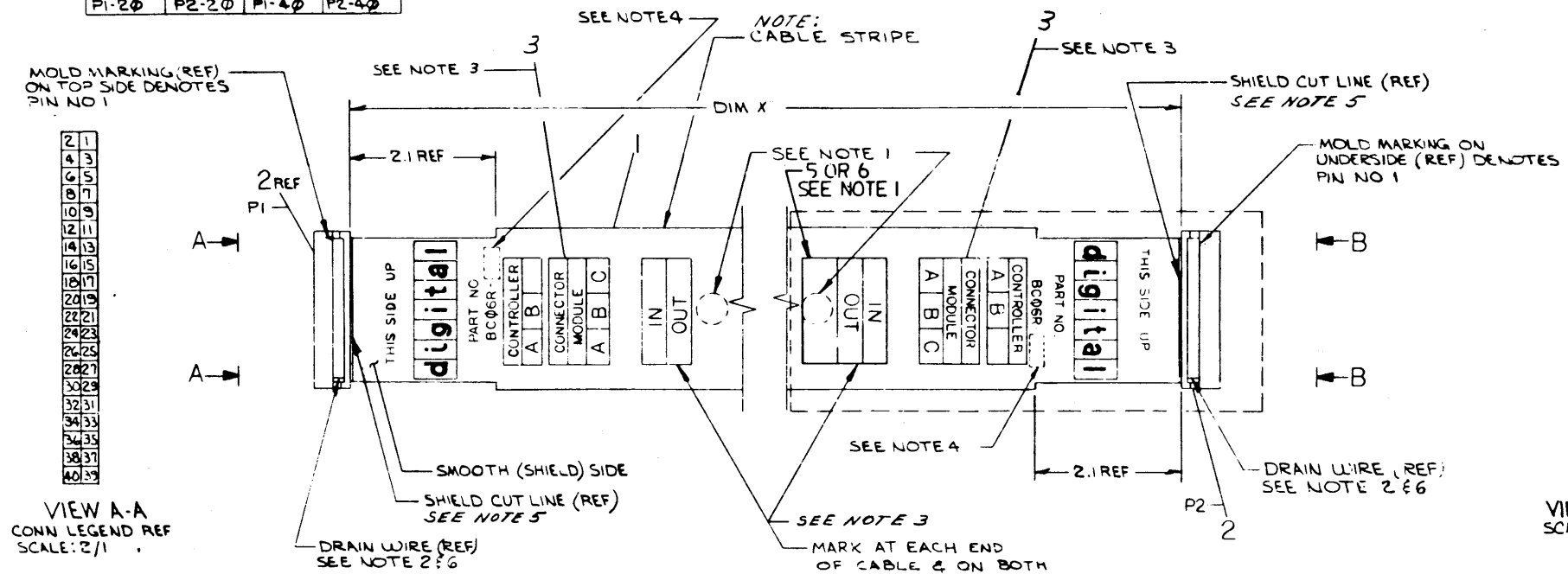
WIRE TABLE

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P1-3	P2-3	P1-23	P2-23
P1-4	P2-4	P1-24	P2-24
P1-5	P2-5	P1-25	P2-25
P1-6	P2-6	P1-26	P2-26
P1-7	P2-7	P1-27	P2-27
P1-8	P2-8	P1-28	P2-28
P1-9	P2-9	P1-29	P2-29
P1-10	P2-10	P1-30	P2-30
P1-11	P2-11	P1-31	P2-31
P1-12	P2-12	P1-32	P2-32
P1-13	P2-13	P1-33	P2-33
P1-14	P2-14	P1-34	P2-34
P1-15	P2-15	P1-35	P2-35
P1-16	P2-16	P1-36	P2-36
P1-17	P2-17	P1-37	P2-37
P1-18	P2-18	P1-38	P2-38
P1-19	P2-19	P1-39	P2-39
P1-20	P2-20	P1-40	P2-40

LEGEND

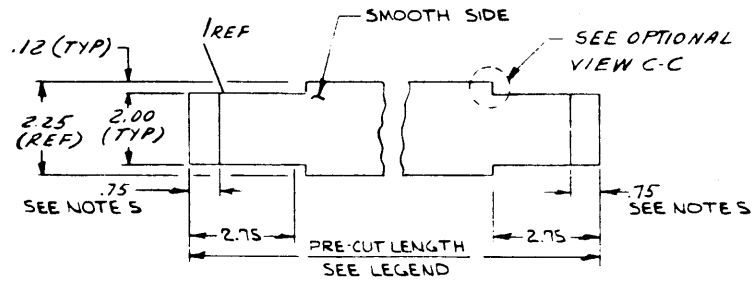
NUMBER	DIM X	PRECUT LENGTH	REMARKS
BCØGR-Ø1	1 FT	1 FT 1.5 IN ± 1 IN	SEE PRE-CUT VIEW C-C
BCØGR-Ø2	2 FT	2 FT 1.5 IN ± 1 IN	
BCØGR-Ø3	3 FT	3 FT 1.5 IN ± 1 IN	
BCØGR-Ø4	4 FT	4 FT 1.5 IN ± 1 IN	
BCØGR-Ø5	4 FT 6 IN	4 FT 7.5 IN ± 1.5 IN	SEE NOTE 7
BCØGR-Ø6	6 FT	6 FT 1.5 IN ± 2 IN	
BCØGR-Ø8	8 FT	8 FT 1.5 IN ± 2 IN	
BCØGR-10	10 FT	10 FT 1.5 IN ± 2 IN	
BCØGR-12	12 FT	12 FT 1.5 IN ± 3 IN	
BCØGR-20	20 FT	20 FT 1.5 IN ± 3 IN	
BCØGR-25	25 FT	25 FT 1.5 IN ± 3 IN	
BCØGR-30	30 FT	30 FT 1.5 IN ± 6 IN	
BCØGR-50	50 FT	50 FT 1.5 IN ± 10 FT	
BCØGR-60	60 FT	60 FT 1.5 IN ± 12 FT	
BCØGR-75	75 FT	75 FT 1.5 IN ± 15 FT	
BCØGR-100	100 FT	100 FT 1.5 IN ± 2 FT	
BCØGR-Ø7	7 FT	7 FT 1.5 IN ± 2 IN	
BCØGR-Ø8	8 FT 6 IN	8 FT 7.5 IN ± 1 IN	SEE PRE-CUT VIEW C-C
BCØGR-15	15 FT	15 FT 1.5 IN ± 3 IN	

- ### NOTES:
- LABEL (ITEMS 5 OR 6 CAN BE USED) TO CONTAIN:
PART NO.
REV.
DATE (OF BUILD)
MFG (STAMP) TEST (STAMP)
INSP (STAMP)
AFFIX LABEL AROUND CABLE IN APPROX CENTER.
 - DRAIN WIRE CONNECTS TO PIN NO 40.
 - RUBBER STAMP INFORMATION SHOWN USING INK (ITEM 3) & ARTWORK DEC NO A-DC-741699-0-0.
 - STAMP APPLICABLE OPTION DASH NO. ACCORDING TO LENGTH.
 - REMOVE SHIELD .75 FROM END OF PRECUT CABLE (SEE VIEW C-C).
 - COVER EXPOSED DRAIN WIRE WITH ITEM 4 PRIOR TO ASSY (BOTH ENDS).
 - FOR RPØ4, RPØ5, RPØ6 USE WRAP AROUND VINYL LABEL. SEE VARIATIONS ON DRAWING NUMBER A-PS-365389-0-0 ALSO SEE NEXT HIGHER ASSEMBLY E-IA-7 JØ7-0-0 AND E-IA-7ØØ98Ø8-0-0.

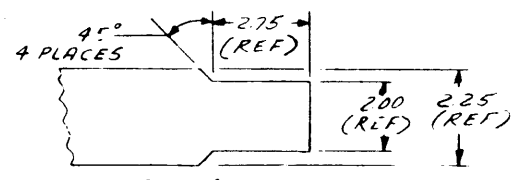


VIEW A-A
CONN LEGEND REF
SCALE: 2/1

VIEW B-B
SCALE: 2/1



VIEW C-C
PRE-CUT VIEW
SCALE: NONE



OPTIONAL VIEW C-C
PRE-CUT VIEW
SCALE: NONE

(CX ONLY) SEE NOTE 1
SEE NOTE 1

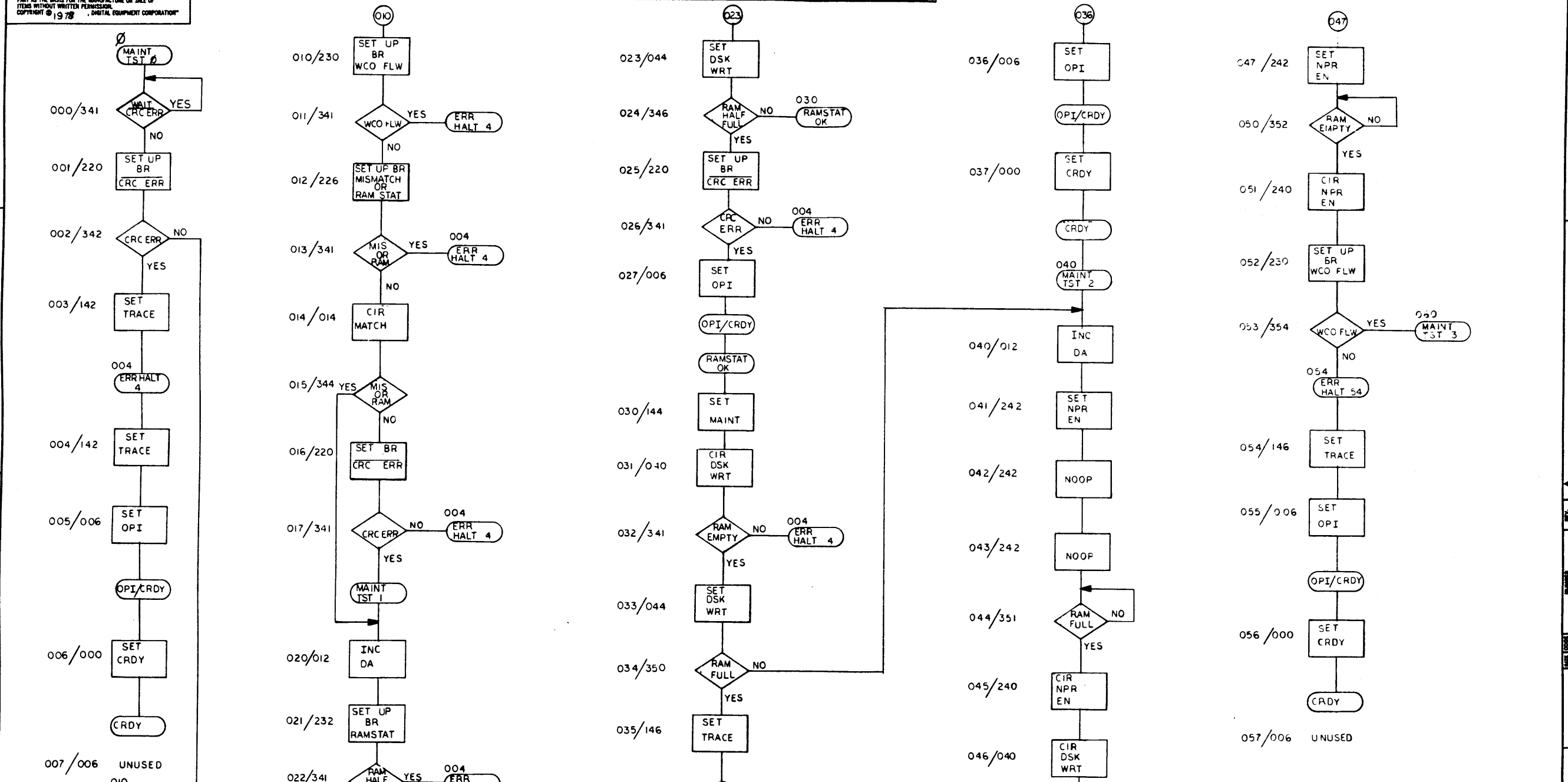
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1	LABEL I.D.	3616989-0-0	6
1	LABEL I.D.	3616073-0-0	5
A/R	PLASTIC TAPE	3612511-0	4
A/R	INK	4901150	3
2	CONNECTOR, 40 SOCKET	1211206	2
A/R	CABLE, 40 COND FLAT W/SHIELD	17-00034	1

FIRST USED ON OPTION/MODEL RPØ4	QTY	DESCRIPTION	PART NO	ITEM NO
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN 6/10/73	DATE 2-22-73	PARTS LIST	
DECIMALS .0005	ENG W. J. DUNIGAN	DATE 10/1/73	TITLE BCØGR I/O CABLE	
ANGLES 10° 30'	PROJ. ENG W. J. DUNIGAN	DATE 10/1/73	NEXT HIGHER ASSY E-IA-7ØØ98Ø8-0-0	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	MATERIAL SEE PARTS LIST			
FINISH	SCALE 1/16			
SHEET 1 OF 1		REV F		REV F

PART NO. A-PS-365389-0-0

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MAINTENANCE FUNCTION



REVISIONS

REV.	CHANGE NO.

QUANTITY & VARIATION	DESCRIPTION	DWG. PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ANGLES: 12.5° ± .005			
CLASS OF ACCURACY: 10 12.5 15 20 30 40 50			
SURFACE QUALITY: IN (MICROINCHES) 1.0 1.25 1.5 2.0 2.5 3.15 4.0 5.0 6.3 8.0 10 12.5 16 20 25 31.5 40 50 63 80 100			
MEDIUM: 1.004 1.008 1.012 1.016 1.020 1.025 1.031 1.037 1.043			
PREFERRED: 1.012 1.016 1.020 1.04 1.053 1.1			
THIRD ANGLE PROJECTION			
DRN. G. Drayton 1 Jan 78		FIRST USED ON	
CHK'D R. Walker 3 May 78		RLVII	
ENG. R. Walker 3 May 78		digital	
PROJ. ENG. P.T. 8 May 78		TITLE	
PROD. H.T. 8 May 78		FLOW DIAGRAM, DISK CONTROLLER (RLVII)	
DO NOT SCALE DWG. NEXT HIGHER ASSY.			
MATERIAL	E-UA-RLVII-0-0	SIZE	CODE
FINISH	SCALE	D	FD
	SHEET 1 OF 10	DIST.	NUMBER
			REV.

D

C

B

A

RLVII-0-3

8

7

6

5

4

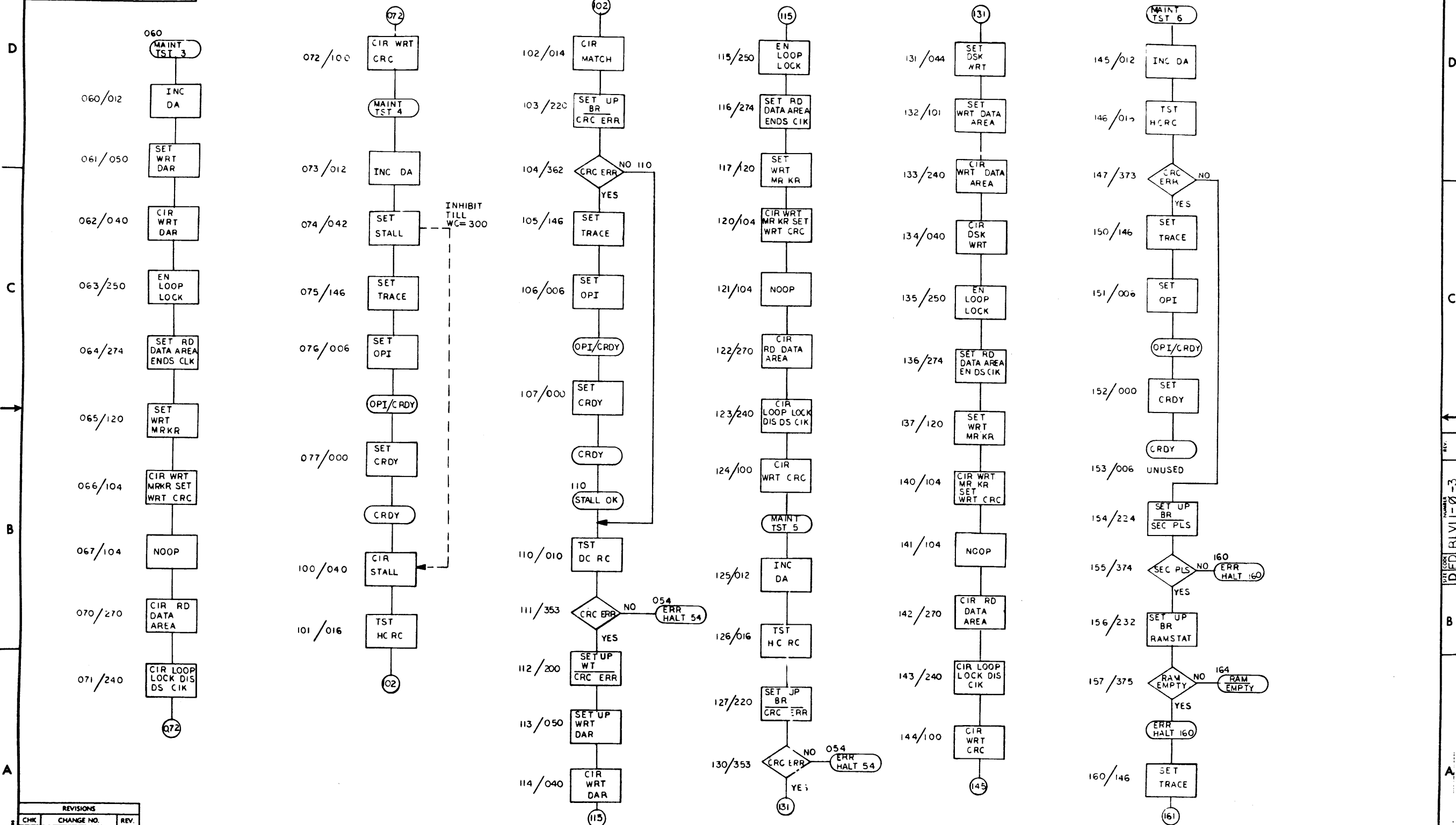
3

2

1

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MAINTENANCE FUNCTION Ø (CONT)



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FLOW DIAGRAM, DISK CONTROLLER (RLVII) SIZE CODE NUMBER REV.
 SCALE SHEET 2 OF 10 DIST.

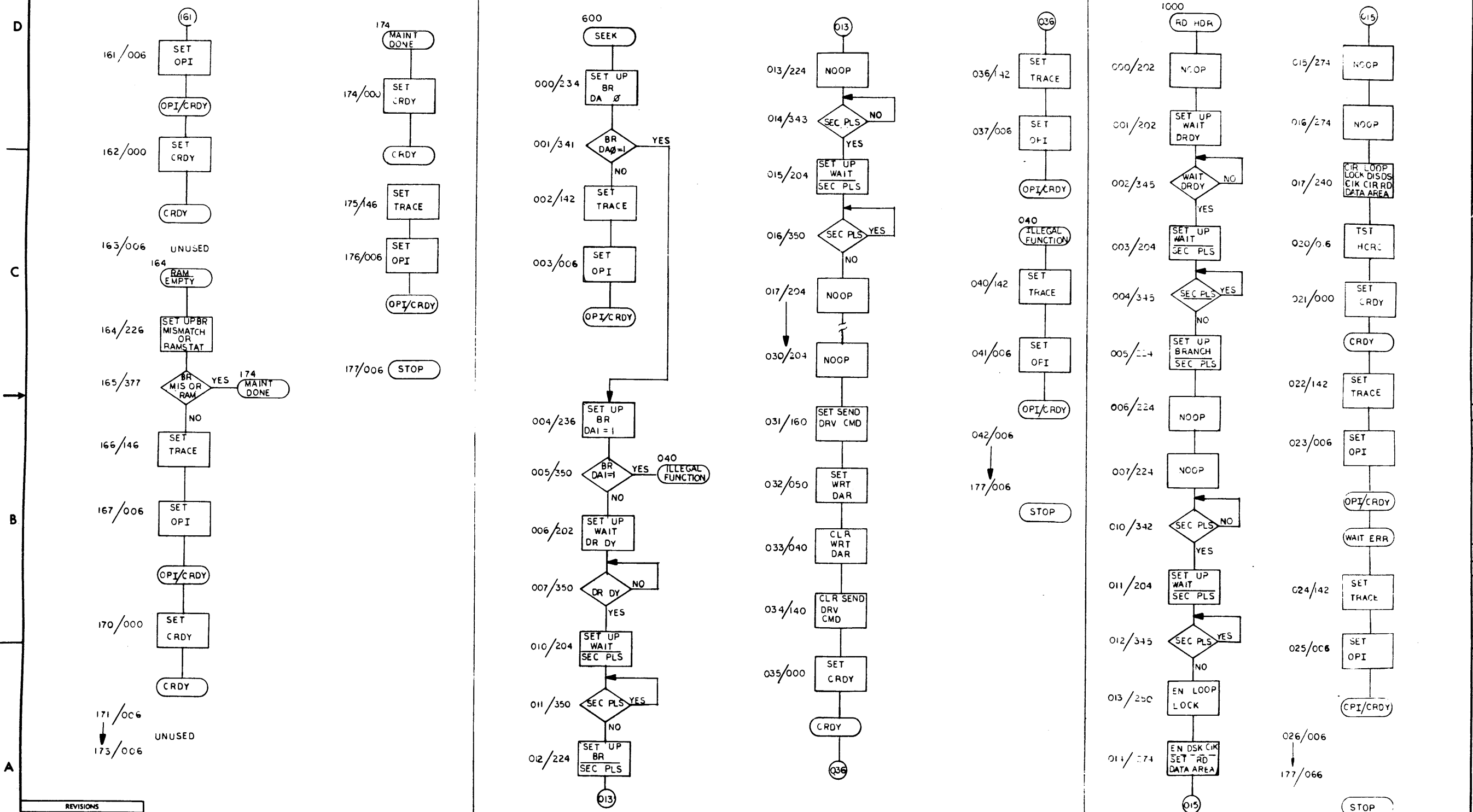
REV. NUMBER DFDRLVII-Ø-3

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MAINTENANCE FUNCTION Ø (CONT)

SEEK 600 FUNCTION 3

RD HDR 1000 FUNCTION 4

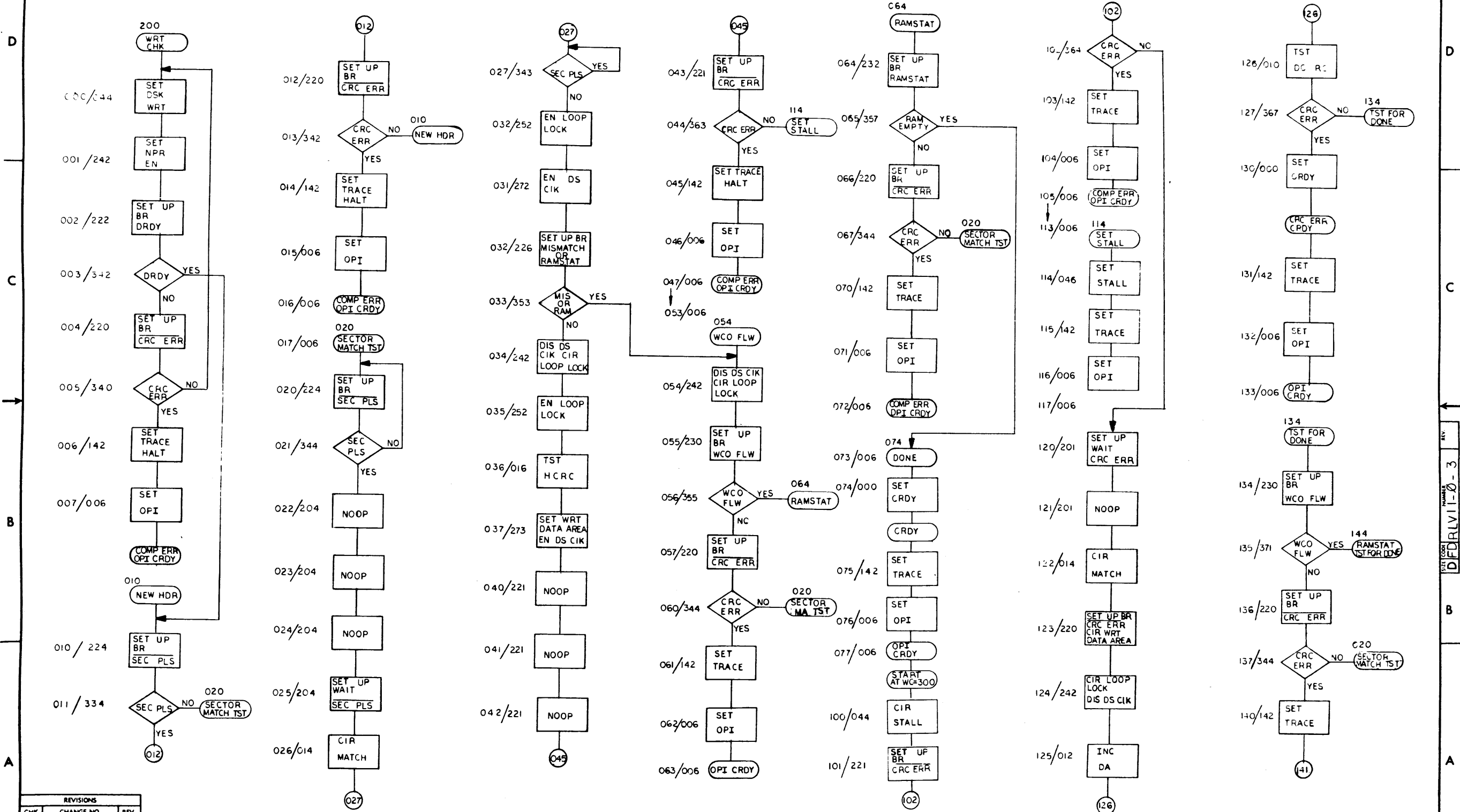


REVISIONS		
CHK	CHANGE NO.	REV.

REV. NO. DFD RLVII-Ø-3

WRITE CHECK 200 FUNCTION 1

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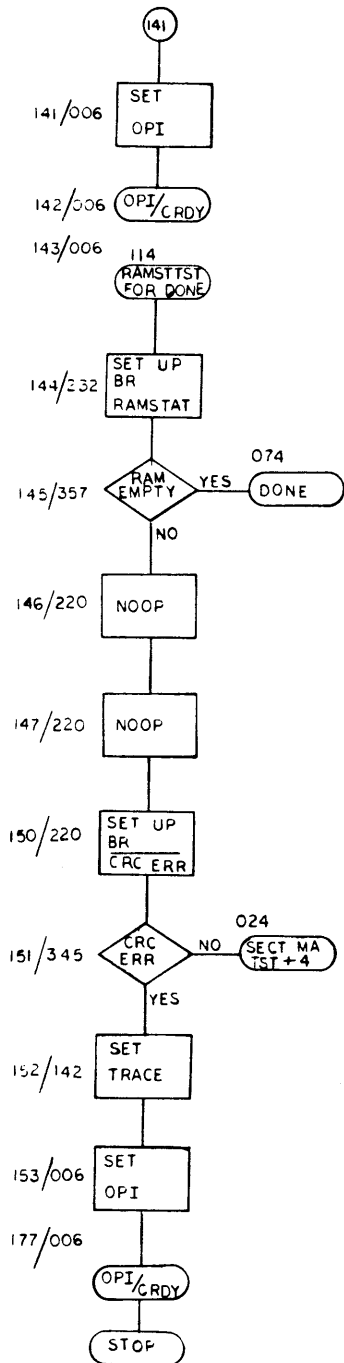


REVISIONS		
CHK	CHANGE NO.	REV.

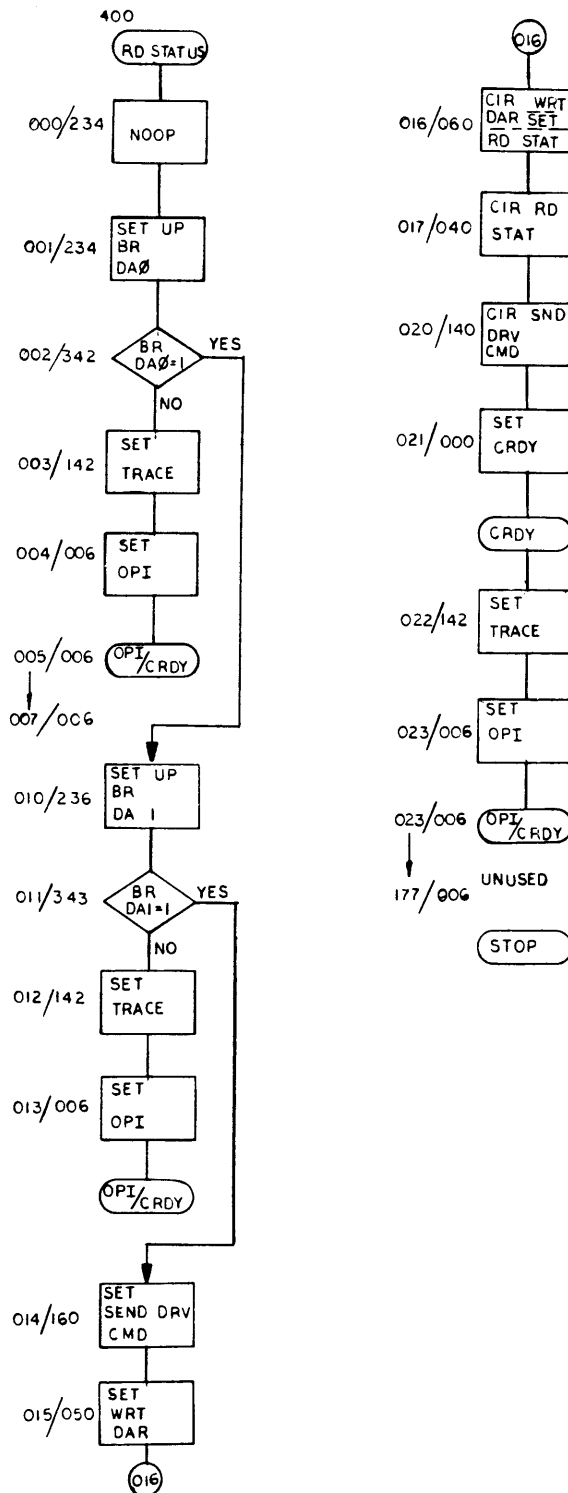
REVISED 11-17-78

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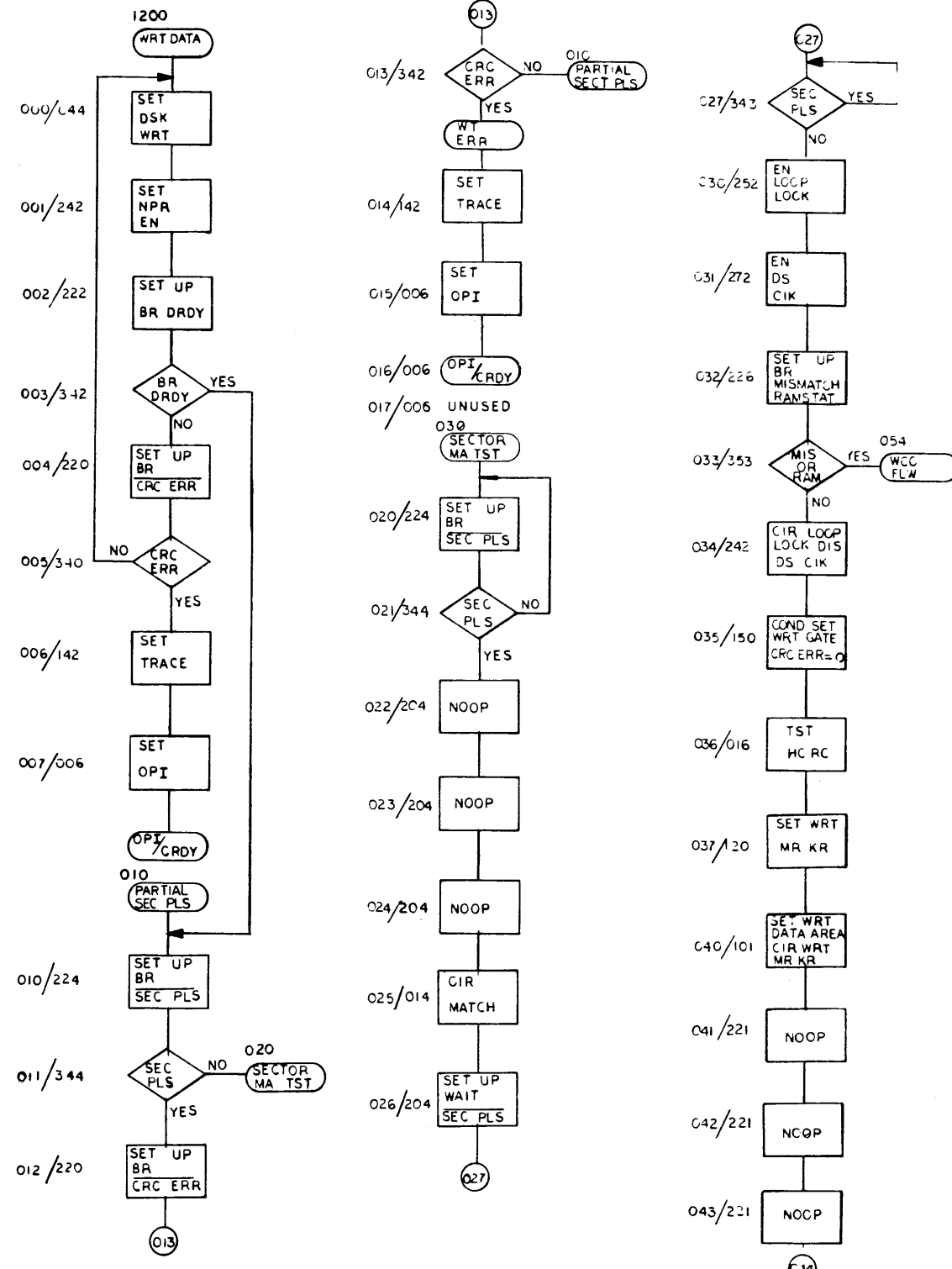
WRITE CHECK
FUNCTION 1 (CONT)



GET STATUS 400
FUNCTION 2



WRITE DATA 1200
FUNCTION 5

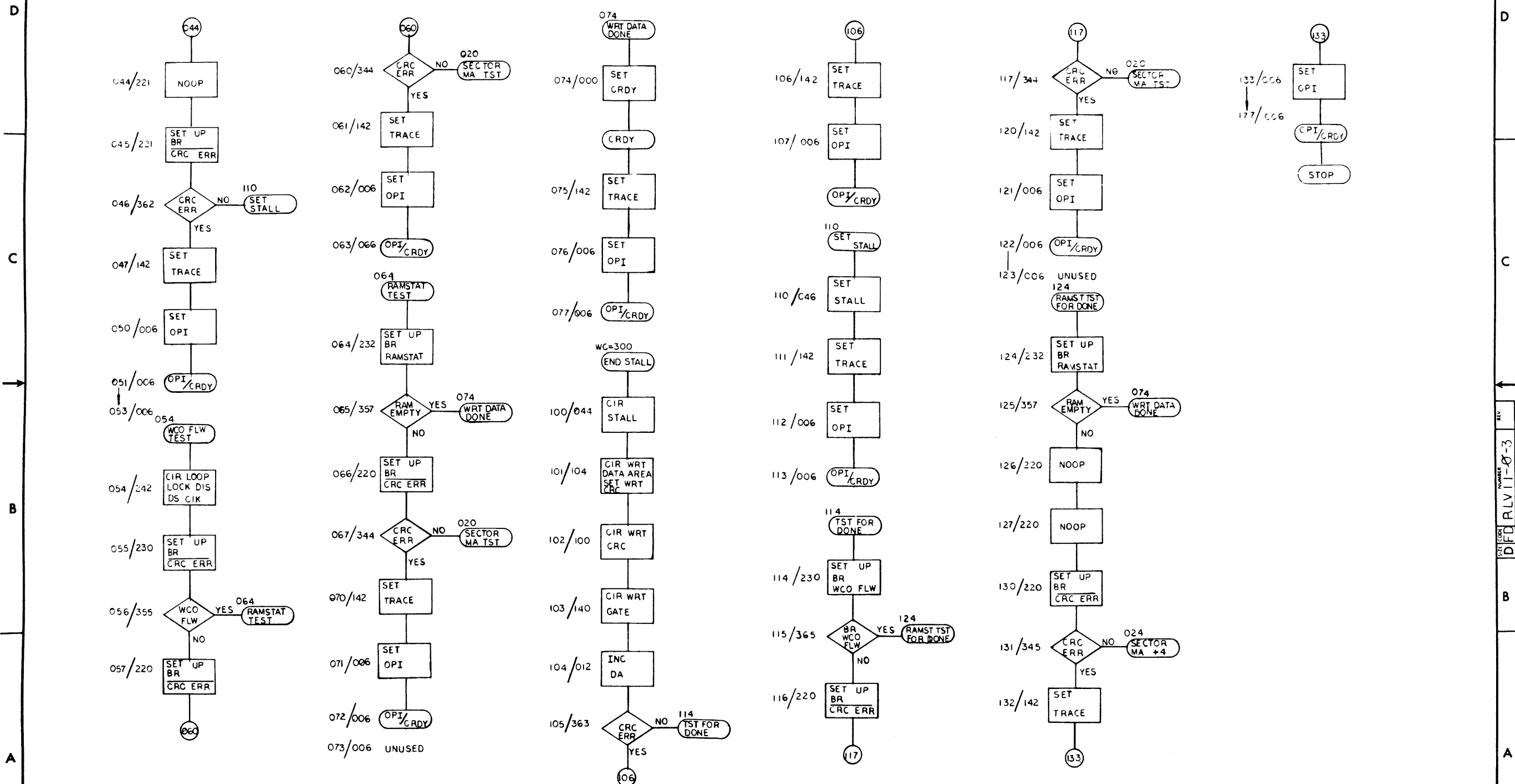


REVISIONS		
CHK	CHANGE NO.	REV.

REV. NUMBER DFD RLVII-0-3

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WRITE DATA 1200 FUNCTION 5 (CONT)



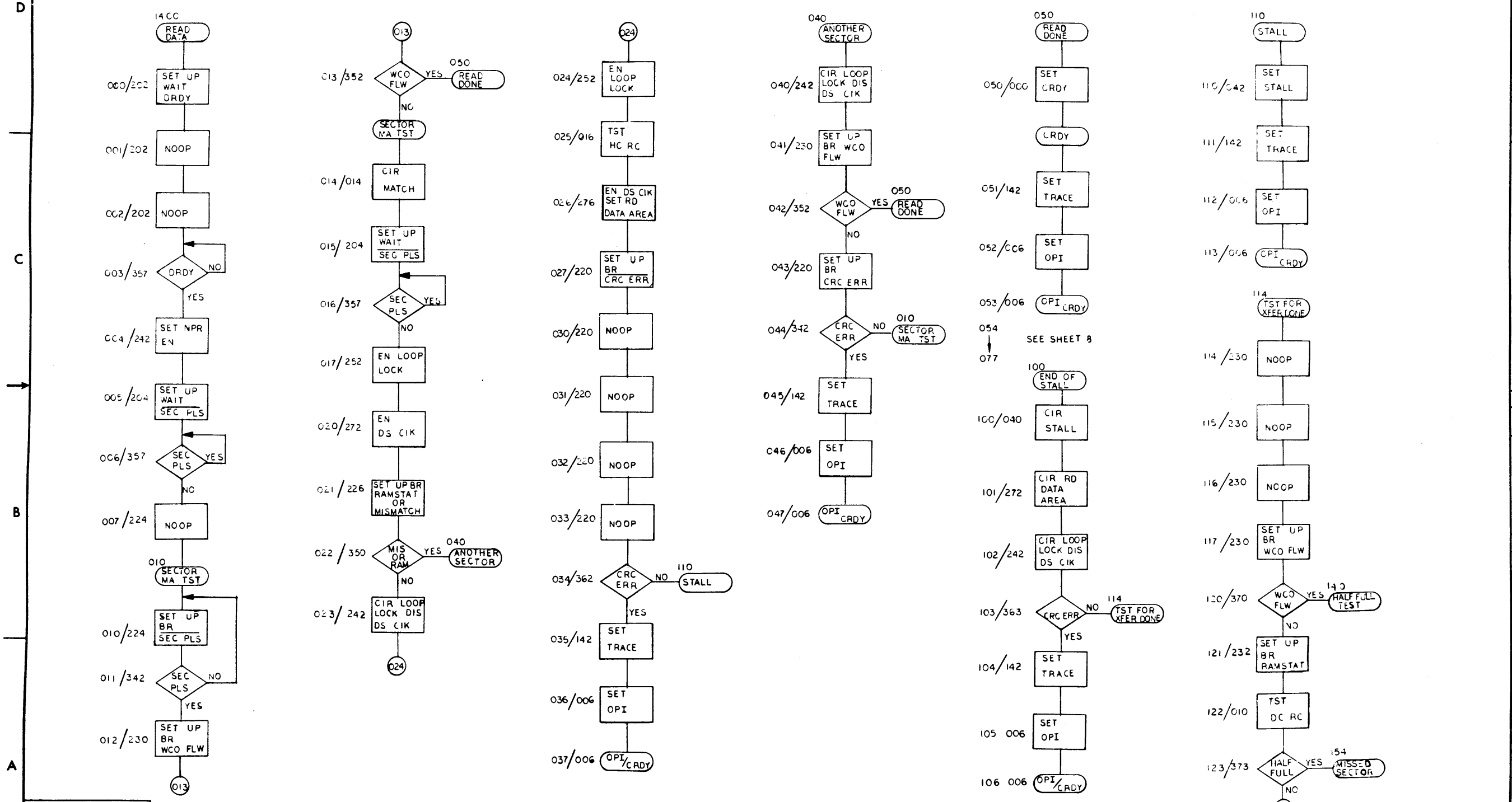
REVISIONS		
CHK	CHANGE NO.	REV.

REVISED 11-17-76

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READ DATA 1400
FUNCTION 6

REVISED 11-1-78
D F D RLVII-0-3



REVISIONS		
CHK	CHANGE NO.	REV.

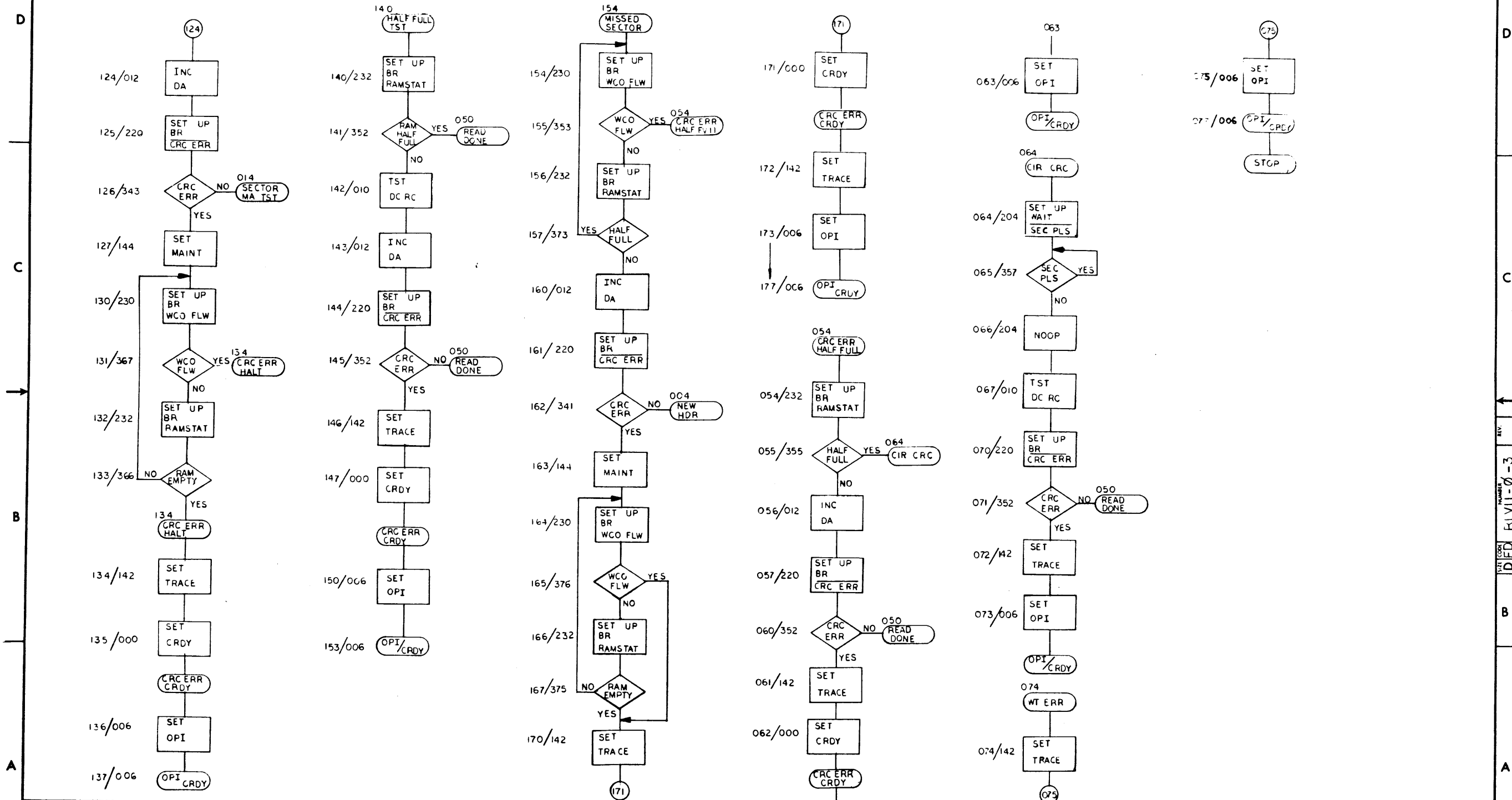
REV. NUMBER D F D RLVII-0-3

TITLE FLOW DIAGRAM, DISK CONTROLLER (RLVII)
SCALE: SHEET 7 OF 10
SIZE CODE: D F D RLVII-0-3
NUMBER: REV.

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READ DATA
FUNCTION 6 (CONT)

REV. 2
D F D RLVII-0-3

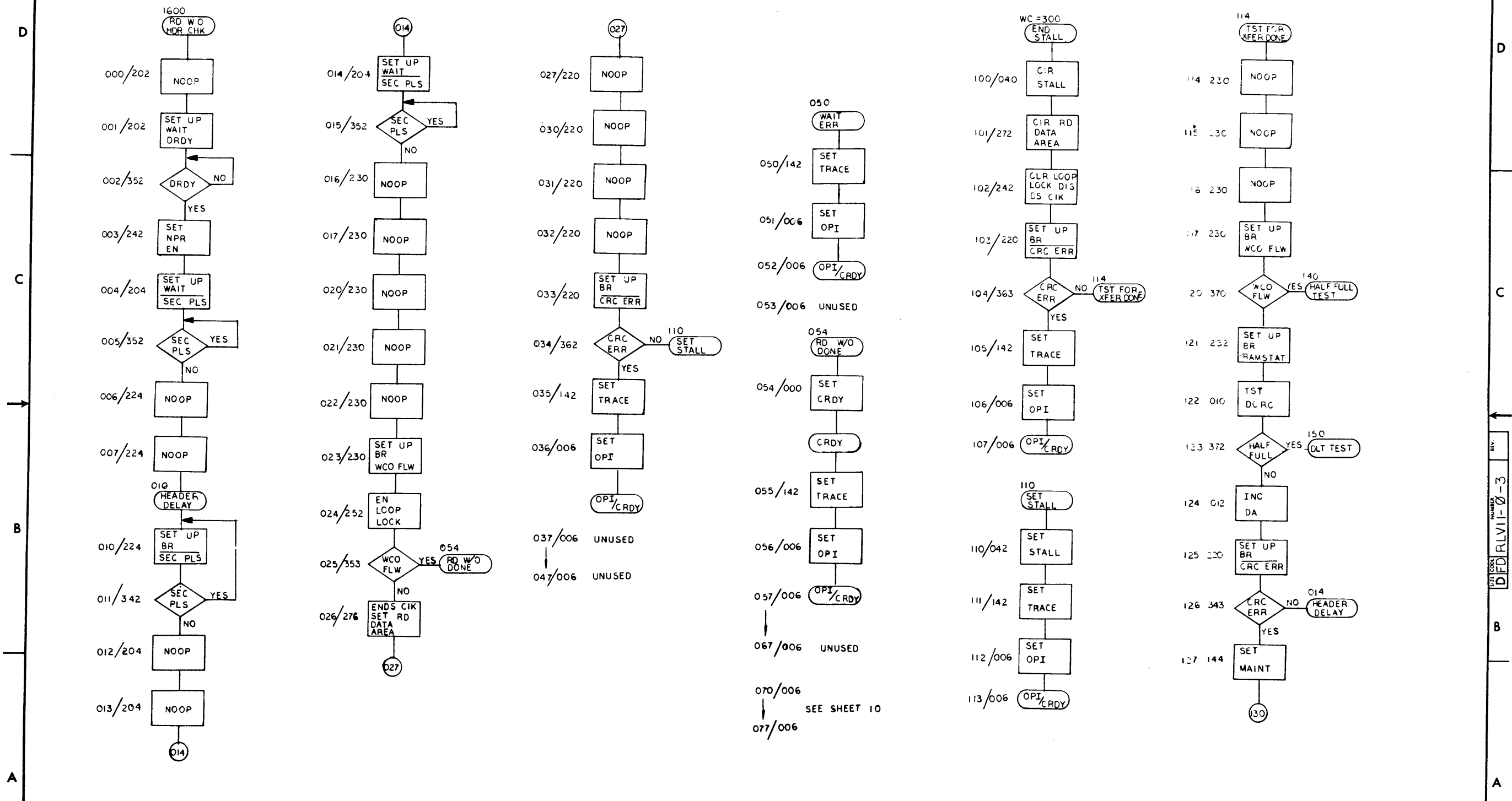


REVISIONS		
CHK	CHANGE NO.	REV.

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**READ W/O HDR CHK 1600
FUNCTION 7**

2-0-11178

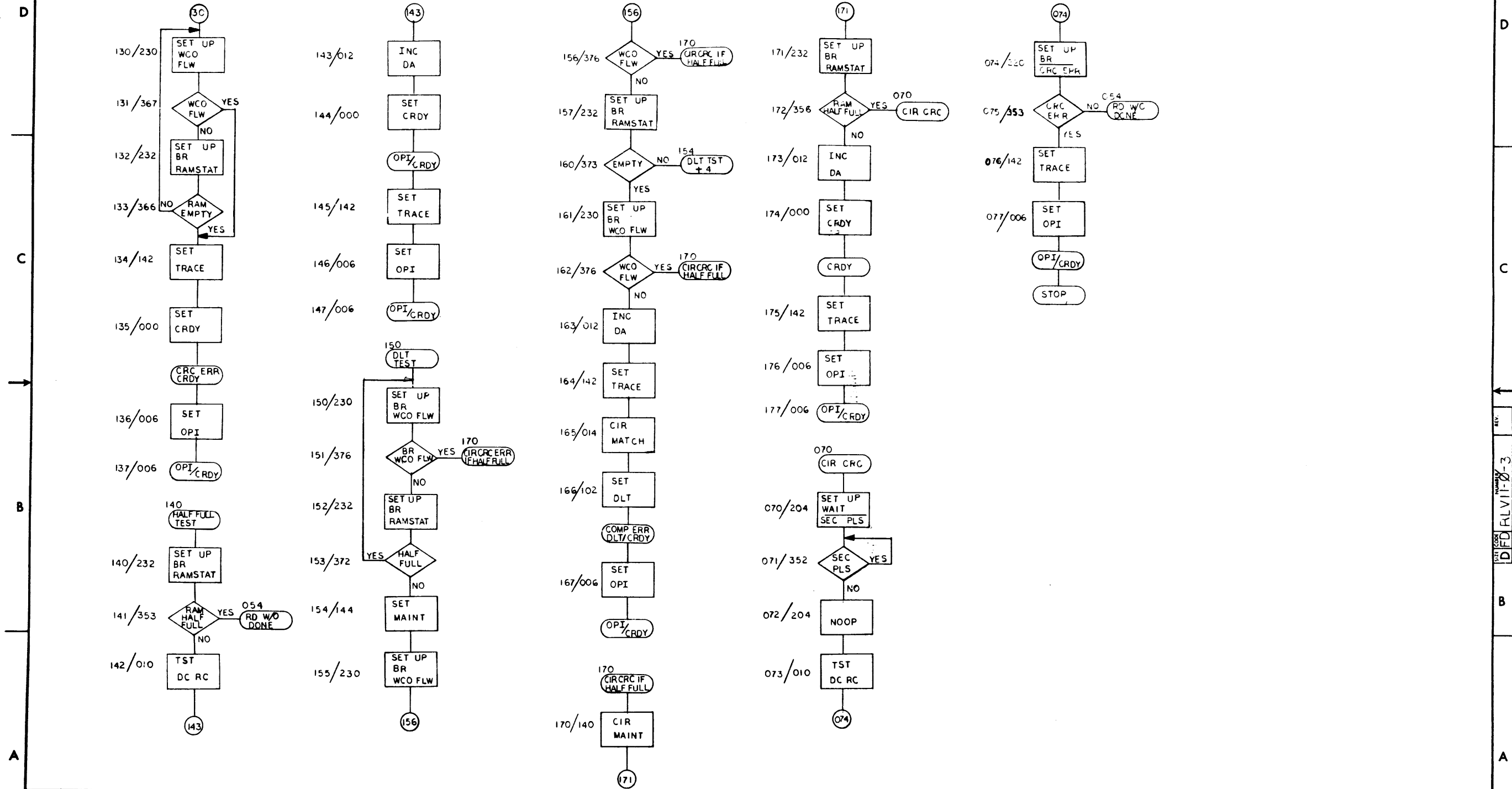


REVISIONS		
CHK	CHANGE NO.	REV.

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READ WO HDR CHK
FUNCTION 7 (CONT)

REV. 3
D F D RLVII-Ø-3

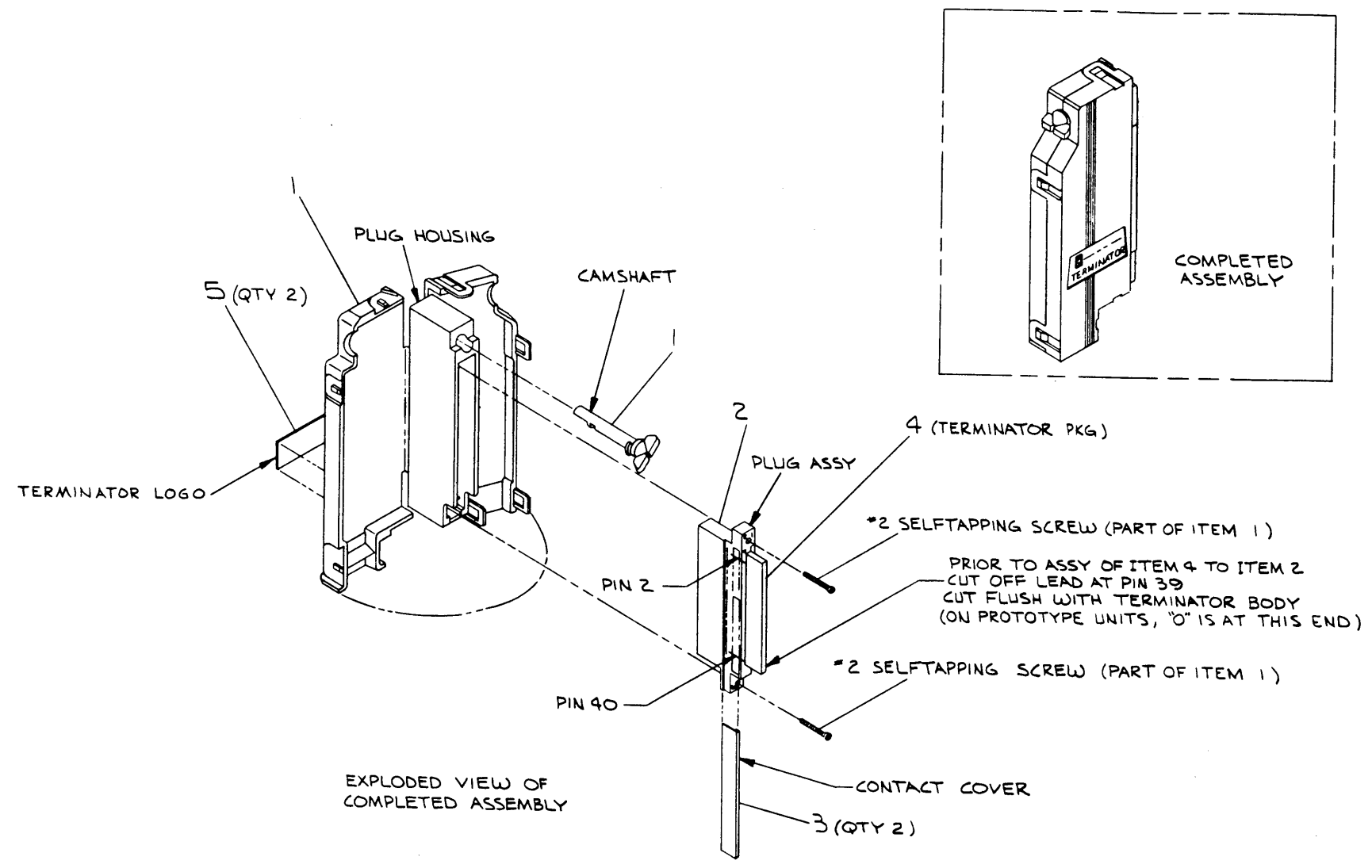


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FLOW DIAGRAM, DISK CONTROLLER (RLVII)
 SIZE CODE: D F D
 NUMBER: RLVII-Ø-3
 SCALE: --- SHEET 10 OF 10
 DIST.:

REV. 3
D F D RLVII-Ø-3

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2	LOGO, TERMINATOR	A-DC-7416678-0-0	5
1	TERMINATOR PKG	1313242-00	4
2	COVER, CONTACT	1211591-11	3
1	PLUG ASSY	1211591-07	2
1	CONN PLUG HSG & CAMSHAFT KIT	1211591-34	1

0.5621102	QUANTITY & VARIATION	DESCRIPTION	DWG./PART NO.	ITEM NO.
	ANGLER 30° 30' CLASS OF ACCURACY SURFACE QUALITY IN MICROINCHES	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CLASS OF ACCURACY (CHECK ONE) MEDIUM <input type="checkbox"/> PREFERRED <input type="checkbox"/>	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	
THIRD ANGLE PROJECTION REMOVE BURRS AND BREAK SHARP CORNERS DO NOT SCALE DWG	DRN: [Signature] CHK'D: [Signature] ENG: [Signature] PROD: [Signature]	FIRST USED ON RKP6	TITLE TERMINATOR ASSY	
MATERIAL SEE PARTS LIST FINISH	NEXT HIGHER ASSY. SCALE: NONE	SIZE CODE D	NUMBER IA 7012293-0-0	REV. A
	SHEET 1 OF 1	DIST.		

REVISIONS	CHK	CHANGE NO.	REV.
		7012293-00001	A
		W. DUNHAM	9/19/76

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				QUANTITY / VARIATION														
PARTS LIST																		
MADE BY <i>Richard Hultman</i>		CHECKED <i>Richard Hultman</i>		SECTION														
DATE 4/18/78		DATE <i>4/26/78</i>		1														
ENG <i>Richard Hultman</i>		PROD <i>H.T. & Co.</i>		ISSUED SECT.														
DATE 4/18/78		DATE <i>3-May-78</i>		1														
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION			ZJ257-RB	ZJ257-RZ*	ZJ257-PB*											
1	AC-E036B-MC	CZRLAB0 RL11/RLV11 CTRL 1 (DOC)			1	1	-											
2	AH-E037B-MC	CZRLAB0 RL11/RLV11 CTRL 1 (FICHE)			-	-	-											
3	AK-E038B-MC	CZRLAB0 RL11/RLV11 CTRL 1 (PT1)			1	-	1											
4	AK-E039B-MC	CZRLAB0 RL11/RLV11 CTRL 1 (PT2)			1	-	1											
5	AC-E040B-MC	CZRLBB0 RL11/RLV11 CTRL 2 (DOC)			1	1	-											
6	AH-E041B-MC	CZRLBB0 RL11/RLV11 CTRL 2 (FICHE)			-	-	-											
7	AK-E042B-MC	CZRLBB0 RL11/RLV11 CTRL 2 (PT1)			1	-	1											
8	AK-E043B-MC	CZRLBB0 RL11/RLV11 CTRL 2 (PT2)			1	-	1											
9	AC-E044B-MC	CZRLCB0 RL01 Drive Test 1 (DOC)			1	1	-											
10	AH-E045B-MC	CZRLCB0 RL01 Drive Test 1 (FICHE)			-	-	-											
11	AK-E046B-MC	CZRLCB0 RL01 Drive Test 1 (PT1)			1	-	1											
12	AK-E047B-MC	CZRLCB0 RL01 Drive Test 1 (PT2)			1	-	1											
13	AC-E048B-MC	CZRLDB0 RL01 Drive Test 2 (DOC)			1	1	-											
14	AH-E049B-MC	CZRLDB0 RL01 Drive Test 2 (FICHE)			-	-	-											
15	AK-E050B-MC	CZRLDB0 RL01 Drive Test 2 (PT1)			1	-	1											
16	AK-E051B-MC	CZRLDB0 RL01 Drive Test 2 (PT2)			1	-	1											
17	AC-E246B-MC	CZRLEB0 RL01 Perf Exer (DOC)			1	1	-											
18	AH-E247B-MC	CZRLEB0 RL01 Perf Exer (FICHE)			-	-	-											
19	AK-E248B-MC	CZRLEB0 RL01 Perf Exer (PT1)			1	-	1											
20	AK-E249B-MC	CZRLEB0 RL01 Perf Exer (PT2)			1	-	1											
21	AC-E250B-MC	CZRLFBO RL01 Drive Cmpt (DOC)			1	1	-											
22	AH-E251B-MC	CZRLFBO RL01 Drive Cmpt (FICHE)			-	-	-											
TITLE				ASSY NO.	SIZE	CODE	NUMBER				REV.	ECO NO.						
RLV11 Software List				E-UA-RLV11-0-0	A	PL	RLV11-0-5											
				SHEET 1 OF 2	DIST.													

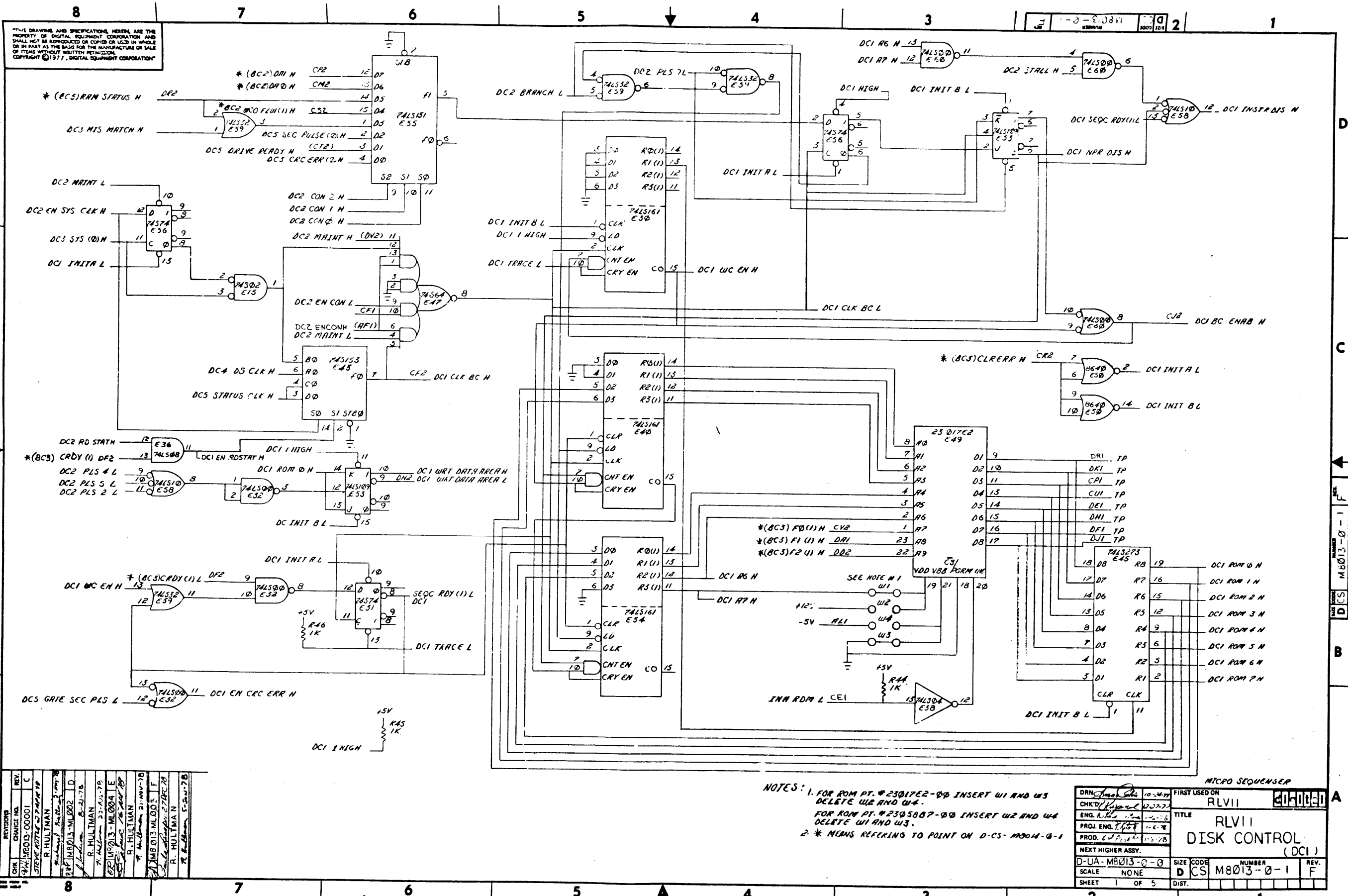
DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

QUANTITY / VARIATION

MADE BY <i>Richard Hallman</i>	CHECKED <i>Richard Hallman</i>	SECTION 1
DATE 4/18/78	DATE 4/26/78	
ENG <i>Richard Hallman</i>	PROD <i>H.T. G. Bauler</i>	ISSUED SECT. 1
DATE 4/18/78	DATE 3 May - 78	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION																	
			ZJ257-RB	ZJ257-RZ*	ZJ257-PB*															
23	AK-E252B-MC	CZRLFBO RL01 Drive Cmpt (PT1)	1	-	1															
24	AK-E253B-MC	CZRLFBO RL01 Drive Cmpt (PT2)	1	-	1															
25	AC-B107A-MC	CVRLAA0 RLV11/RL01 Dskls (DOC)	1	1	-															
26	AH-B108A-MC	CVRLAA0 RLV11/RL01 Dskls (FICHE)	-	-	-															
27	AK-B109A-MC	CVRLAA0 RLV11/RL01 Dskls (PT1)	1	-	1															
28	AK-E375A-MC	CVRLAA0 RLV11/RL01 Dskls (PT2)	1	-	1															
		*NOT TO BE SHIPPED REFERENCE ONLY																		

TITLE RLV11 Software List	ASSY NO. E-UA-RLV11-0-0	SIZE A	CODE PL	NUMBER RLV11-0-5	REV.	ECO NO.
SHEET 2 OF 2		DIST.				



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REV.	CHG.	BY	DATE
1	1	R. HULTMAN	11-15-76
2	1	R. HULTMAN	11-15-76
3	1	R. HULTMAN	11-15-76
4	1	R. HULTMAN	11-15-76
5	1	R. HULTMAN	11-15-76
6	1	R. HULTMAN	11-15-76
7	1	R. HULTMAN	11-15-76
8	1	R. HULTMAN	11-15-76

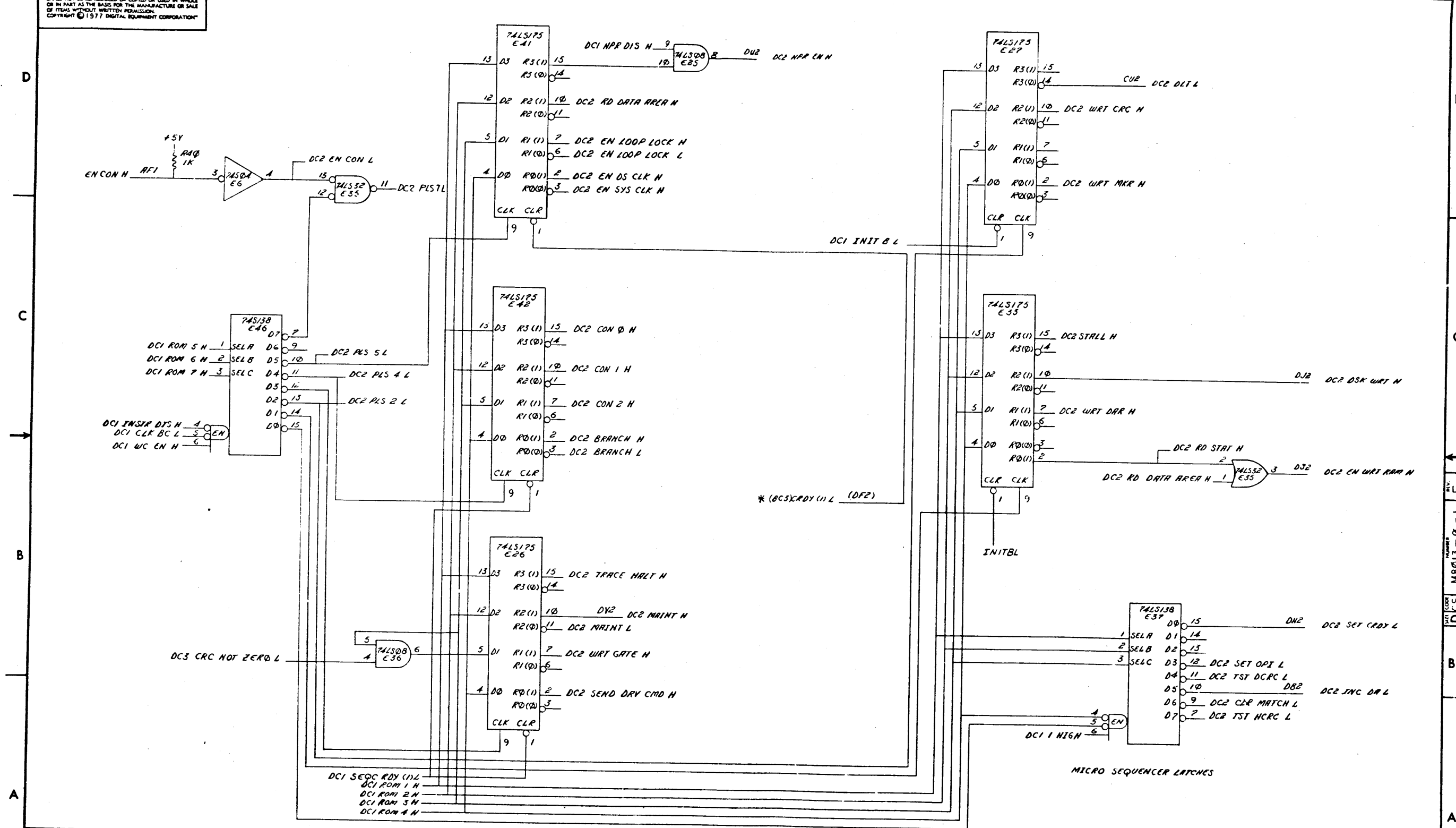
NOTES: 1. FOR ROM PT. # 23017E2-00 INSERT W1 AND W3 DELETE W2 AND W4.
 FOR ROM PT. # 2305807-00 INSERT W2 AND W4 DELETE W1 AND W3.
 2. * MEANS REFERRING TO POINT ON D-CS-M8013-0-1

DRN: [Signature]	DATE: 10-24-77	FIRST USED ON: RLVII
CHKD: [Signature]	DATE: 12-27-77	TITLE: DISK CONTROL (DCI)
ENG. A. [Signature]	DATE: 1-2-78	PROJECT: [Signature]
PROD. [Signature]	DATE: 1-2-78	SCALE: NONE
D-UA-M8013-0-0 SIZE CODE NUMBER REV. D CS M8013-0-1 F		
SHEET 1 OF 5		

REV. 10-24-77 M8013-0-1 F

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1-0-0-1031W
M8013-0-1 F

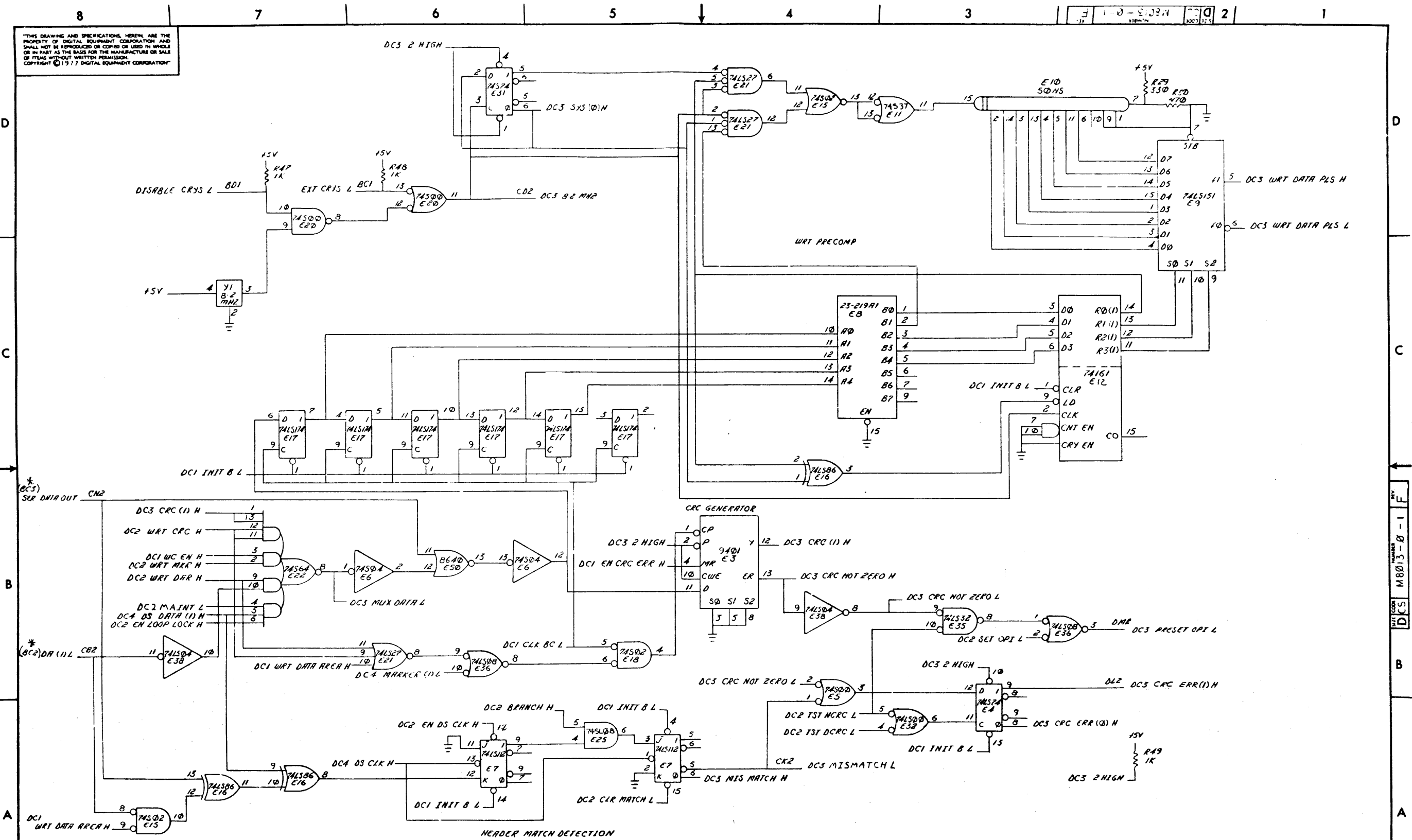


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: RLVI DISK CONTROL (DC2)
 SIZE CODE: DCS
 NUMBER: M8013-0-1 F
 SCALE: NONE
 SHEET: 2 OF 5
 DIST.:

NUMBER: M8013-0-1 F
 CODE: DCS

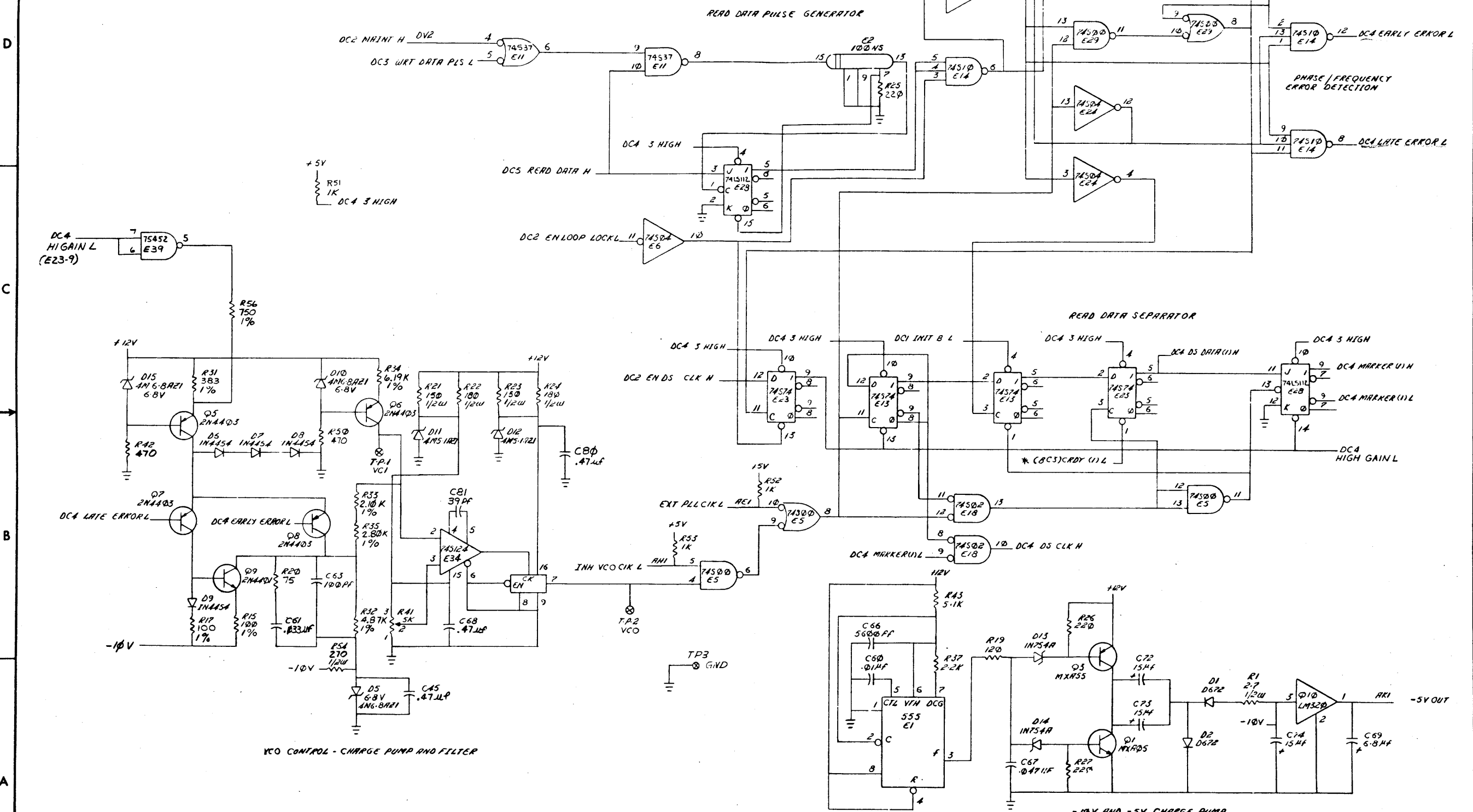
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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	RLVII DISK CONTROL (DC3)	SIZE CODE	DCS	NUMBER	M8013-0-1	REV.	F
SCALE	NONE	SHEET	3 OF 5	DIST.			

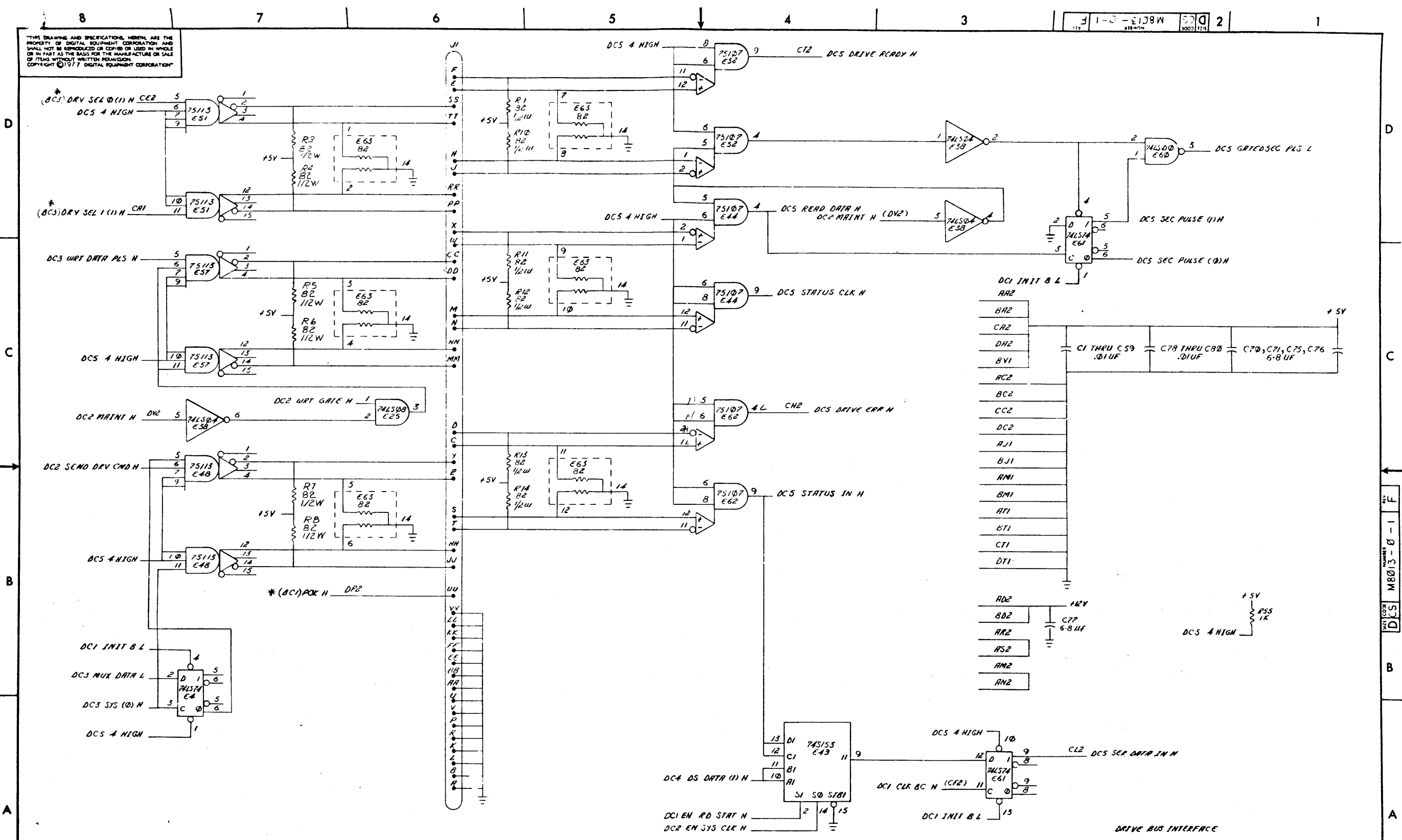
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REVISIONS			TITLE		SIZE CODE		NUMBER		REV.	
CHK	CHANGE NO.	REV.	RLVII DISK CONTROL (DC4)		D CS		M8013-0-1		F	
			SCALE	NC NE	SHEET	4	OF	5	DIST.	

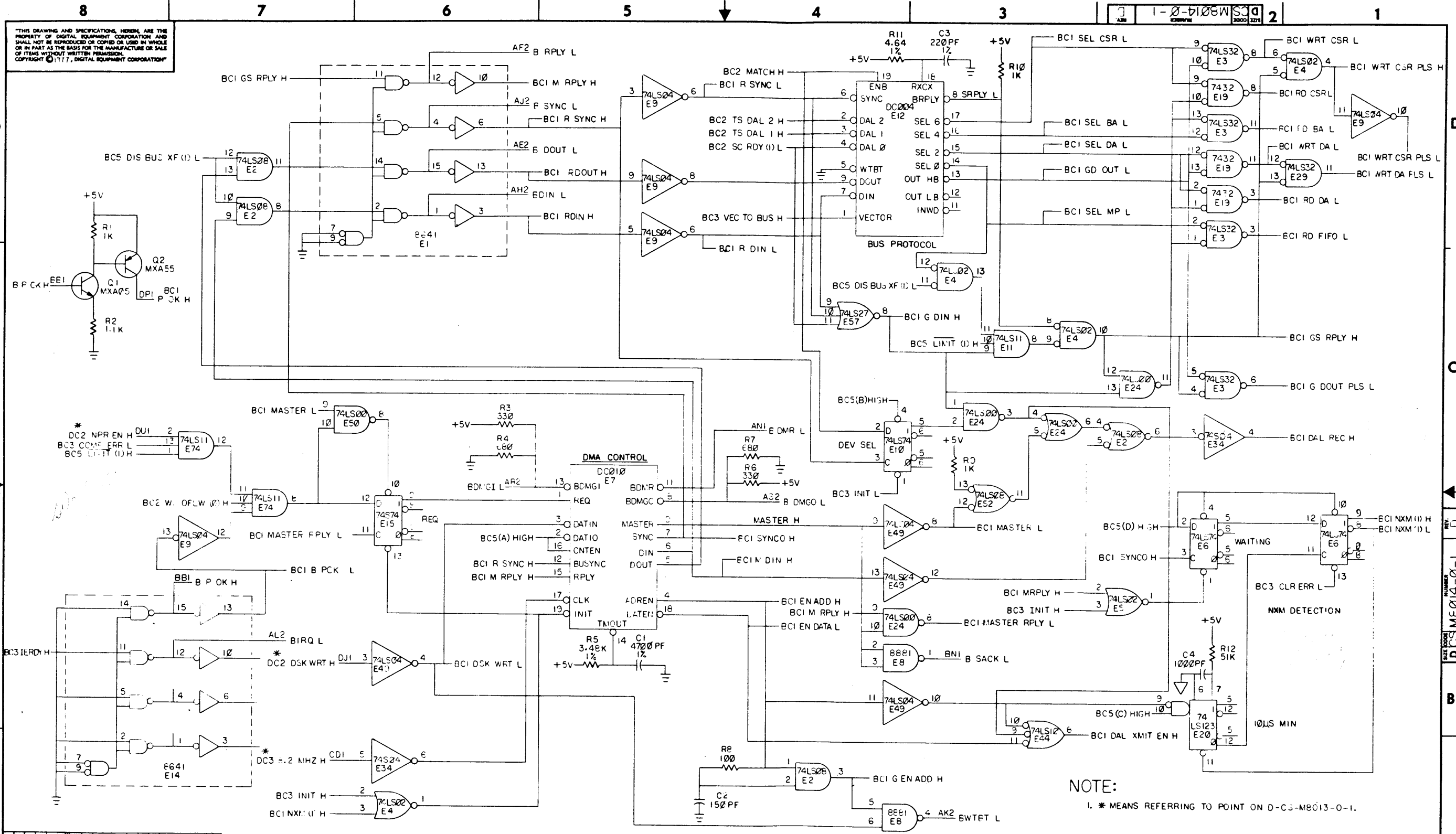
REV. F
M8013-0-1

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REVISIONS		
CHK	CHANGE NO.	REV

REV. 10/77 M8013-0-1 F



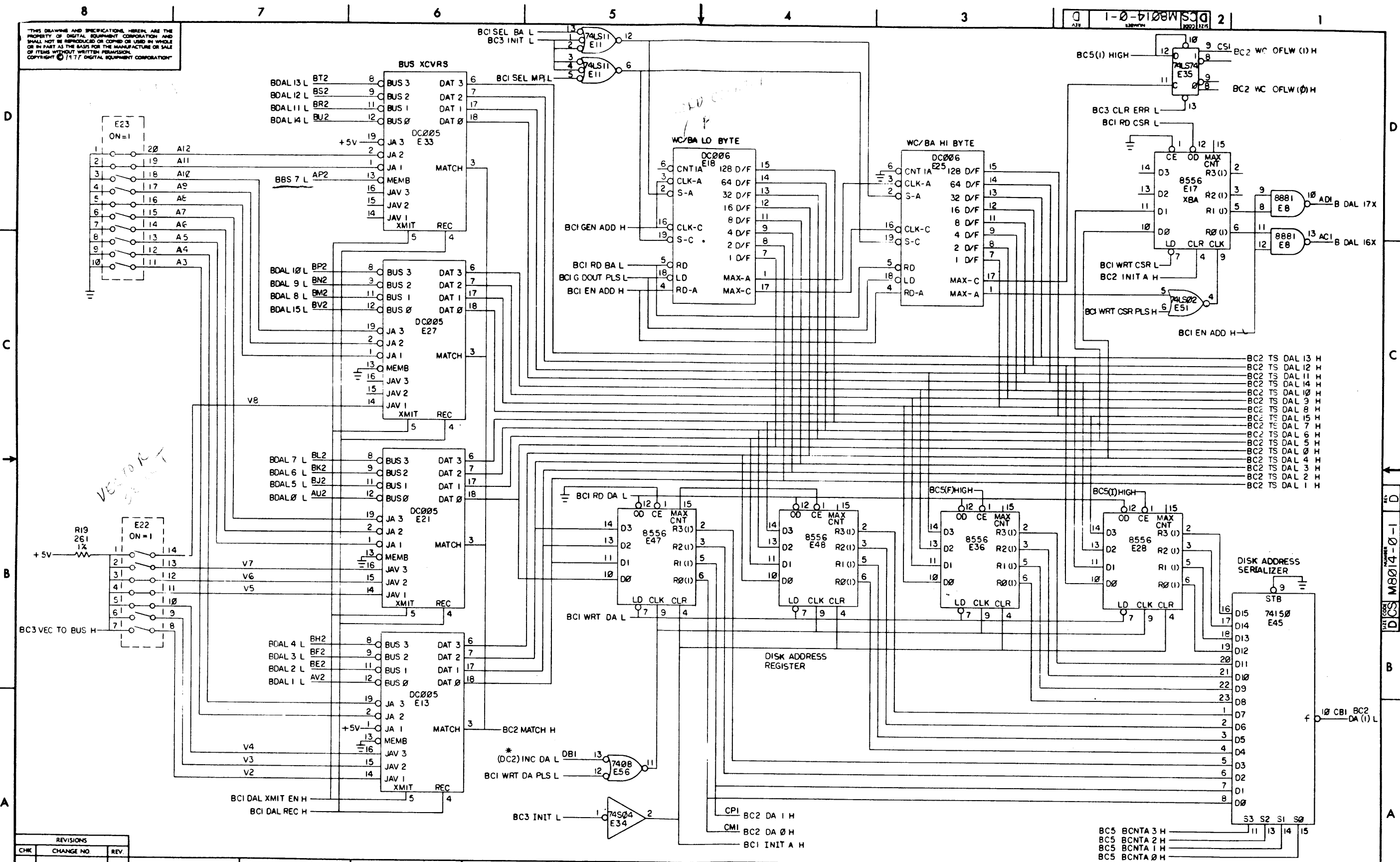
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REV	CHG	NO.	DATE	BY	CHK
1		1	11/14/77	R. HULTMAN	
2		1	11/14/77	R. HULTMAN	
3		1	11/14/77	R. HULTMAN	
4		1	11/14/77	R. HULTMAN	
5		1	11/14/77	R. HULTMAN	
6		1	11/14/77	R. HULTMAN	
7		1	11/14/77	R. HULTMAN	
8		1	11/14/77	R. HULTMAN	

DRN/	7	FIRST USED ON	RLV II
CHK	1/16/78	TITLE	RLV II BUS CONTROL (BCI)
ENG.		SCALE	D
PROJ. ENG.		SIZE CODE	CS
PROD.		NUMBER	M2014-0-1
NEXT HIGHER ASSY.		REV.	D
DATE	11-14-77	DIST.	
SHEET	1 OF 5		

REV. D
D03 MF014-0-1

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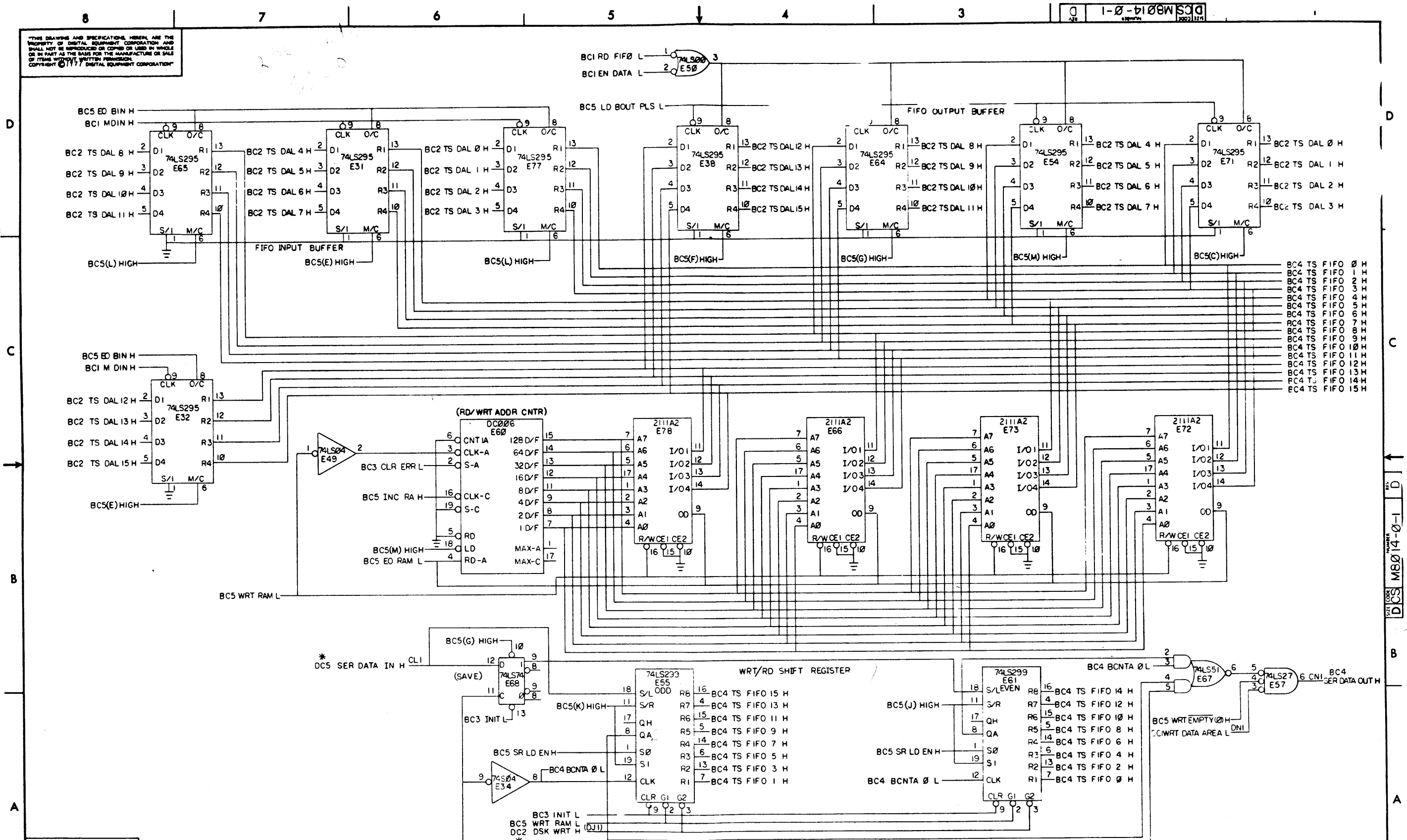


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: RLVI1 BUS CONTROL (BC2)
 SIZE CODE: DCS
 NUMBER: M8014-0-1
 REV: D
 SCALE: 1:1
 SHEET: 2 OF 5
 DIST.:

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DCS M8014-0-1

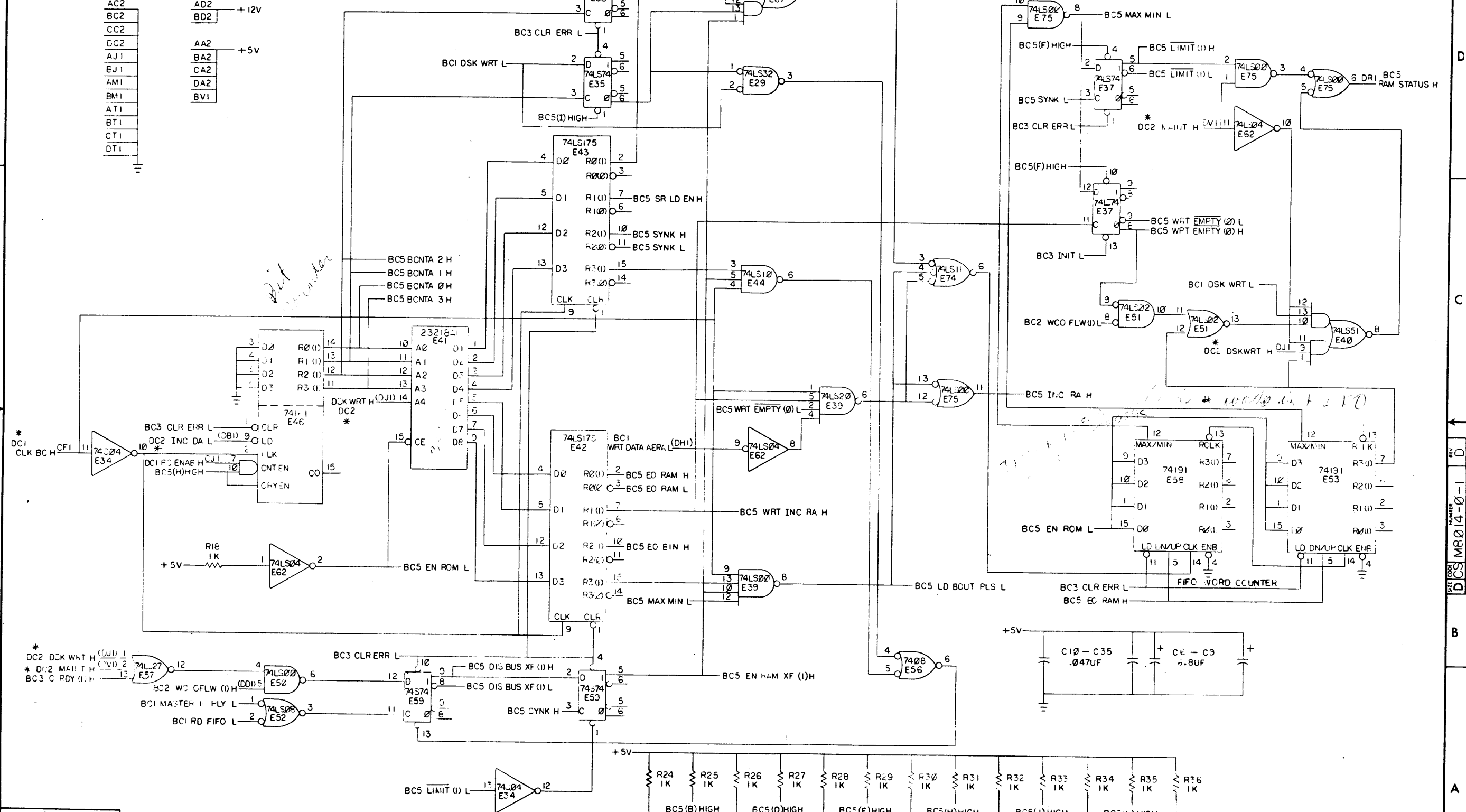


REVISIONS		
CHK	CHANGE NO	REV

TITLE	RLV 11 BUS CONTROL	SIZE CODE	(BC4) DCS	NUMBER	M8014-0-1	REV.	D
SCALE	+	SHEET	4 OF 5	DIST.			

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- AC2
 - BC2
 - CC2
 - DC2
 - AJ1
 - EJ1
 - AM1
 - BM1
 - AT1
 - BT1
 - CT1
 - DT1
- AD2 +12V
 - BD2
 - AA2 +5V
 - BA2
 - CA2
 - DA2
 - BV1



REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 080 130

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	REFERENCE DESIGNATOR
1	1	D-MD-5012962-0-0	5012962-00	RLV11 DISK CONTROL	1	
2	2		1000011-00	*** THIS ITEM IS NOT USED ***	-	
3	3		1000016-00	100.0 MMF 100V 5%200PPM DM15S	1	C63
4	4		1011740-00	5600.0 MMF 50V 10% CW15C CER.	1	C66
5	5		1000050-00	.033 MFD 100V 10% 663UW MYLR	1	C61
6	6		1012784-00	.047 MFD 50V -20+80 CER	1	C67
7	7		1012312-00	.47 MFD 50V X% CER.	4	C68,C45,C80,C83
8	8		1005306-00	6.8MFD 35V 10% S.TANT	6	C69-C71,C75-C77
9	9		1004812-00	15 MFD 20V 10% S.TANT	3	C72-C74
10	10		1001610-01	.01 MFD 100V -20+80 Z5U DISC	61	C1-C44,C78,C79,C46-C60
11	11		1211813-00	SOCKET 16PIN LOW PROFILE	1	XE8
12	12		1105275-00	D 672 TR= 15NS PIV= 60V SI	2	D1,D2
13	13		1111577-00	1N 4454 TR= 4NS PIV= 50 S	4	D6,D7,D8,D9
14	14		1105871-00	1/4M5.1AZ1 = 5.1 1% .25W N	2	D11,D12
15	15		1109991-00	1N 754A VZ= 6.8 5% .40W	2	D13,D14
16	16		1109991-01	4M6.8AZ1 VZ= 6.8 1% .40W	3	D5,D10,D15
17	17		1210693-00	SOCKET 24PIN IC	1	XE49
18	18		1300285-00	270 1/2W 5% CC	1	R54
19	19		1309444-00	2.7 1/2W 10% CC	1	R1
20	20		1301781-00	82 1/2W 5% CC	12	R3-R14
21	21		1300005-05	R NETWORK 13-82 RESISTORS 5% 14	1	E63
22	22		1302858-00	100 1/4W 1% RN55D-F 100PPM	2	R15,R17
23	23		1300247-00	120 1/4W 5% CC	1	R19
24	24		1301322-00	*** THIS ITEM IS NOT USED ***	-	
25	25		1300260-00	180 1/2W 5% CC	2	R22,R24
26	26		1300271-00	220 1/4W 5% CC	3	R26,R27,R25
27	27		1300295-00	330 1/4W 5% CC	1	R29
28	28		1300316-00	470 1/4W 5% CC	3	R30,R42,R50
29	29		1300365-00	1 K 1/4W 5% CC	11	R40,R44-R49,R51-R53,R55
30	30		1300417-00	3.2 K 1/4W 5% CC	1	R37

REVISION HISTORY		SECTION 1 OF 1	RESP. ENG.: R. HULTMAN	DATE: 28-DEC-77	DIGITAL				
ENG	ECO NUMBER	REV	SECTION VARIATION INDEX	MADE BY: R. NICHOLSON	DATE: 31-OCT-77	TITLE	PARTS LIST		
W.H.	M8001	C				RLV11 DISK CONTROL			
J.A.	ML002	D	1.00						
ER	ML003	E	2.						
R.H.	M8013-ML004	F	3.	CHECKED: R. KOPPENAL	DATE: 28-DEC-77				
R.H.	M8013-ML005	H	4.						
			5.						
			6.	DSN.ENG.: P. KOTSCH	DATE: 28-DEC-77				
			7.						
			8.			SIZE CODE	DOCUMENT NUMBER	REV	
			9.	PROD.: R. KIRK	DATE: 28-DEC-77	K	PL	M8013-0-DBP	H
			10.						
			11.						
			12.	ASSEMBLY NUMBER: D-UA-M8013-0-0		PART NUMBER: M8013		EDIT #	
								31	

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LINE ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	REFERENCE DESIGNATOR
31	31	1305145-00	2.8 K 1/4W 1% RN55D-F 100PPM	1	R35
32	32	1309143-09	5 K 3/4W10% POT 100PPM	1	R41
33	33	1312930-00	5.1 K 1/4W 5% CC	1	R43
34	34	1305125-00	383 1/4W 1% RN55D-F 100PPM	1	R31
35	35	1314187-00	6.19 K 1/4W 1% RN55D-F 100PPM	1	R34
36	36	1313592-00	4.87 K 1/4W 1% RN55D-F 100PPM	1	R32
37	37	1312923-00	2.10 K 1/4W 1% RN55D-F 100PPM	1	R33
38	38	1510705-00	XA 05 NPN 500MW SI 60 50 P	1	Q1
39	39	1510706-00	XA 55 PNP 500MW SI 60 50 P	1	Q3
40	40	1513490-00	2N 4403 PNP 350MW SI-40 30	4	Q5-Q8
41	41	1513489-00	2N 4401 NPN 350MW SI 40 20	1	Q9
42	42	1610033-00	DELAY= 10-100NS,10TAPS	1	E2
43	43	1614159-00	DELAY 50NS,10TAPS	1	E10
44	44	1912799-00	LS00 NAND-GATE-QUAD 2IN,P	2	E32,E60
45	45	1912803-00	LS04 INVERTER GATE-HEX 1I	1	E38
46	46	1912805-00	LS08 AND GATE-QUAD 2IN,PO	2	E25,E36
47	47	1912807-00	LS10 NAND GATE-TRIPLE 3IN	1	E58
48	48	1912813-00	LS27 NOR GATE-TRIPLE 3IN	1	E21
49	49	1912816-00	LS32 OR GATE-QUAD 2IN,POS	2	E35,E59
50	50	1912824-00	LS74 FF-D DUAL,EDGE TRIGG	2	E4,E61
51	51	1912829-00	LS86 X-OR GATE-QUAD 2IN	1	E16
52	52	1912833-00	LS109 FF-JK DUAL,POS EDGE	1	E53
53	53	1912842-00	LS138 DECODER-THREE INPUT,	1	E37
54	54	1912844-00	LS151 MUX 1 OF 8 & DATA	2	E9,E55
55	55	1912697-00	LS174 FF-D HEX W/CLEAR	1	E17
56	56	1912853-00	LS175 FF-D QUAD	5	E26,E27,E33,E41,E42
57	57	1912863-00	LS273 FF-D OCTAL W/CLEAR	1	E45
58	58	1910950-00	74S74 FF-D DUAL (-45 VFRSI	3	E23,E31,E56
59	59	1910091-00	*** THIS ITEM IS NOT USED ***	-	
60	60	1910650-00	74161 COUNTER,SYNCHR. UP	1	E12
61	61	1910542-00	74S64 A-O-I GATE 4-2-3-2	2	E22,E47
62	62	1910532-00	74S00 NAND GATE-QUAD 2IN&	3	E5,E20,E29
63	63	1912388-00	74S02 NOR GATE-QUAD 2IN,PO	2	E18,E15
64	64	1910534-00	74S04 INVERTER GATE-HEX 1I	2	E6,E24
65	65	1910536-00	74S10 NAND GATE-TRIPLE 3IN	1	E14
66	66	1910544-00	74S74 FF-D DUAL,EDGE TRIGG	1	E13
67	67	1910545-00	*** THIS ITEM IS NOT USED ***	-	
68	68	1911911-00	DEC 74S124 OSCILLATOR,DUAL VOLT	1	E34
69	69	1910547-00	74S153 MUX 1 OF 4 (DUAL)	1	E43
70	70	1910268-00	DEC 751073 RECEIVER,LINE,DUAL,	3	E44,E52,E62
71	71	1911341-00	75113 DRIVER,LINE,DUAL,MA	3	E48,E51,E57
72	72	1911469-00	DEC 8640 RECEIVER,BUS,QUAD,U	1	E50
73	73	1913474-00	9401 GENERATOR/CHECKER CR	1	E3
74	74	1911944-00	555CN TIMER,FUNCT.BLOCK	1	E1
75	75	1912541-00	VOLT.REG.FIX	1	Q10
76	76	2305687-00	*** THIS ITEM IS NOT USED ***	-	
77	77	1912834-00	LS112 FF-JK DUAL,EDGE TRIG	2	E7,E28
78	78	1911675-00	74S138 DECODER/DEMUX 3-8 LIN	1	E46

DIGITAL		TITLE	SECTION	SIZE	CODE	DOCUMENT NUMBER	REV
		RLV11 DISK CONTROL	1 OF 1	K	PL	M8013-0-DBP	H

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	REFERENCE DESIGNATOR
79	79		1912849-00	LS161 COUNTER, SYNCHR, 4BIT	3	E30, E40, E54
80	80		1811660-12	OSCILLATOR, CRYSTAL 8.2000MHZ	1	Y1
81	81		1209941-02	HEADER 100 40POS RT ANGLE	1	J1
82	82		1209941-03	HEADER RT ANGLE LEFT L	1	
83	83		1209941-04	HEADER RT ANGLE, RIGHT	1	
84	84		1213113-01	HANDLE, MODULE,	1	
85	85		9009185-00	JUMPER, WIRE, INSULATED, BLACK B	4	W1-W4
86	86		9000024-01	EYELET, POLLED FLANGE, .121 OD X	8	
87	87		9007791-00	TERM PCB 2POS SOLDER, TUPRET	3	TP1, TP2, TP3
88	88		23219A1-00	A1-07	1	E8
89	89		9007201-00	TRANSIPADS #10253	1	
90	90		9105740-55	WIRE(WRAP)30AWG UL1423	A/R	
91	91		1300249-00	150 1/2W 5% CC	2	R21, R23
92	92		1912746-00	DEC 74S37 NAND GATE-QUAD 2IN	1	E11
93	93	SEE NOTES	23017E2-00	E2-01	1	E49
94	94		1000010-00	39.0 MWF 100V 5%200PPM DM15S	1	C81
95	95	BLANK				
96	96		1302955-00	750 1/4W 1% RN55D-F 100PPM	1	R56
97	97		1910645-00	75452 DRIVER, PERIPH, DUAT,	1	E39
98	98		1303064-00	75 1/4W 1% RN55D-F 100PPM	1	R20

99 NOTE: PARTS SUBSTITUTION LIST
 100 NOTE: NOTE1 FOR 23017E2-00 IS PREFERRED, ALLOWABLE SUBSTITUTION IS 2305807-00
 101 NOTE: _____
 102 NOTE: _____

D	I	G	I	T	A	L	TITLE	SECTION	1	OF	1	SIZE	CODE	DOCUMENT NUMBER	REV
							RLV11 DISK CONTROL					K	PL	M8013-0-DBP	H

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	PER VARIATION	REFERENCE DESIGNATOR
					00		
1	1	D-MD-5012963-0-0	5012963-00	RLV11 BUS CONTROL		REF	
2	2		1012784-00	.047 MFD 50V +80-20% CER	26		C10-C35
3	3		1005306-00	6.8MFD 35V 10% S.TANT	5		C5,C6,C7,C8,C9
4	4		1012121-00	220.0 MMF 100V 1%200PPM MICA	1		C3
5	5		1000042-00	1000.0 MMF 100V 5%200PPM MICA	1		C4
6	6		1000019-00	150.0 MMF 100V 5%200PPM MICA	1		C2
7	7		1009312-00	.0047 MFD 100V 1% MYLR	1		C1
8	8		1211164-06	SW,DIP 1P 1A 10POS	1		E23
9	9		1211164-03	SW,DIP 1P 1A 7POS	1		E22
10	10		1213113-01	HANDLE,MODULE,	1		
11	11		1211813-00	/REPLACED BY 12-15006-02	1		XE41
12	12		1300229-00	100.0 .25 W 5.0 % CC	1		R8
13	13		1300295-00	330.0 .25 W 5.0 % CC	4		R3,R6,R13,R15
14	14		1301424-00	680.0 .25 W 5.0 % CC	4		R4,R7,R14,R16
15	15		1300365-00	1.0 K .25 W 5.0 % CC	18		R1,R9,R10,R18,R23-R36
16	16		1302873-00	261.0 .25 W 1.0 % RN55D-F10	1		R19
17	17		1300439-00	*** THIS ITEM IS NOT USED ***	-		
18	18		1305114-00	3.48 K .25 W 1.0 % RN55D-F10	1		R5
19	19		1304856-00	4.64 K .25 W 1.0 % RN55D-F10	1		R11
20	20		1302397-00	180.0 K .25 W 5.0 % CC	1		R17
21	21		1300479-00	10.0 K .25 W 5.0 % CC	3		R20,R21,R22
22	22		1304839-00	51.0 K .25 W 5.0 % CC	1		R12
23	23		1510705-00	XA 05 NPN 500MW SI 60 50 P	1		Q1
24	24		1510706-00	XA 55 PNP 500MW SI 60 50 P	1		Q2
25	25		1912799-00	LS00 NAND-GATE-QUAD 2IN,P	3		E24,E50,E75
26	26		1912801-00	LS02 NOR-GATE-QUAD 2IN	3		E4,E5,E51
27	27		1912803-00	GSD4 INVERTER GATE,HEL	3		E9,E49,E62
28	28		1912805-00	LS08 AND GATE-QUAD 2IN,PO	2		E2,E52
29	29		1912807-00	LS10 NAND GATE-TRIPLE 3IN	1		E44
30	30		1912808-00	LS11 AND GATE-TRIPLE 3IN	2		E11,E74

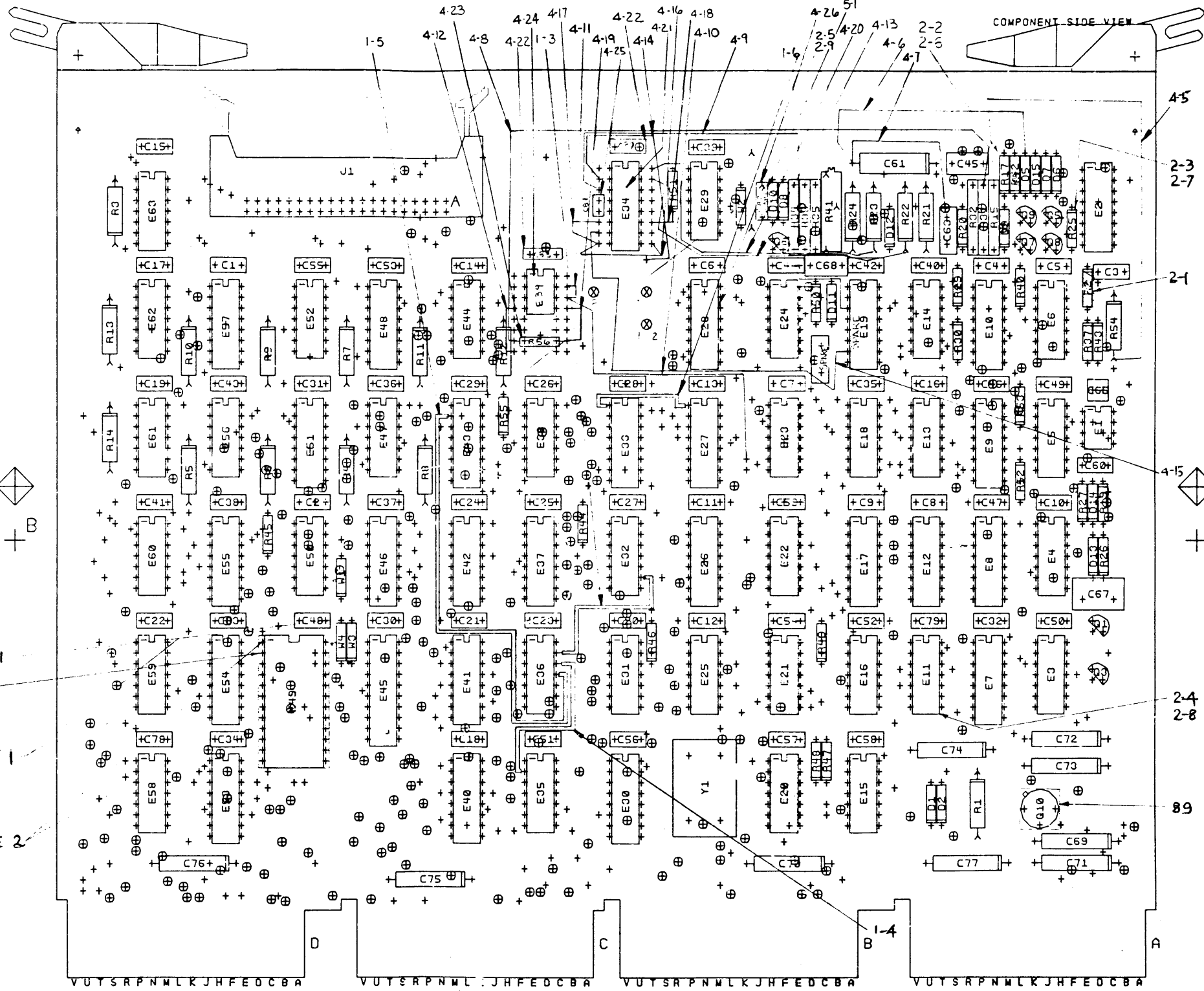
REVISION HISTORY		BASIC PART NO:	MBO14		DRN:	R. KOPPENAL	DATE:	24-APR-78				DIGITAL			
ENG!	ECD NUMBER	REV	SECTION A	OF A	CHK'D:	K. GLEASON	DATE:	24-APR-78				TITLE PARTS LIST			
J.A!	INIT	B	SECTION	VARIATION INDEX	CHK'D:	K. GLEASON	DATE:	24-APR-78				RLV11 BUS CONTROL			
E.R!	00002	C	[A]	00	DES.ENG:	R. DULTMAN	DATE:	24-APR-78				DOCUMENT NUMBER			
R.H!	MBO14-ML003	D	[B]		RESP.ENG.:	R. DULTMAN	DATE:	24-APR-78				SIZE!CODE! NUMBER ! REV			
IRH!	MBO14-ML004	E	[C]		MFG.ENG.:	B. KIRK	DATE:	24-APR-78				K ! PL ! MBO14-0-DBP ! E			
			[D]		ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:					FILE NAME: ! EDIT #!			
			[E]		D-UA-MBO14-0-0		B-DD-MBO14-0-0					Z2012E.PLS ! 12 !			
			[F]												
			[G]												
			[H]												
			[I]												
			[J]												
			[K]												
			[L]												
			[M]												
			[N]												

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LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	PER VARIATION	REFERENCE DESIGNATOR
					00		
31	31		1912813-00	LS27 NOR GATE-TRIPLE 3IN	1		E57
32	32		1912816-00	LS32 OR GATE-QUAD 2IN, POS	2		E3, E29
33	33		1912820-00	LS51 A-0-I GATE 2-WIDE 2I	2		E67, E40
34	34		1912824-00	LS74 FF-D DUAL, EDGE TRIGG	6		E68, E63, E35, E37, E10, E6
35	35		1912833-00	LS109 FF-JK DUAL, POS EDGE	1		E69
36	36		1912837-00	LS123 ONE SHOT-DUAL, RETRIG	1		E20
37	37		1912697-00	LS174 FF-D HEX W/CLEAR	1		E26
38	38		1912853-00	LS175 FF-D QUAD	2		E42, E43
39	39		1912866-00	LS295 SHIFT REG., 4BIT RIGH	8		E71, E54, E64, E38, E77, E31, E65, E32
40	40		1912868-00	LS299 SHIFT REG. 8-BIT UNI	2		E55, E61
41	41		1910155-00	DEC 7408 AND GATE, POS. QUAD 2I	1		E56
42	42		1911521-00	7432 OR GATE-QUAD 2IN, PD	1		E19
43	43		1910153-00	DEC 74150 MUX 1 OF 16	1		E45
44	44		1910650-00	74161 COUNTER, SYNCHR. UP	1		E46
45	45		1910096-00	DEC 74191 COUNTER, SYNCHR. UP/D	2		E53, E58
46	46		1910534-00	74504 INVERTER GATE-HEX 1I	1		E34
47	47		1910850-00	74574 FF-D DUAL (-45 VERSI	2		E15, E59
48	48		1911527-00	8097 BUFFER GATE-HEX 2INP	3		E30, E70, E76
49	49		1909705-00	DEC 8881 NAND GATE-QUAD 2IN 0	1		E8
50	50		1912951-00	DM 8556 COUNTER, BINARY, 4BIT	5		E17, E28, E36, E47, E48
51	51		1911579-00	8641 TRANSCEIVER, BUS, QUA	2		E1, E14
52	52		1912730-00	DC 003 INTERRUPT, 2 CIRCUIT	1		E16
53	53		1912729-00	DC 004 PROTOCOL, REG. SELECT	1		E12
54	54		1913040-00	DC 005 TRANSCEIVER 4BIT	4		E13, E21, E27, E33
55	55		1914035-00	DC 006 BIPOLAR, BUS ADDRESS	3		E18, E25, E60
56	56		1914038-00	DC 010 BIPOLAR, MEM ADDRESS, L	1		E7
57	57		1912810-00	LS20 NAND GATE-DUAL 4IN	1		E39
58	58		2113106-01	1K MOS RAM 250NS	4		E66, E72, E73, E78
59	59		23218A1-00	A1-07	1		E41
60	60		9000024-01	EYELET, ROLLED FLANGE, .121 OD X	8		
61	61		1301475-00	1.10 K .25 W 5.0 % CC	1		R2

D	I	G	I	T	A	L	TITLE	SECTION A	OF A	SIZE	CODE	DOCUMENT NUMBER	REV
							..LV11 BUS CONTROL			K	PL	M8014-0-DBP	E

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NOTE 1

NOTE 2

NOTES:

PART SUBSTITUTION LIST:

23-017E2-00: E49 PREFERRED

23-058B7-00: E49 SUBSTITUTE

1. WHEN USING 23-017E2-00 FOR E49 REMOVE W2 & W4 (W1 & W3 INSERTED)

2. WHEN USING 23-258B7-00 FOR E49 REMOVE W1 & W3 (W2 & W4 INSERTED)

CHK	CHANGE NO	REV	DATE	BY	APP
✓	1	1	11-17-77	R. HULTMAN	
✓	2	1	11-17-77	R. HULTMAN	
✓	3	1	11-17-77	R. HULTMAN	
✓	4	1	11-17-77	R. HULTMAN	
✓	5	1	11-17-77	R. HULTMAN	
✓	6	1	11-17-77	R. HULTMAN	
✓	7	1	11-17-77	R. HULTMAN	
✓	8	1	11-17-77	R. HULTMAN	
✓	9	1	11-17-77	R. HULTMAN	
✓	10	1	11-17-77	R. HULTMAN	

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

SIGNATURES	DATE	digital		
DRN. <i>R. Hultman</i>	11-17-77			
CHK'D. <i>R. Hultman</i>	11-17-77	TITLE RLVII DISK CONTROL		
ENC. <i>R. Hultman</i>	11-17-77			
PROJ. ENG. <i>R. Hultman</i>	11-17-77			
PROD. <i>R. Hultman</i>	11-17-77			
SCALE 2/1		SIZE CODE	NUMBER	REV
SHT. 1 OF 4		0 UA	M6013-C-0	H
NEXT HIGHER ASSY: B-00-M8013-0				

8

7

6

5

L1

4

3

2

1

4-4 4-1 4-2

CS*ABCDEFGHIJKLMNPRS

SIDE 1

digital

E63 E34 E29 E24 E19 E14 E10 E8 E2

J1

E39

V C

GND

VCC

E68

E20

E15

VIEWED FROM SIDE 1

REVISIONS		
CHK	CHANGE NO	DT.

TITLE: RLV II DISK CONTROL
 SCALE: 2:1 SHEET 2 OF 4
 SIZE: D UJA M8013-0-0
 NUMBER: H

DUAL MFC 17 X 11

8

7

6

5

4

3

2

1

8

7

6

5

4

3

2

1

4-3

D

C

B

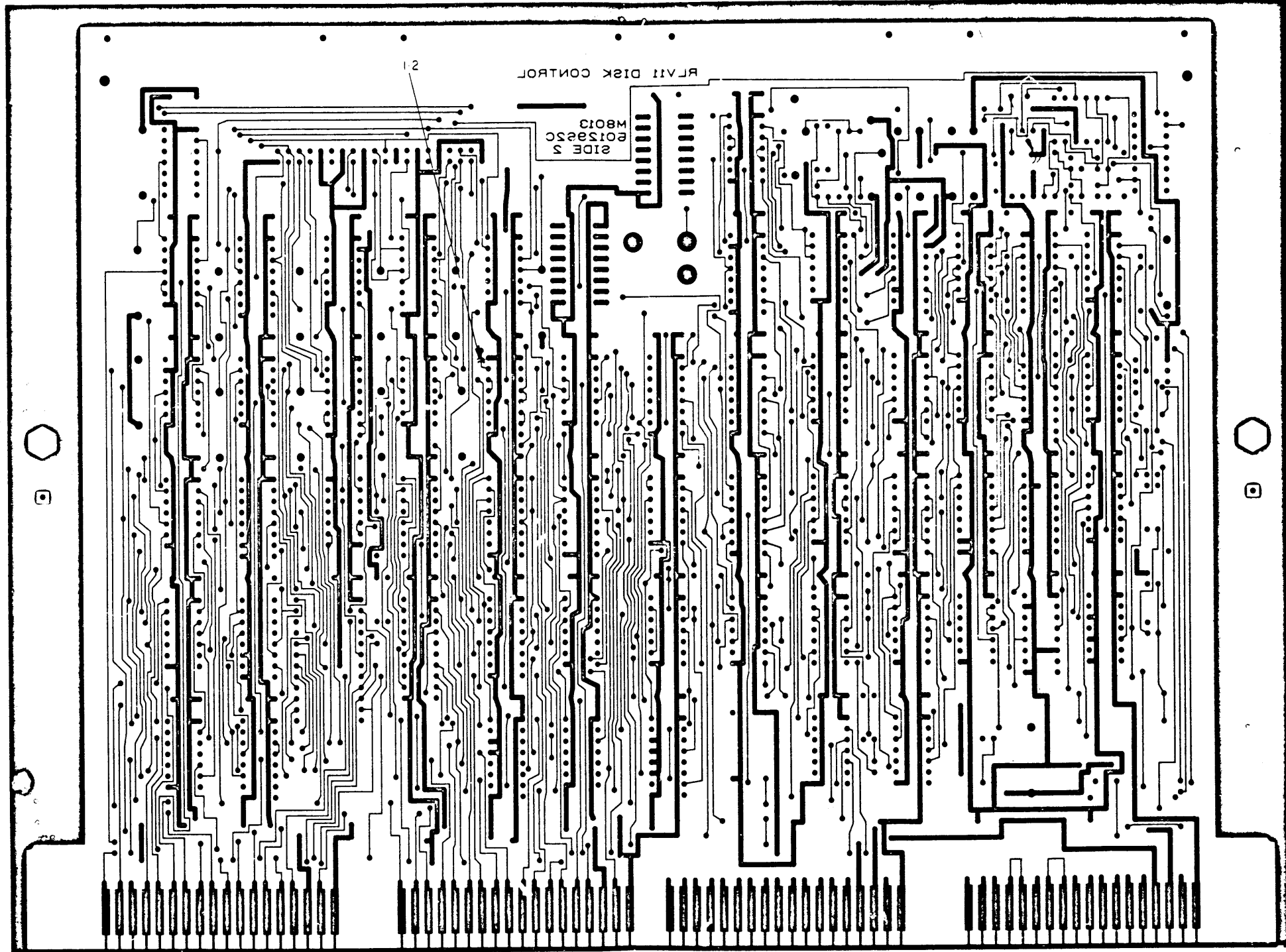
A

D

C

B

A



RLVII DISK CONTROL

SIDE 5
M8013
6013253C

12

VIEWED FROM SIDE 1

DUA M8013 C-1 H

H

REVISIONS		
CHG	CHANGE NO	REV

RLVII DISK CONTROL

DUA M8013-0-0

8

7

6

5

4

3

2

1

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REWORK INSTRUCTIONS:

ECO #1

- ETCH CUTS SIDE 1:
 1-1 BETWEEN E33-1 AND PTH TO THE RIGHT OF E33-16.
 ETCH CUTS SIDE 2:
 1-2 BETWEEN E43-2 AND PTH ABOVE AND TO THE LEFT OF E43-1
 WIRE ADDS SIDE 1:
 1-3 FROM E32-9 TO E36-13
 1-4 FROM E35-2 TO E36-12
 1-5 FROM E43-2 TO E36-11
 1-6 FROM E33-1 TO E27-1

ECO #2

- COMPONENT DELETES SIDE 1
 2-1. R2, 330~ (P/N, 13-00295-00)
 2-2. R17, 180~ (P/N, 13-01322-00)
 2-3. R25, 470~ (P/N, 13-00316-00)
 2-4. E11, 7437 (P/N, 1910091-00)
 2-5. E28, 745112 (P/N, 1910545-00)
 COMPONENT ADD SIDE 1
 2-6 R17, 100~ (P/N, 13-00229-00)
 2-7 R25, 220~ (P/N, 13-00271-00)
 2-8 E11, 74537 (P/N, 1912746-00)
 2-9 E28, 74LS112 (P/N, 1912834-00)

ECO #4

- CUT CUTS
 4-1 CUT ETCH AT LEFT SIDE OF C61, SIDE 1.
 4-2 CUT ETCH AT LINE TO R17 AND R15, AT TOP OF R17, SIDE 1.
 4-3 CUT ETCH AT LINE FROM TOP OF R15 TO FEED THRU UNDER R31, SIDE 2.
 4-4 CUT ETCH AT E34-16 BETWEEN E34 AND R51 NEAREST R51, SIDE: 1.
 WIRE ADDS:
 4-5 BOTTOM OF R54 TO TOP OF R15.
 4-6 TOP OF D5 (ANODE) TO LEFT SIDE OF C61 (TWO WIRES, REF: REWORK STEP 4-7).
 4-7 LEFT SIDE OF C61 TO TOP OF C63 (REF: REWORK STEP 4-6).
 4-8 TOP OF R31 TO E39 LOCATION, PIN 7 (REF: REWORK STEP 4-23).
 4-9 E19 LOCATION, PIN 3 TO E34 LOCATION, PIN 3 (ROUTE WIRE UP BETWEEN R34 AND R32 THEN LEFT OVER R29 AND E34).
 4-10 FEED THRU TO THE LEFT OF E23, PIN 6 TO E39 LOCATION, PIN 14 (ROUTE WIRE UP TO C7 THEN LEFT TO C26 THEN UP) (TWO WIRES, REF: REWORK STEP 4-11).
 4-11 E39 LOCATION, PIN 14 TO E39 LOCATION, PIN 15 (REF: REWORK STEP: 4-10).
 4-12 E39 LOCATION, PIN 4 TO E39 LOCATION, PIN 8.
 4-13 BOTTOM OF R22 TO E34, PIN 15 (ROUTE WIRE BELOW R41 AND E29).
 4-14 E34 PIN 2 TO VC1 AT FEED THRU BELOW E34, PIN 9 (ROUTE WIRE ABOVE E34 THEN DOWN TO FEED THRU).
 4-15 E34, PIN 7 TO E19 LOCATION, PIN 7.
 4-16 E34, PIN 8 TO E34, PIN 9 (TWO WIRES, REF: REWORK STEP 4-11).
 4-17 E34, PIN 8 TO E34, PIN 6 (REF: REWORK STEP 4-16).
 4-18 E34, PIN 11 TO BOTTOM OF R51.

REWORK INSTRUCTIONS CONT.

ECO #4 (CONT.)

- 4-19 E39 LOCATION, PIN 13 TO E39 LOCATION, PIN 10 (REF: REWORK STEP 4-23).
 4-20 BOTTOM OF R23 TO E34, PIN 16.
 COMPONENT ADDS: (* ONLY THESE INSTRUCTIONS SHOWN ON DRAWING)
 * 4-21 E34 (P/N 19-11911-00) 745124.
 * 4-22 C80, C83 (P/N 10-12312-01) ABOVE E34 LOCATION AND E39 LOCATION.
 * 4-23 R56 (P/N 13-02955-00) AT E39 LOCATION, PINS 7 AND 10 (REF: REWORK STEP 4-8 AND 4-18).
 * 4-24 E39 (P/N 19-10645-00) AT PINS 1-4, 13-16.
 * 4-25 C81 (P/N 10-00010-00) AT LOCATION E34 PINS 4 AND 5.
 * 4-26 C82 (P/N 10-00020-00) AT LEFT OF D10 FEED THRU TO TOP & BOTTOM.
 4-27 R20 (P/N 13-03064-00)
 4-28 R42 & R50 (P/N 13-00316-00)
 4-29 R31 (P/N 13-05125-00)
 4-30 R17 (P/N 13-02858-00).
 4-31 R34 (P/N 13-14187-00).
 4-32 R33 (P/N 13-12923-00).
 4-33 R35 (P/N 13-05145-00).
 4-34 R32 (P/N 13-13592-00).
 4-35 R54 (P/N 13-00285-00).
 4-36 R21 & R23 (P/N 13-00249-00)
 4-37 C61 (P/N 10-00050-00)
 4-38 C45, C68 (P/N 10-12312-01)

COMPONENT DELETES:

- 4-39 R31 (P/N 13-03047-00)
 4-40 R17 (P/N 13-00229-00)
 4-41 R20 (P/N 13-01322-00)
 4-42 R34 (P/N 13-04862-00)
 4-43 R33 (P/N 13-04858-00)
 4-44 R35 (P/N 13-02645-00)
 4-45 R32 (P/N 13-10630-00)
 4-46 R54 (P/N 13-00228-00)
 4-47 R21 & R23 (P/N 13-00260-00)
 4-48 C61 (P/N 10-05784-00)
 4-49 C45 & C68 (P/N 10-10274-00)
 4-50 E19 (P/N 19-11911-00).
 4-51 C62 (P/N 10-00011-00)
 4-52 R42 & R50 (P/N 13000365-00)

ECO #5

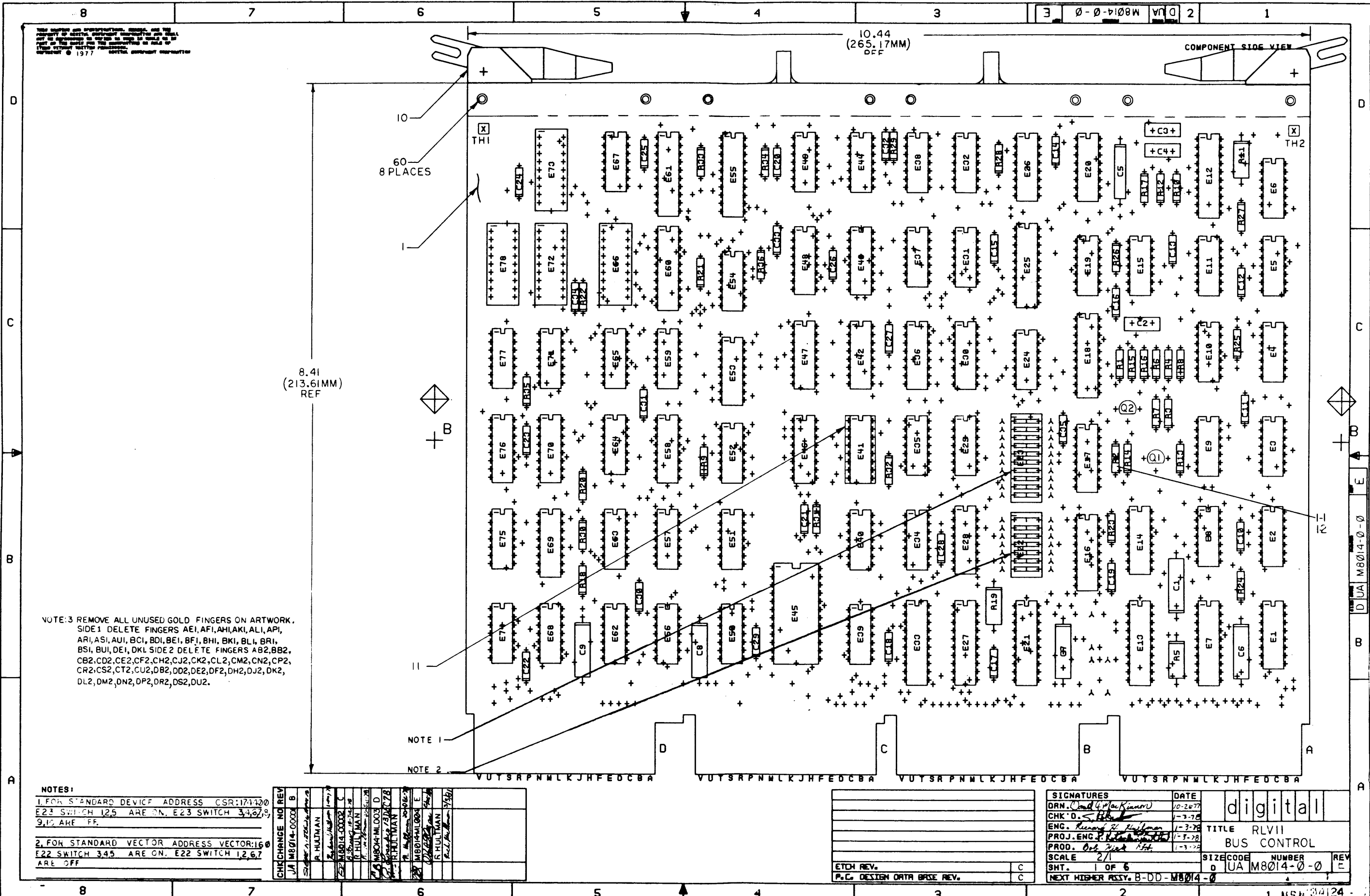
- COMPONENT DELETE
 5-1 C82 (P/N 10-00020-00)

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	RL VII DISK CONTROL	SIZE CODE	DUA M8013-0-0	NUMBER		REV.	H
SCALE		SHEET	4 OF 4	DIST.			

DUA M8013-0-0
 SHEET 4 OF 4
 REV. H

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NOTE: 3 REMOVE ALL UNUSED GOLD FINGERS ON ARTWORK. SIDE 1 DELETE FINGERS AE1, AF1, AH1, AK1, AL1, AP1, AR1, AS1, AU1, BC1, BD1, BE1, BF1, BH1, BK1, BL1, BR1, BS1, BU1, DE1, DK1. SIDE 2 DELETE FINGERS AB2, BB2, CB2, CD2, CE2, CF2, CH2, CJ2, CK2, CL2, CM2, CN2, CP2, CR2, CS2, CT2, CU2, DB2, DD2, DE2, DF2, DH2, DJ2, DK2, DL2, DM2, DN2, DP2, DR2, DS2, DU2.

NOTES:

- FOR STANDARD DEVICE ADDRESS CSR:171420
E23 SWITCH 1,2,5 ARE ON. E23 SWITCH 3,4,6,7,8,9,10 ARE OFF.
- FOR STANDARD VECTOR ADDRESS VECTOR:160
E22 SWITCH 3,4,5 ARE ON. E22 SWITCH 1,2,6,7 ARE OFF.

CHG	NO	REV	DATE	BY	CHK'D
JA	M8014-0000	B		R. HULTMAN	
				R. HULTMAN	
				R. HULTMAN	
				R. HULTMAN	
				R. HULTMAN	
				R. HULTMAN	
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				R. HULTMAN	

SIGNATURES		DATE	digital	
DRN	<i>[Signature]</i>	10-26-77		
CHK'D	<i>[Signature]</i>	1-3-78		
ENG.	<i>[Signature]</i>	1-3-78		
PROJ. ENG.	<i>[Signature]</i>	1-3-78		
PROD.	<i>[Signature]</i>	1-3-78		
SCALE	2/1		TITLE	RVII
SHT.	1 OF 6			BUS CONTROL
NEXT HIGHER ASSY. B-DD-M8014-0			SIZE	CODE
			D	UA M8014-0-0
			NUMBER	REV
				E

1 D UA M8014-0-0 2 E

1 D UA M8014-0-0 B

1 D UA M8014-0-0 E

1 D UA M8014-0-0 A

8 7 6 5 4 3 2 1

D

C

B

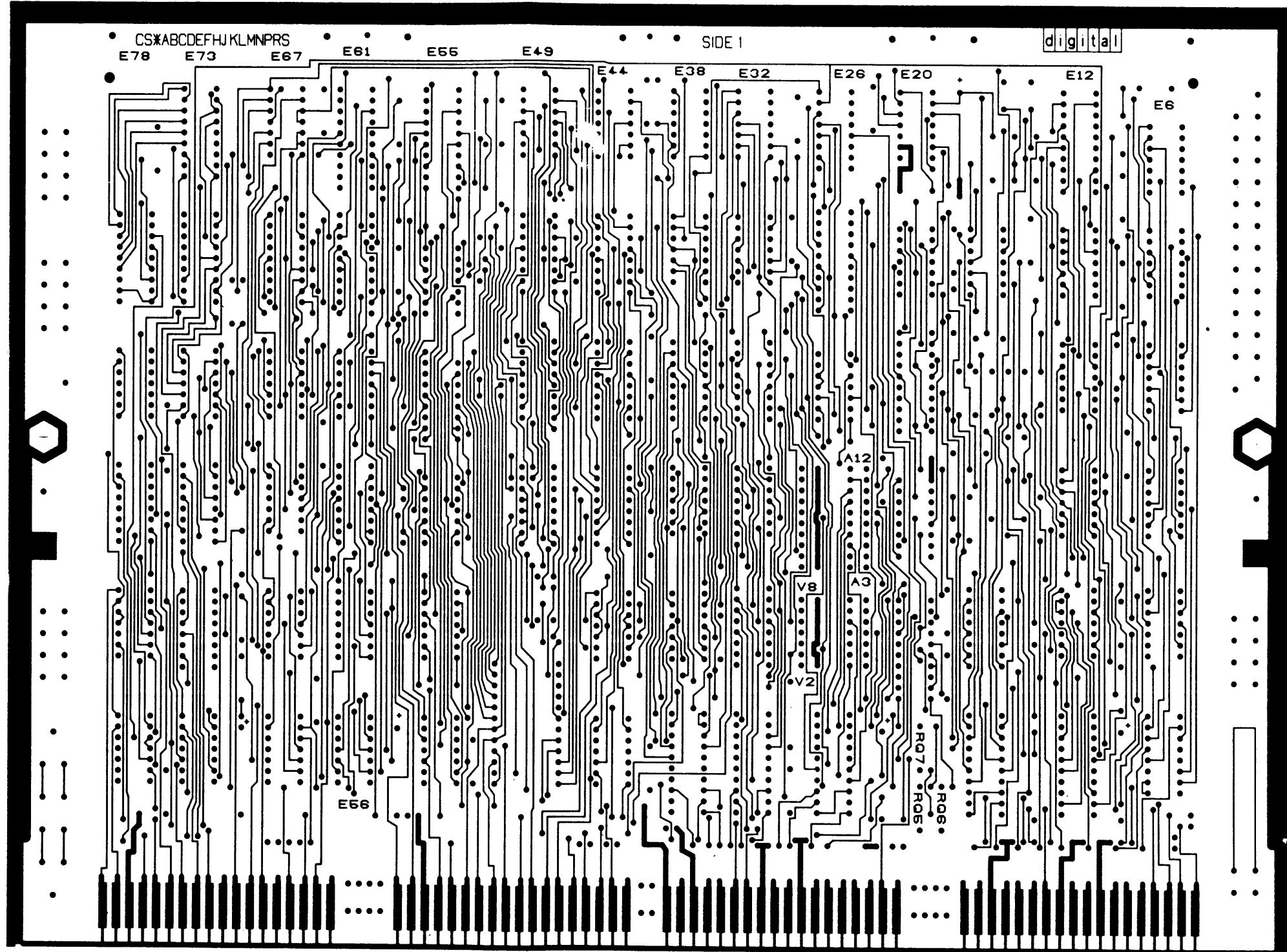
A

8 7 6 5 4 3 2 1

REVISED
N8014
8012962 C

DUA M 2/11-0-0 2

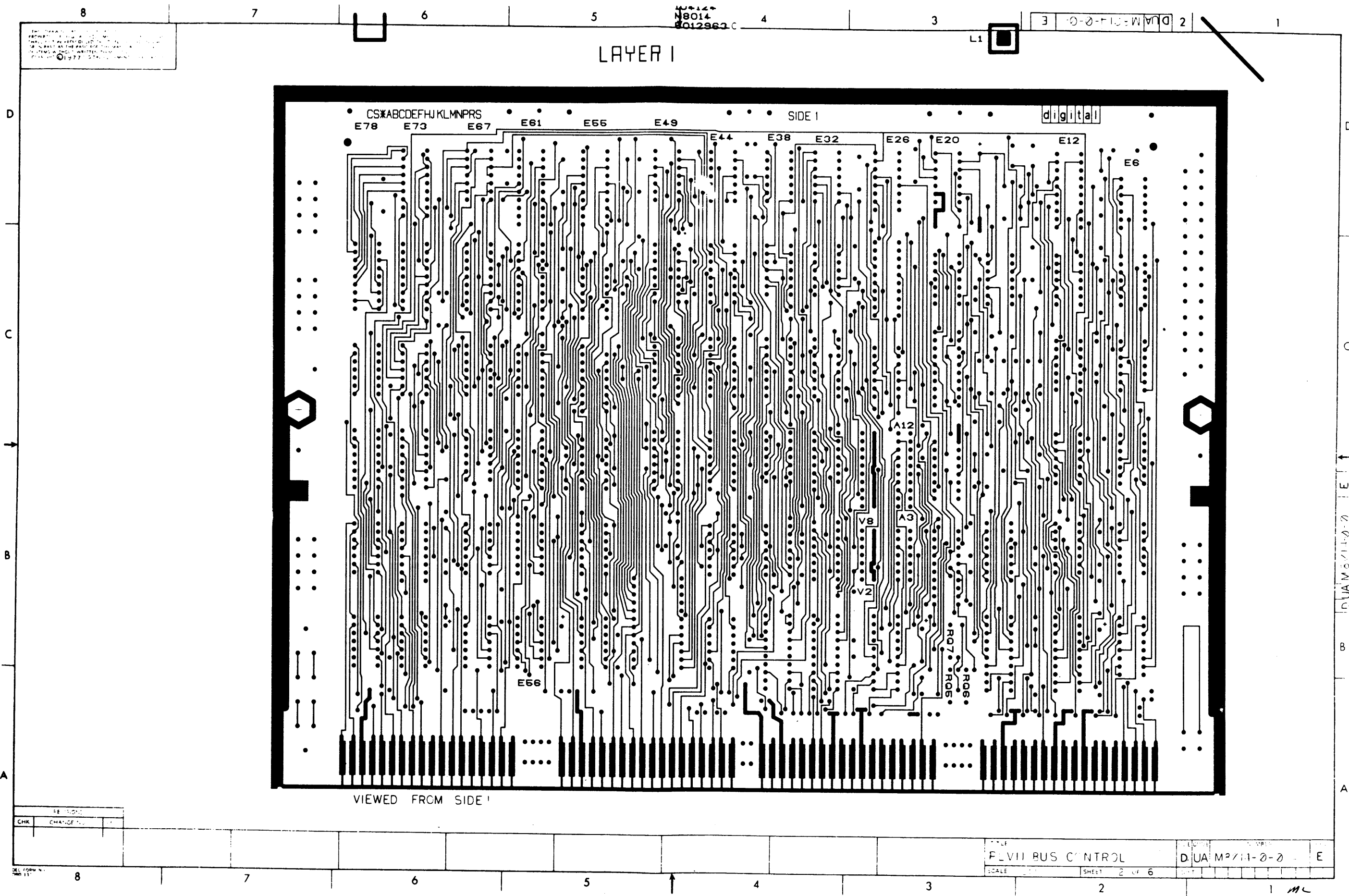
LAYER 1



VIEWED FROM SIDE 1

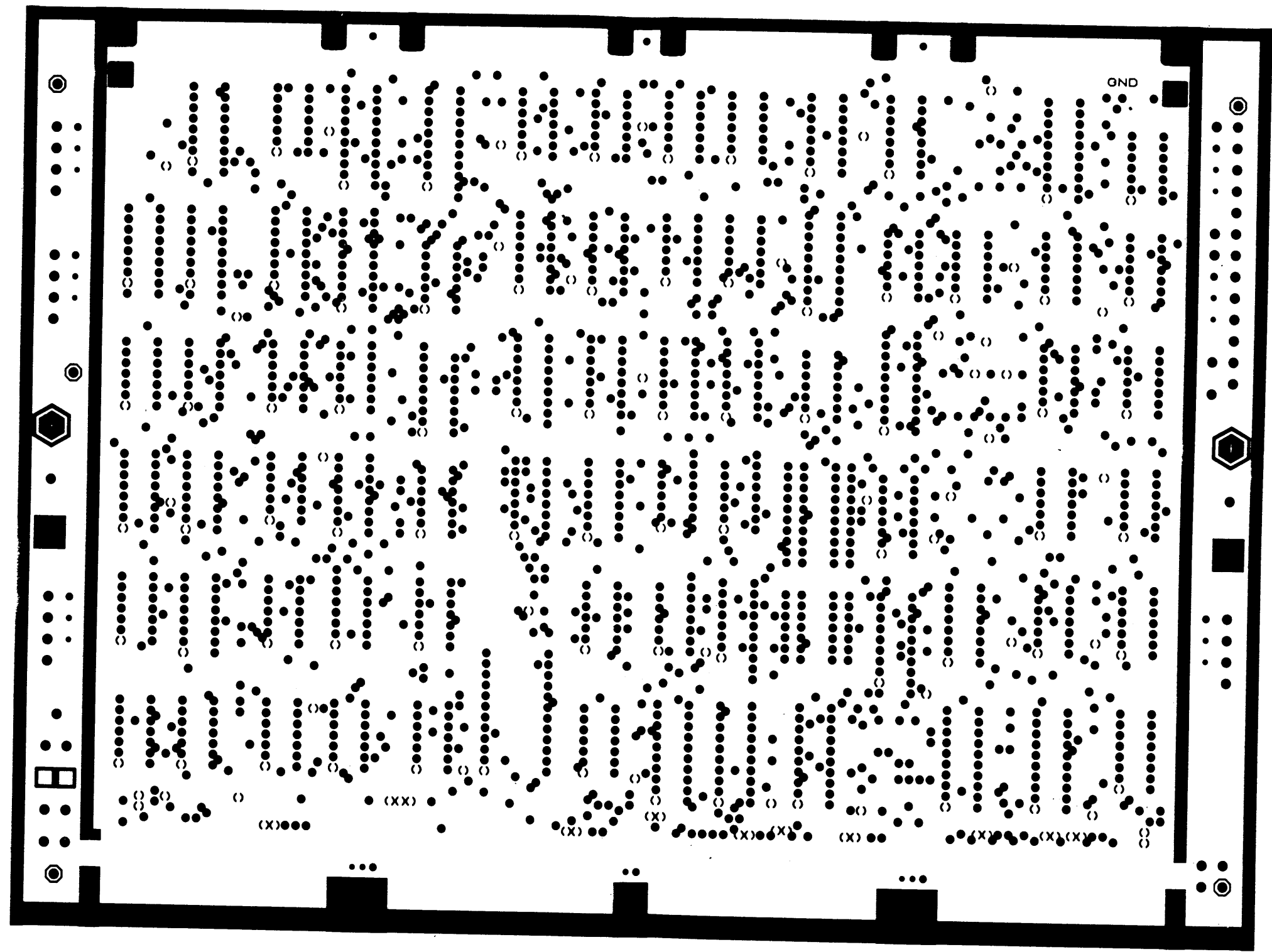
CHK	CHANGED	
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FLV11 BUS CONTROL
 DUA M 2/11-0-0 E
 SHEET 2 OF 6



LAYER 12

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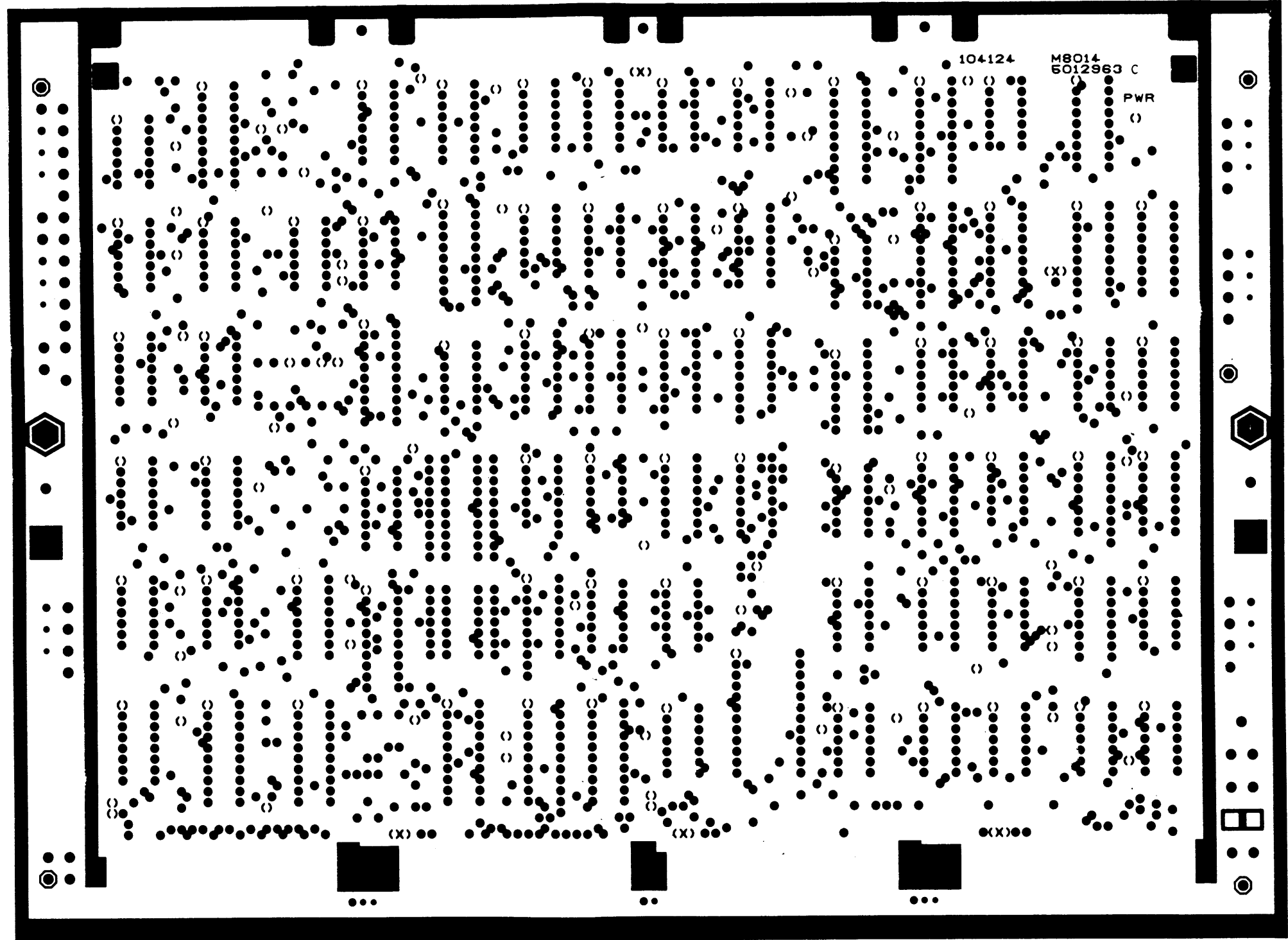
VIEWED FROM SIDE 1

REV	DATE	BY	CHKD

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REVISION

DUA M8014-0-0-2 E



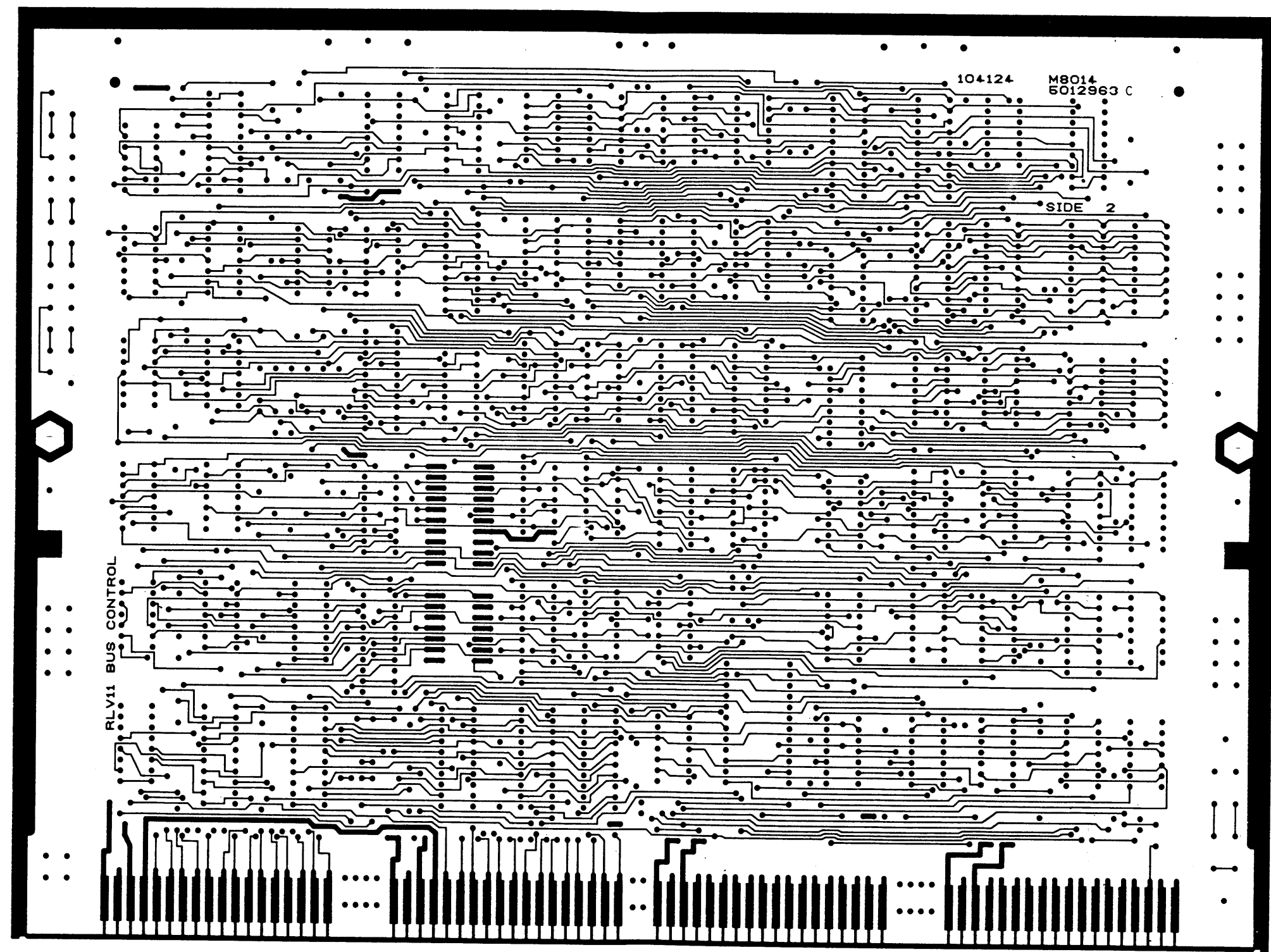
VIEWED FROM SIDE 2

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV
REVII BUS CONTROL	DUA	M8014-0-0-	E
SCALE 2:1	SHEET 4 OF 6	DIST	

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H 834AJ



VIEWED FROM SIDE 2

REVISIONS		
CHK	CHANGE NO	DATE

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REV. E
 NUMBER M8014-0-0
 SIZE CODE DUA

REWORK INSTRUCTIONS:

- ECO #1:
 COMPONENT DELETE SIDE 1:
 1-1 DELETE R2, 3.3K (PM 1300439-00)
 COMPONENT ADDS SIDE 1:
 1-2 ADD R2, 1.1K (PM 1301975-00)

D

D

C

C

B

B

A

A

REV. E
 NUMBER M8014-0-0
 SIZE CODE DUA

REVISIONS		
CHK	CHANGE NO.	REV.

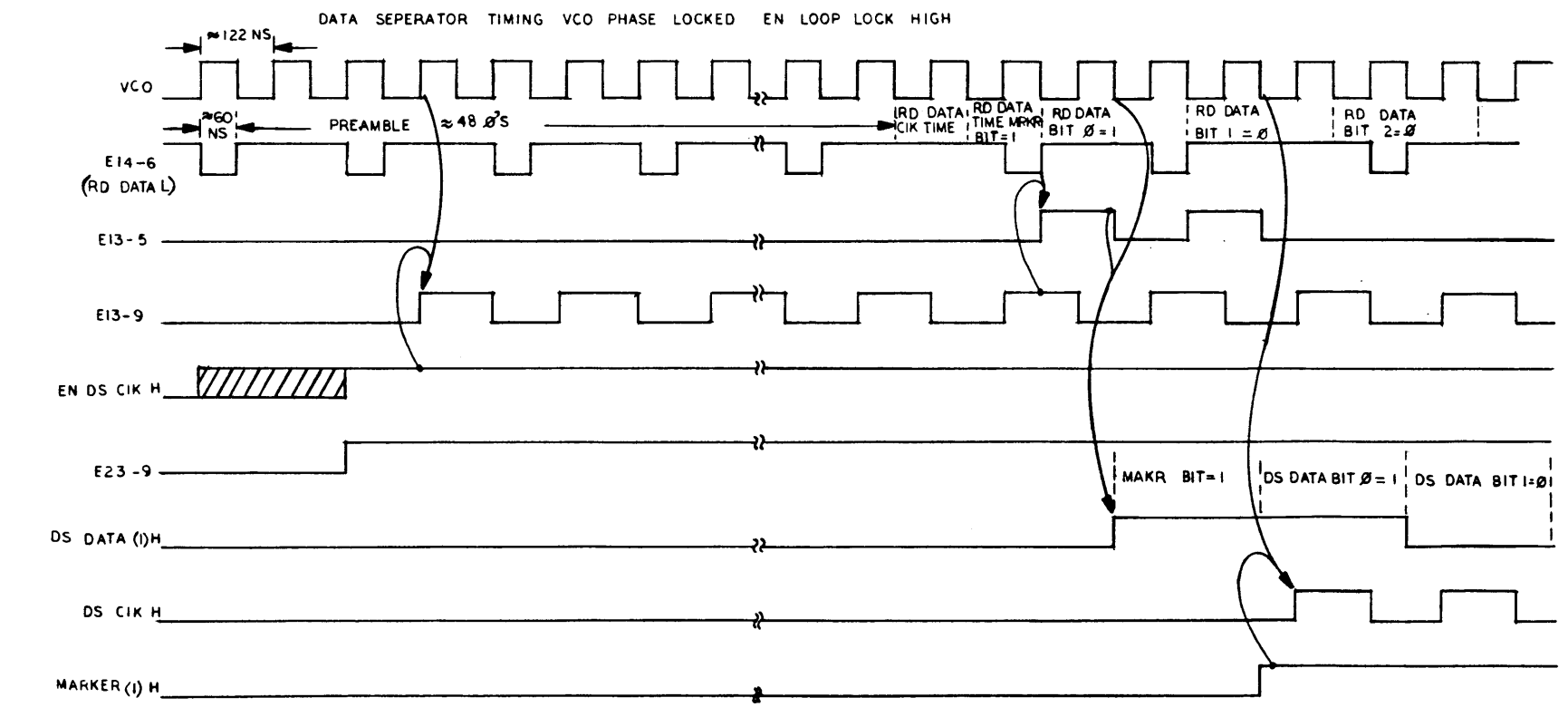
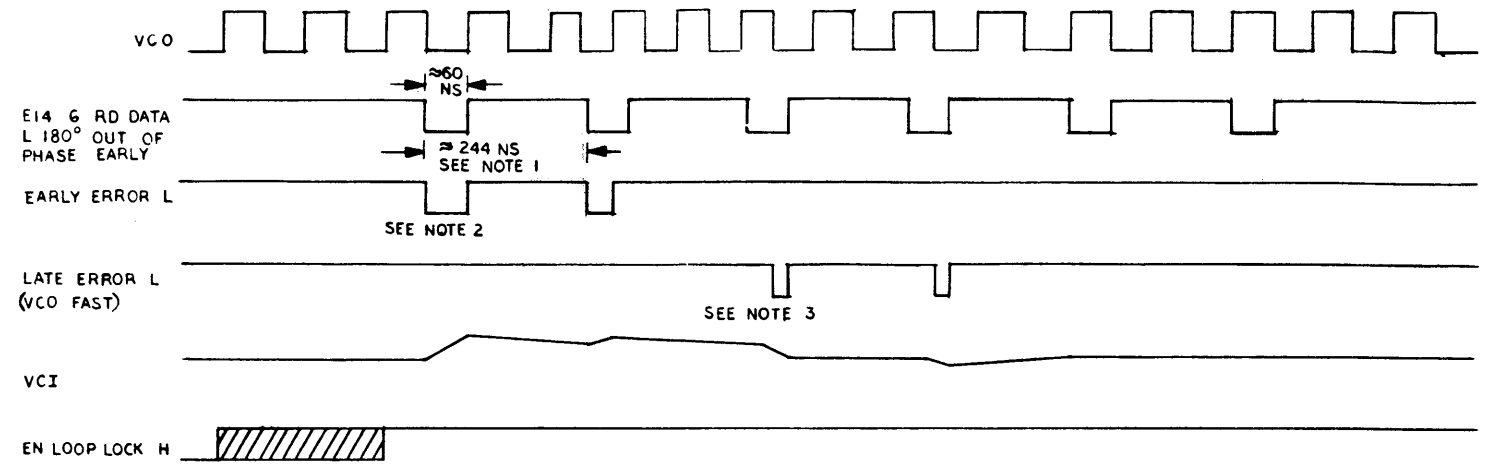
TITLE	RLVII BUS CONTROL	SIZE CODE	DUA	NUMBER	M8014-0-0	REV.	E
SCALE	2/1	SHEET	6	OF	6	DIST.	

DEC 1980

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- NOTE
1. 244 NS BIT RATE IS DEPENDENT UPON SPEED VARIATIONS AT THE DRIVE.
 2. EARLY ERRORS CAUSE THE VCO CLOCK RATE TO INCREASE. VCO IS RUNNING SLOWER THAN READ DATA. POS PLS @ VCI
 3. LATE ERRORS CAUSE THE VCO CLOCK RATE TO DECREASE. VCO IS RUNNING FASTER THAN READ DATA. NEG: PLS @ VCI



DRN'D: Deighton 12/28/78	FIRST USED ON	RLVII	digital
CHK'D: A. H. H. 1/29/79	TITLE	TIMING DIAGRAM (RLVII)	
ENGL: R. W. H. 3/29/78	SIZE	D	TD
PROJ. ENG.: H. J. 7/24/78	NUMBER	RLVII-0-4	
PROD. H.: S. L. 5/22/78	SCALE		
NEXT HIGHER ASSY.	SHEET	OF	DIST.
E-UA-RLVII-0-0			