

LOGIC DIAGRAM MANUAL
7370/148

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COMPUTER PRODUCTS

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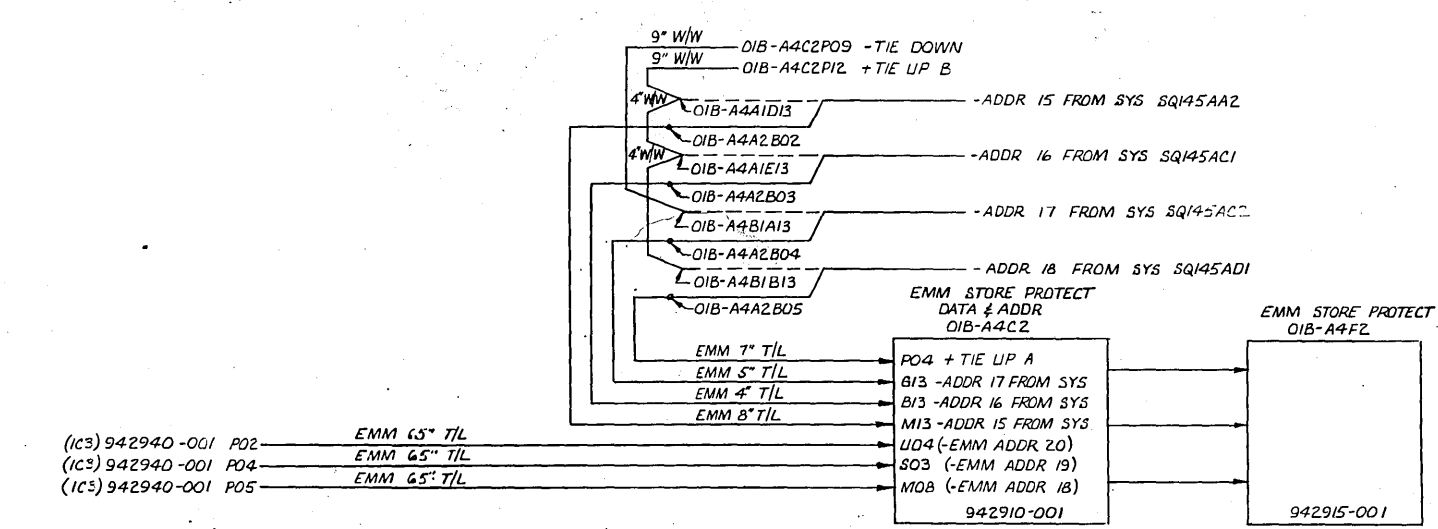
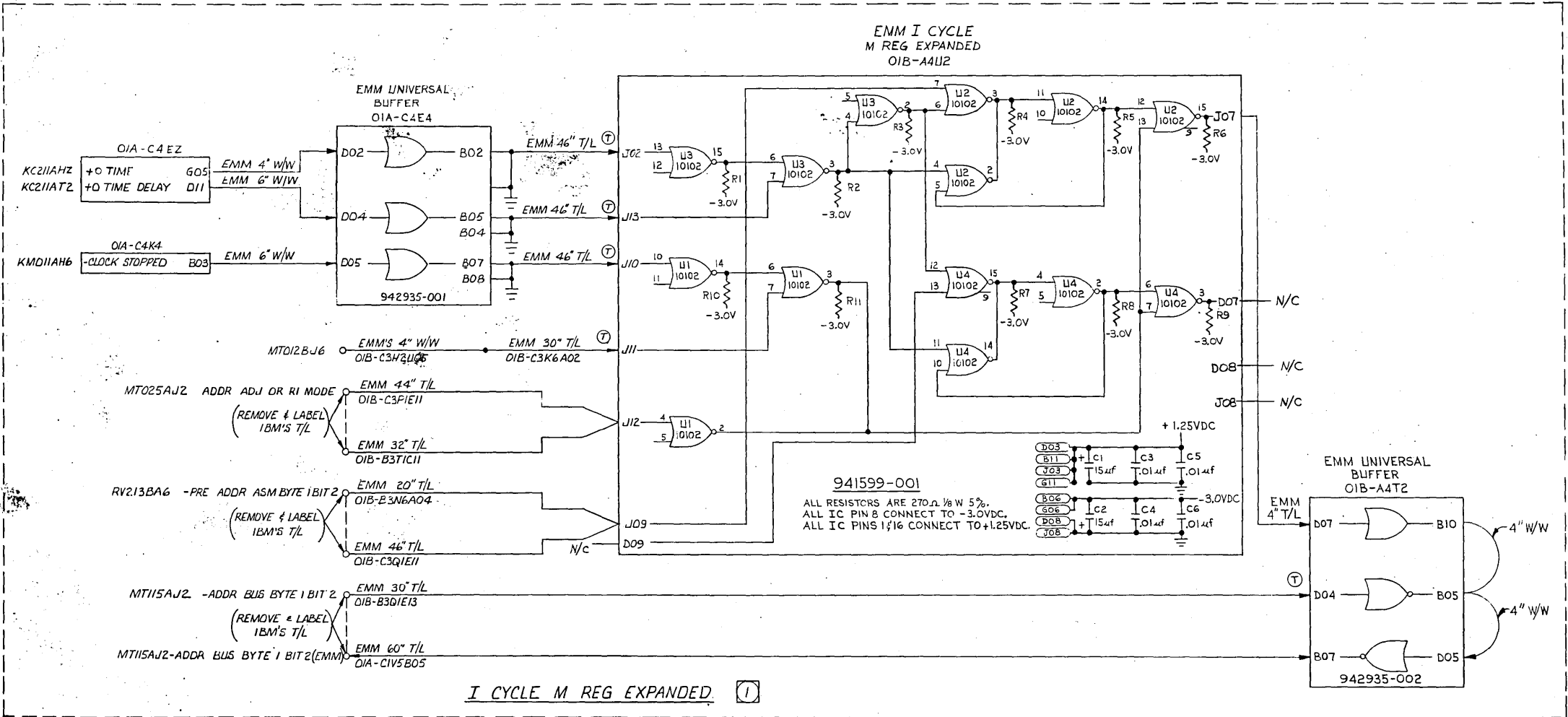
April 18, 1978

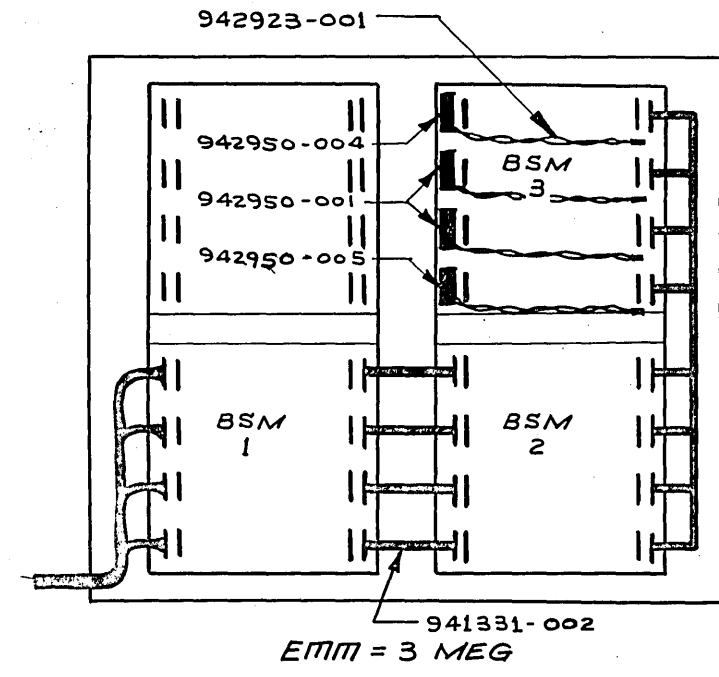
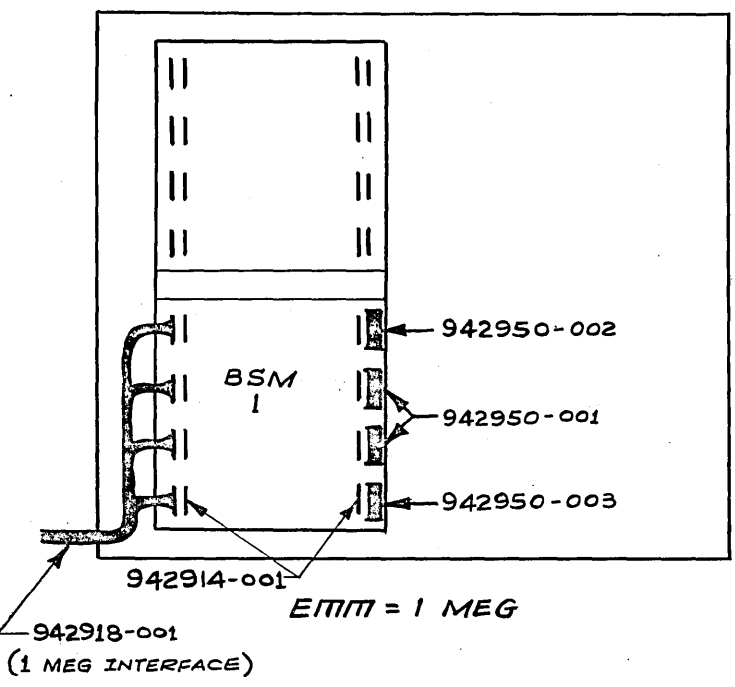
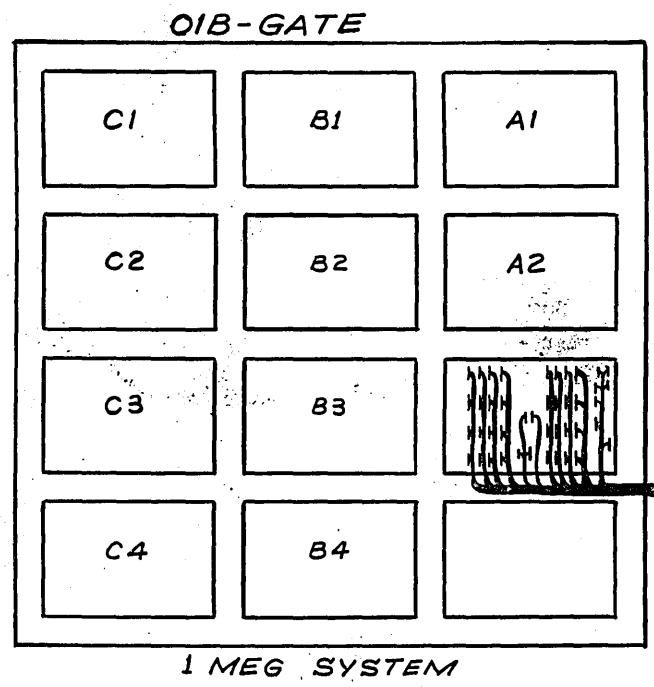
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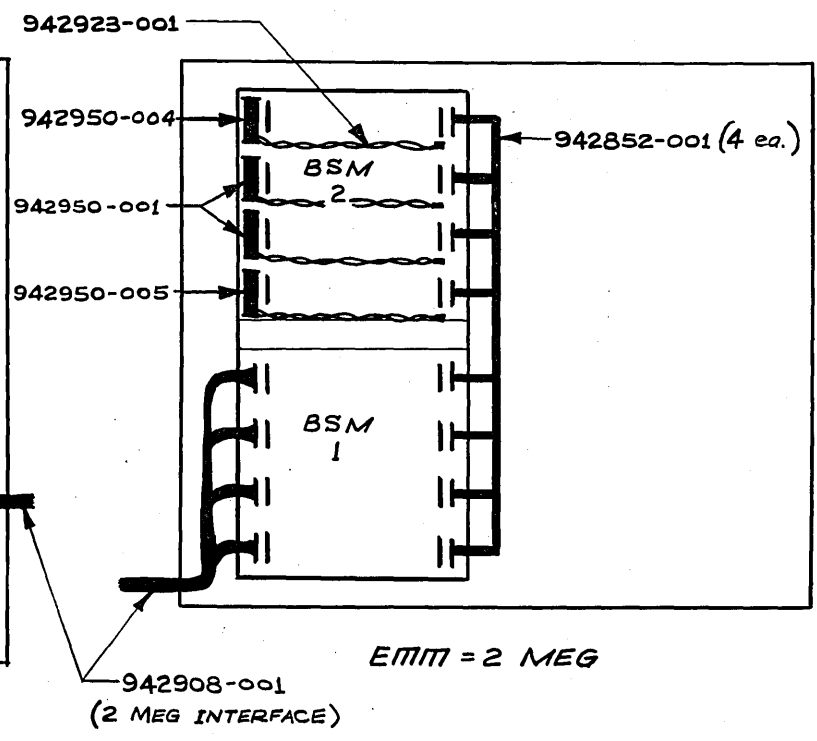
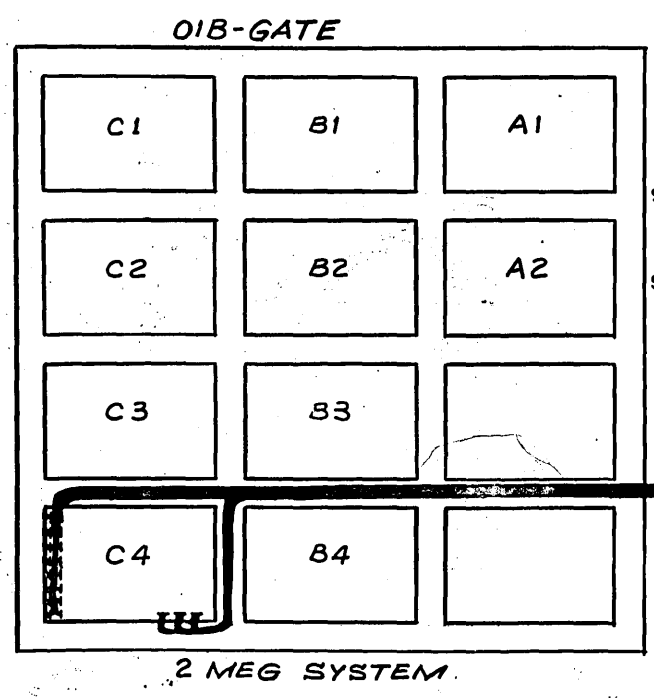
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I = TERMINATORS



LTR	DESCRIPTION	DATE	APPROVED
A	PRODUCTION RELEASE	1-27-78	
REVISIONS			

INTERFACE CABLE LAYOUT
& EMM BSM LOCATIONS

DIST. NO.	DWG. NO. 942687
1400	SHEET 1 OF 3

SIGNAL NAME (-M)	ALD SOURCE	(2 MEG SYS)	(1 MEG SYS)	COLUMN 1 (1 MEG)			COLUMN 2 (1 MEG)			COLUMN 3 (1 MEG)			COLUMN 4 (1 MEG)		
		CPU END TRILEAD IDENTIFIER	CPU END TRILEAD IDENTIFIER												
BIT 00		OIB-C4V3D05	OIB-A3T2U11	J51-20	J188-057	J36-34	J55-08	J028-057	J32-46	J23-46	J02A-057	J46-08	J27-34	J18A-057	J42-20
01		-C4V3D03	-A3T2U09	J51-19	J188-055	J36-33	J55-07	J028-055	J32-45	J23-45	J02A-055	J46-07	J27-33	J18A-055	J42-19
02		-C4V3D04	-A3T2J11	J51-18	J188-053	J36-32	J55-06	J028-053	J32-44	J23-44	J02A-053	J46-06	J27-32	J18A-053	J42-18
03		-C4V3D02	-A3T2J09	J51-17	J188-051	J36-31	J55-05	J028-051	J32-43	J23-43	J02A-051	J46-05	J27-31	J18A-051	J42-17
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08		-C4V2B07	-A3S2U11	J51-12	J168-057	J34-50	J53-24	J048-057	J32-38	J23-38	J04A-057	J44-24	J25-50	J16A-057	J42-12
09		-C4V2B05	-A3S2U09	J51-11	J168-055	J34-49	J53-23	J048-055	J32-37	J23-37	J04A-055	J44-23	J25-49	J16A-055	J42-11
10		-C4V2B06	-A3S2J11	J51-10	J168-053	J34-48	J53-22	J048-053	J32-36	J23-36	J04A-053	J44-22	J25-48	J16A-053	J42-10
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44		-C4V4B04	-A3G2P12	J53-20	J058-057	J32-34	J51-08	J158-057	J34-46	J25-46	J15A-057	J42-08	J23-34	J05A-057	J44-20
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52		-C4V4B12	-A3F2P12	J55-04	J038-057	J32-42	J51-16	J178-057	J36-30	J27-30	J17A-057	J42-16	J23-42	J03A-057	J46-04
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54		-C4V5B02	-A3F2D07	J55-02	J038-053	J32-40	J51-14	J178-053	J36-28	J27-28	J17A-053	J42-14	J23-40	J03A-053	J46-02
55		-C4V5B03	-A3F2D06	J55-01	J038-051	J32-39	J51-13	J178-051	J36-27	J27-27	J17A-051	J42-13	J23-39	J03A-051	J46-01

EMM=1 MEG, BSM 1=COLUMN 1.

EMM=2 MEG, BSM 1=COLUMN 1,
BSM 2=COLUMN 4.

EMM=3 MEG, BSM 1=COLUMN 1,
BSM 2=COLUMN 2,
BSM 3=COLUMN 3.

EMM=4 MEG, BSM 1=COLUMN 1,
BSM 2=COLUMN 2,
BSM 3=COLUMN 3,
BSM 4=COLUMN 4.

SIGNAL NAME (-M)	ALD SOURCE	IBM (2 MEG SYS)	IBM (1 MEG SYS)	COLUMN 1 (1 MEG)			COLUMN 2 (1 MEG)			COLUMN 3 (1 MEG)			COLUMN 4 (1 MEG)				
		CPU END TRILEAD IDENTIFIER	CPU END TRILEAD IDENTIFIER														
BIT 56		01B-C4V5B04	01B-A3Q2P12	J55-08	J02B-057	J32-46	J51-20	J18B-057	J36-34	J27-34	J18A-057	J42-20	J23-46	J02A-057	J46-08		
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58		-C4V5B06	-A3Q2D07	J55-06	J02B-053	J32-44	J51-18	J18B-053	J36-32	J27-32	J18A-053	J42-18	J23-44	J02A-053	J46-06		
59		-C4V5B07	-A3Q2D06	J55-05	J02B-051	J32-43	J51-17	J18B-051	J36-31	J27-31	J18A-051	J42-17	J23-43	J02A-051	J46-05		
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62		-C4V5B10	-A3J2D07	J55-10	J01B-053	J32-48	J51-22	J19B-053	J36-36	J27-36	J19A-053	J42-22	J23-48	J01A-053	J46-10		
63		-C4V5B08	-A3J2D06	J55-09	J01B-051	J32-47	J51-21	J19B-051	J36-35	J27-35	J19A-051	J42-21	J23-47	J01A-051	J46-09		
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C1		-C4V5B13	-A3M2P02	J53-03	J09B-055	J30-41	J49-15	J11B-055	J34-29	J25-29	J11A-055	J40-15	J21-41	J09A-055	J44-03		
C2		-C4V4D02	-A3M2P04	J53-02	J09B-053	J30-40	J49-14	J11B-053	J34-28	J25-28	J11A-053	J40-14	J21-40	J09A-053	J44-02		
C4		-C4V5B12	-A3M2P05	J51-24	J19B-057	J36-38	J55-12	J01B-057	J32-50	J23-50	J01A-057	J46-12	J27-38	J19A-057	J42-24		
C8		-C4V4D04	-A3N2S09	J53-01	J09B-051	J30-39	J49-13	J11B-051	J34-27	J25-27	J11A-051	J40-13	J21-39	J09A-051	J44-01		
C16		-C4V4D05	-A3N2M04	J51-22	J19B-053	J36-36	J55-10	J01B-053	J32-48	J23-48	J01A-053	J46-10	J27-36	J19A-053	J42-22		
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D 04		-C4C6A04	-A3B2B12	J49-06	J10B-115	J30-32	J49-06	J10B-115	J30-32	J21-32	J10A-115	J40-06	J21-32	J10A-115	J40-06		
R 05		-C4C6B04	-A3B2D13	J49-11	J10B-125	J30-37	J49-11	J10B-125	J30-37	J21-37	J10A-125	J40-11	J21-37	J10A-125	J40-11		
E 06		-C4A6E02	-A3C2J02	J49-03	J10B-107	J30-29	J49-03	J10B-107	J30-29	J21-29	J10A-107	J40-03	J21-29	J10A-107	J40-03		
S 07		-C4B6A02	-A3C2J04	J49-04	J10B-109	J30-30	J49-04	J10B-109	J30-30	J21-30	J10A-109	J40-04	J21-30	J10A-109	J40-04		
S 08		-C4B6B02	-A3C2J05	J49-12	J10B-127	J30-38	J49-12	J10B-127	J30-38	J21-38	J10A-127	J40-12	J21-38	J10A-127	J40-12		
S 09		-C4B6A04	-A3C2J06	J49-10	J10B-123	J30-36	J49-10	J10B-123	J30-36	J21-36	J10A-123	J40-10	J21-36	J10A-123	J40-10		
S 10		-C4B6B04	-A3C2J07	J49-09	J10B-121	J30-35	J49-09	J10B-121	J30-35	J21-35	J10A-121	J40-09	J21-35	J10A-121	J40-09		
- 11		-C4C6C04	-A3C2J11	J49-02	J10B-105	J30-28	J49-02	J10B-105	J30-28	J21-28	J10A-105	J40-02	J21-28	J10A-105	J40-02		
- 12		-C4C6D04	-A3C2J12	J49-07	J10B-117	J30-33	J49-07	J10B-117	J30-33	J21-33	J10A-117	J40-07	J21-33	J10A-117	J40-07		
- 13		-C4C6E04	-A3C2J10	J55-22	J10B-185	J36-48	J55-22	J10B-185	J36-48	J27-48	J10A-185	J46-22	J27-48	J10A-185	J46-22		
- 14		-C4B6C02	-A3B2B10	J55-23	J10B-187	J36-49	J55-23	J10B-187	J36-49	J27-49	J10A-187	J46-23	J27-49	J10A-187	J46-23		
- 15		-C4B6D02	-A3B2S09	J55-24	J10B-189	J36-50	J55-24	J10B-189	J36-50	J27-50	J10A-189	J46-24	J27-50	J10A-189	J46-24		
+ 16		-C4B6D04	-A3B2P12	J55-19	J54A-05	J54A-01	J10B-179	J36-45	J55-19	J54A-05	J54A-01	J10B-179	J36-45	J55-19	J54A-05	J54A-01	J46-19
+ 17		-C4B6C04	-A3B2P11	J55-20	J54A-02	J54A-06	J10B-181	J36-46	J55-20	J54A-02	J54A-06	J10B-181	J36-46	J55-20	J54A-02	J54A-06	J46-20
+ 18		-A3V3G05	-A3V3G05														
+ 19		-A3V3B10	-A3V3B10														
+ 20		-A3V3D02	-A3V3D02														
(-M) WEE		2 -A3V3D06	1 -A3V3D07		J10B-062												
WEE		3 -A3V3D05	2 -A3V3D06				J10B-062							* J10A-062			
WEE		4 -A3V3D04	3 -A3V3D05							J10A-062				J10A-062			
WEE			4 -A3V3D04														
(-M) WEE		2 -A3V3D12	1 -A3V3D13		J10B-159												
WEE		3 -A3V3D10	2 -A3V3D12				J10B-159							* J10A-159			
WEE		4 -A3V3D09	3 -A3V3D10							J10A-159				J10A-159			
WEE			4 -A3V3D09											J10A-159			

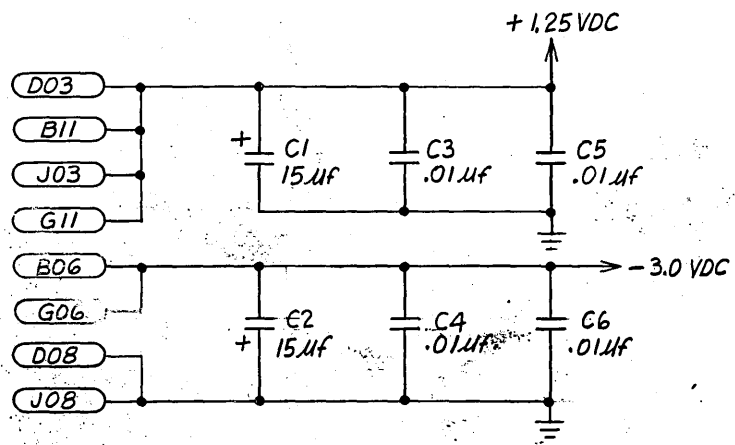
* ONLY IF EMM = 2 MEG.

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PART IDENTIFICATION
MARK PART NUMBER & PART REV.
PER _____

PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
		XI	ENGINEERING MODEL CONTROL	6-19-75	CY 75
		A	PRODUCTION RELEASE	6-30-75	CV 75



- PRE ADDR ASM BYTE 1 BIT 3
RV213 BB6 B-C3M3D10

+ 0 TIME B-C3
KC241AH2 B-C3H2G09

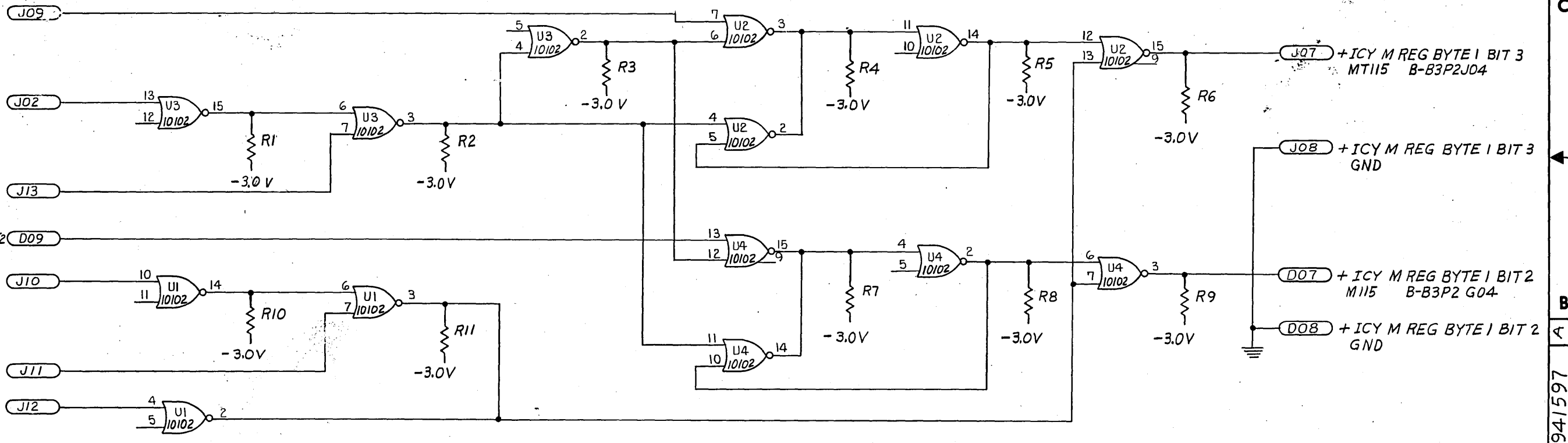
+ 0 TIME DLY B-C3
KC241AT2 B-C3H2G04

- PRE ADDR ASM BYTE 1 BIT 2
RV213 BA6 B-C3M3B08

- CLOCK STOPPED
KMO11AH6 B-C3H2G12

+ STORE 1 OR DIAG BLOCK
MTO12BJ6 B-C3H2U05

- ADR ADJ OR RI MODE
MTO25AJ2 B-C3H2S12



IC PIN 8 CONNECT TO -3.0VDC
IC PINS 1 & 16 CONNECT TO +1.25VDC
RESISTORS ARE 270Ω 1/8W 5%
UNLESS OTHERWISE SPECIFIED

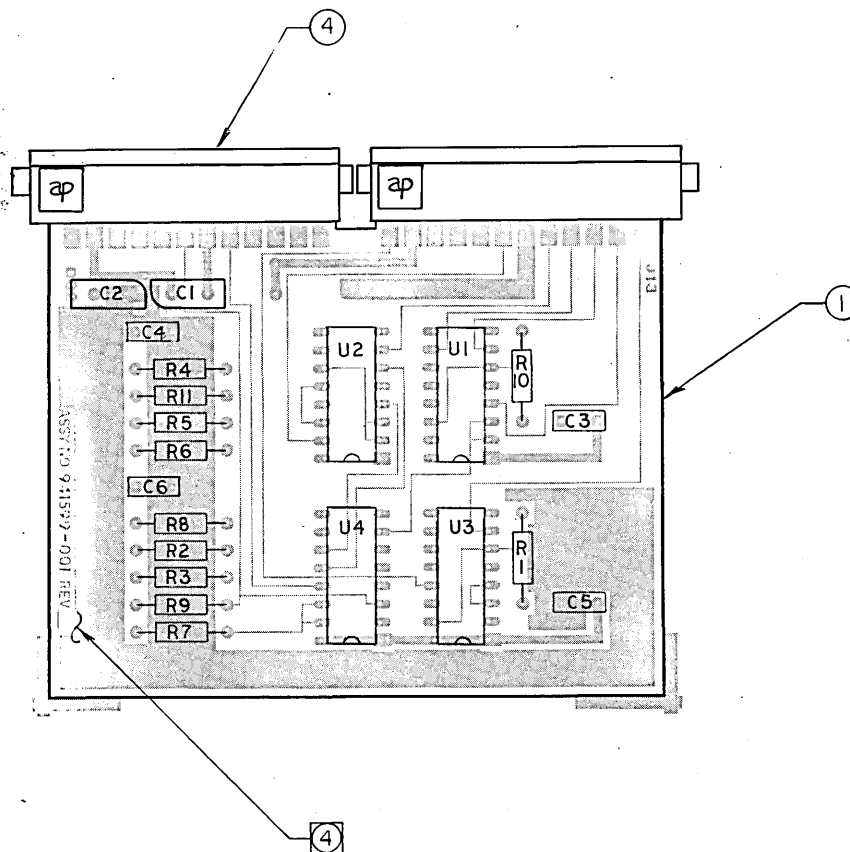
DASH NO. & QTY PER ASSY	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ	DO NOT SCALE DRAWING	PARTS LIST		CONTRACT NO.		
	SCREW THREADS PER HANDBOOK H-28			DRAWN <i>[Signature]</i> 6-19-75		
	COUNTERBORE AND SPOTFACE FILLET RADI TO BE 2X MAXIMUM			CHECKED <i>[Signature]</i> 6-19-75		
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .01R			ENGR <i>[Signature]</i> 6-30-75		
	ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1			PROJ. ENGR <i>[Signature]</i> 6-30-75		
	STANDARD HOLE TOLERANCE PER AND 10387			PROJ. DESIGN <i>[Signature]</i> 7-1-75		
	TOLERANCES ON .XX = ±.03 .XXX = ±.018 ANGLES = ± 9° 30'			SIZE CODE IDENT NO. DWG NO.		
	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5			D 16224 941597		
	DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH			SCALE: WEIGHT SHEET 1 OF 1		
	UNLESS OTHERWISE SPECIFIED			DISTR. NO. 1412		

CHANGE ACTIVITY PENDING, YES NO

941597

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REVISIONS						DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION			
		A		PROD RELEASE		7/15/73	AS
ECO 97040		C5	B	C4 V14.3 C 9			



9. COMPONENT HEIGHT SHALL NOT EXCEED .350
8. SOLDER COMPONENTS AND BOARD TO CONNECTOR USING ITEM NO. 12
7. REFERENCE DESIGNATIONS ARE FOR REF ONLY AND MAY NOT APPEAR ON PART.
6. ■ INDICATES PIN 1.
5. —■— HEAVY LINE INDICATES CATHODE END OF DIODE OR POSITIVE POLARITY OF CAPACITOR.

4 MARK BOARD WITH THE FOLLOWING INFORMATION: VERSION PART REV S/N PER EMPS 6-1 METHOD IV, COLOR BLACK, IF NOT ETCHED

COMPONENT LEAD AND BUILD-UP (FARSIDE) SHALL NOT EXCEED .060.

ASSEMBLE PER EM MANUFACTURING STANDARDS. BOARD TO BE FLAT WITHIN .010 INCH/INCH IN ANY DIRECTION FOLLOWING APPLICATION OF SOLDER.

SCHEMATIC DIAGRAM SEE PARTS LIST.

UNLESS OTHERWISE SPECIFIED

		03 02 -001		SEE PL 941599-001		2			
DASH NO & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL		SPEC/SOURCE CODE IDENT NO. FIND NO.			
PART REV LETTER		DO NOT SCALE DRAWING		CONTRACT NO.		PARTS LIST			
		SCREW THREADS PER HANDBOOK H-28 COUNTERBORE AND SPOTFACE FILLET RADII TO BE .030 MAXIMUM REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .030R ROUGHNESS OF MACHINED SURFACES 125/PER USAS B46.1 STANDARD HOLE TOLERANCE PER AND 10387 TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'		DRAWN T. SUTTON 7-14-5 CHECK ENGR PROJ. ENGR PROD. DESIGN		electronic memories HAWTHORNE, CALIF. A DIVISION OF ELECTRONIC MEMORIES & MAGNETICS CORP. ASSEMBLY PRINTED WIRING BOARD 1 CYCLE M REG EXPANDED		SIZE CODE IDENT NO. DWG NO. D 16224 941599	
-COI 7370/145		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.3 DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		OTHER APPROVALS		SCALE: 2/1 WEIGHT SHEET 1 OF 1			

CHANGE ACTIVITY PENDING, YES NO

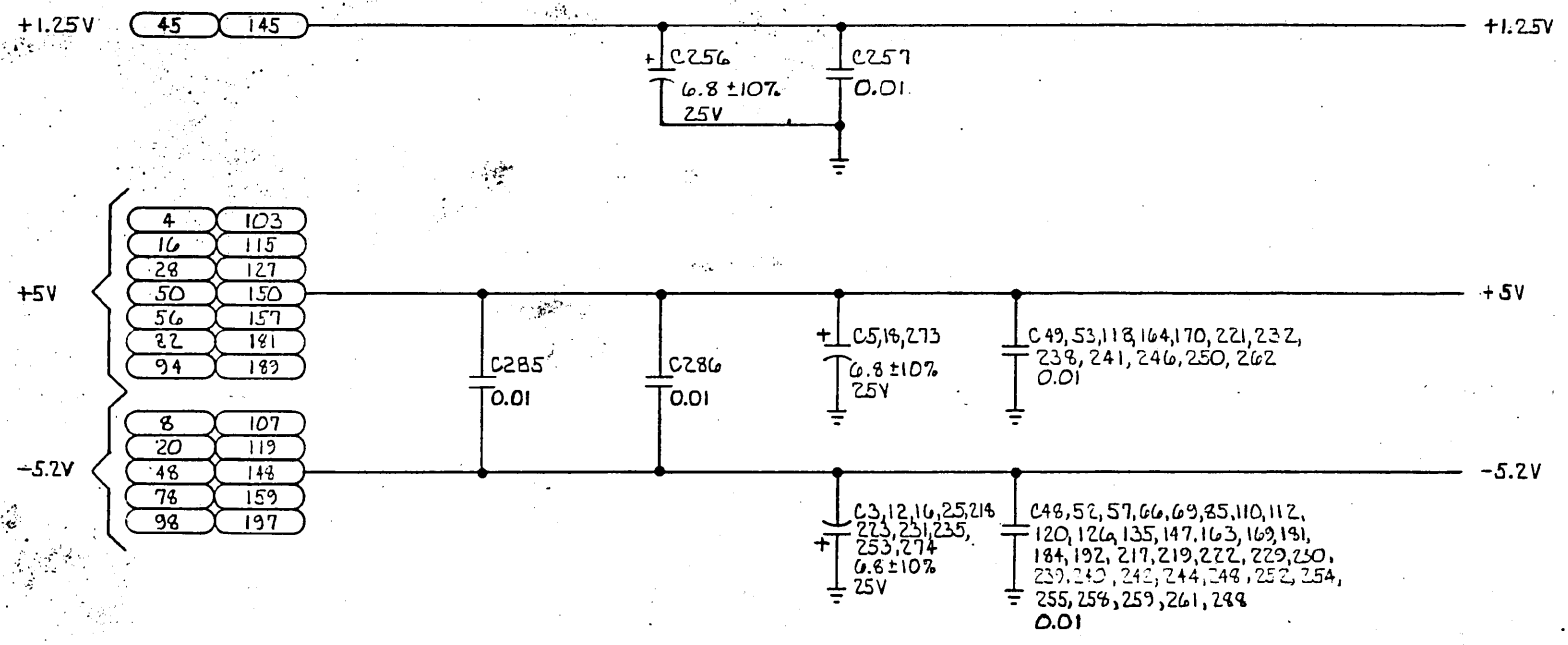
941599

A

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
144/65		XI	ENG MODEL CONTROL	4-14-78	[Signature]

PART IDENTIFICATION	
PART NUMBER	PART REV.



LAST REF. DESIG USED	REFERENCE DESIGNATIONS NOT USED
U191	
T8	
RM25	
CR73	
DM19	
Q102	
R207	R15, 17, 18, 20, 21, 23, 24, 26, 25, 37, 38, 40, 41, 43, 44, 46, 55, 57, 58, 60, 61, 63, 64, 66, 75, 77, 78, 80, 81, 83, 84, 86
C288	C2, 11, 15, 24, 27, 32, 37, 43, 44, 45, 46, 52, 65, 69, 73, 74, 75, 76, 77, 78, 79, 84, 87, 88, 92, 93, 97, 106, 122, 137, 140, 141, 145, 152, 161, 165, 167, 172, 173, 179, 190, 191, 193, 194, 195, 197, 201, 202, 207, 214, 220, 224, 226, 227, 236, 272, 277, 278, 279, 280, 282, 283, 294

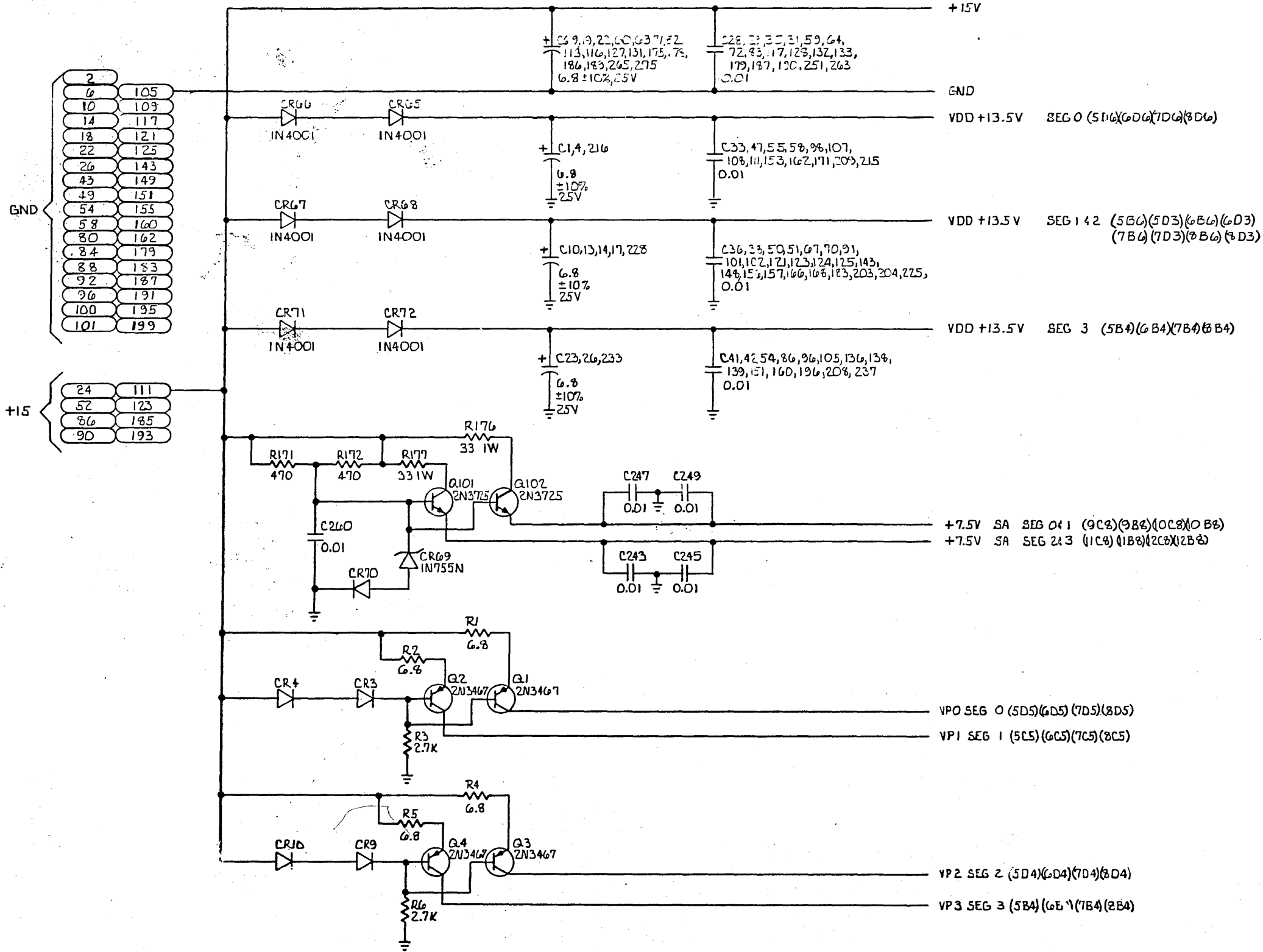
ALL DIODE MODULES ARE IN524Z
 ALL DIODES ARE IN524Z
 RESISTOR MODULES ARE: 330 OHM, ±5%, 1/8 W
 TRANSISTORS ARE 2N2369
 CAPACITOR VALUES ARE IN MICROFARADS, ±10%, 200V
 RESISTOR VALUES ARE IN OHMS, ±5%, 1/4 W
 OTHERWISE SPECIFIED

NOTE		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION-MATERIAL		SPEC SOURCE	CODE IDENT NO.	FIND NO.
DASH NO. & QTY PER ASSY		PARTS LIST		CONTRACT NO.		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION		
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		DRAWN <i>SAUNDERS</i> 4-4-78		SCHEMATIC - STORAGE CARD; 128K X 4		
		SCREW THREADS PER HANDBOOK H-38		CHECK <i>SAUNDERS</i> 4-13-78		SIZE CODE IDENT NO. DWG NO.		
		COUNTERBORE AND SPOTFACE F-LLET RASH TO BE 1/32 MAX W/IN		ENGR <i>SAUNDERS</i> 4-13-78		D 16224 941842		
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO 0.01R		PROJ. ENGR <i>SAUNDERS</i> 4-19-78		SCALE WEIGHT SHEET 1 of 17		
		ROUGHNESS OF MACHINED SURFACES IS PER UNAS 7148		PROC. DES. ENGR <i>SAUNDERS</i> 4-13-78		DISTR. NO. 41		
		STANDARD HOLE TOLERANCE PER UNAS 7148		OTHER APPROVALS				
		TOLERANCES ON DIMS ARE UNLESS OTHERWISE SPECIFIED						
		INTERPRET DIMENSIONS AND TOLERANCES PER UNAS 7148						
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED						
NEXT ASSY USED ON APPLICATION								

1041842 IV1

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET #1		



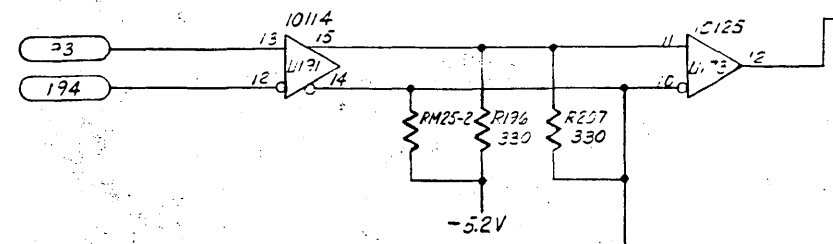
941842 XI

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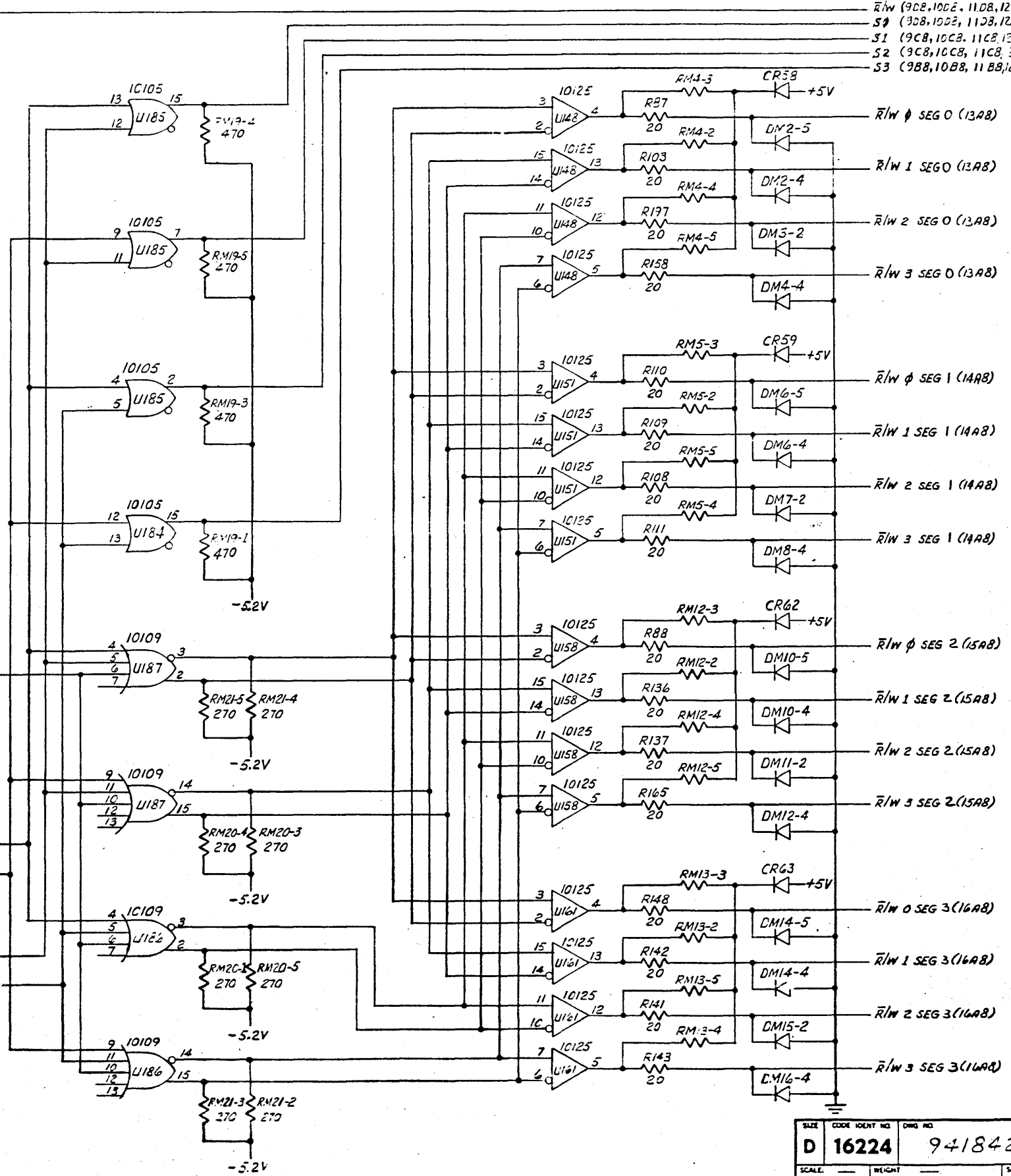
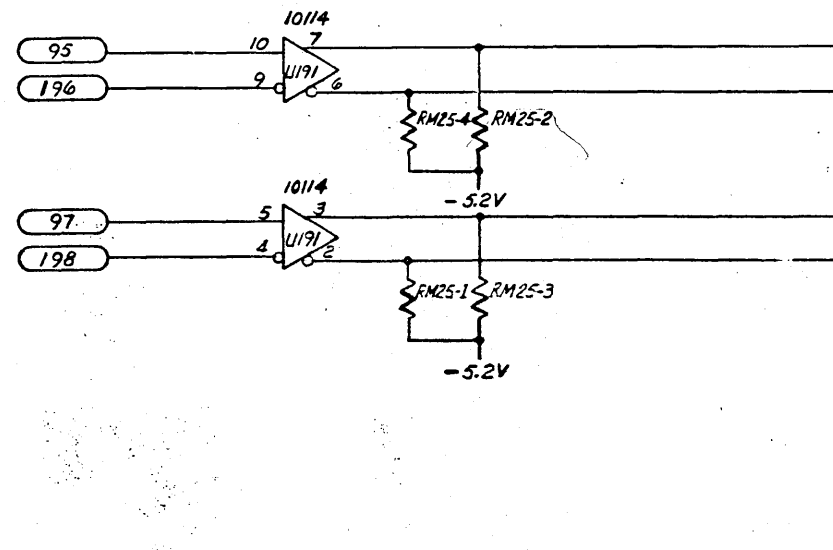
REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		

- RM (9CB, 10CB, 11CB, 12CB)
- S0 (9CB, 10CB, 11CB, 12CB)
- S1 (9CB, 10CB, 11CB, 12CB)
- S2 (9CB, 10CB, 11CB, 12CB)
- S3 (9CB, 10CB, 11CB, 12CB)

+ E WRITE
- E WRITE



- E ADD 13
+ E ADD 13
- E ADD 14
+ E ADD 14

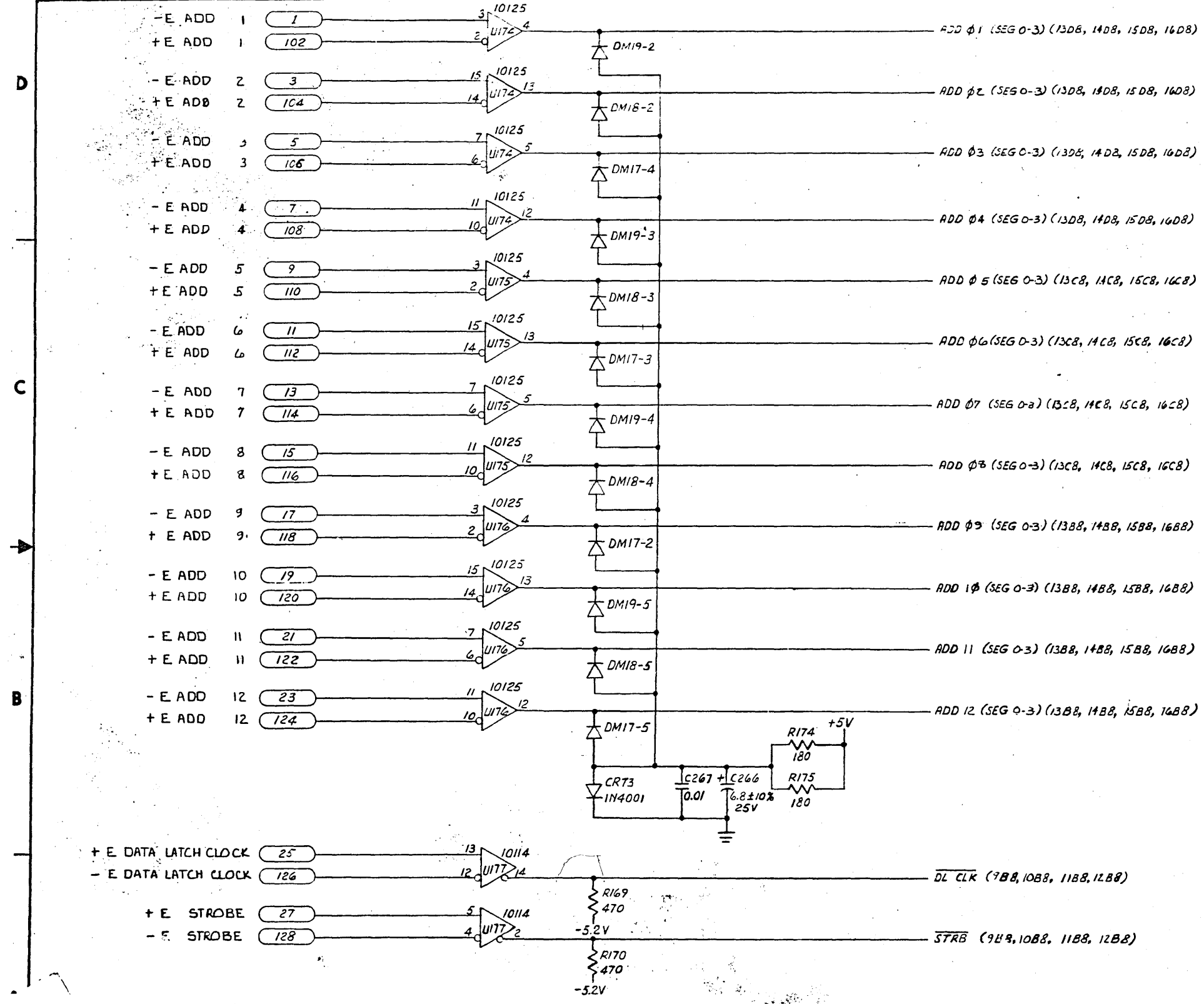


SIZE	CODE IDENT NO	DRG NO
D	16224	941842
SCALE	WEIGHT	SHEET 3 of 17

941842

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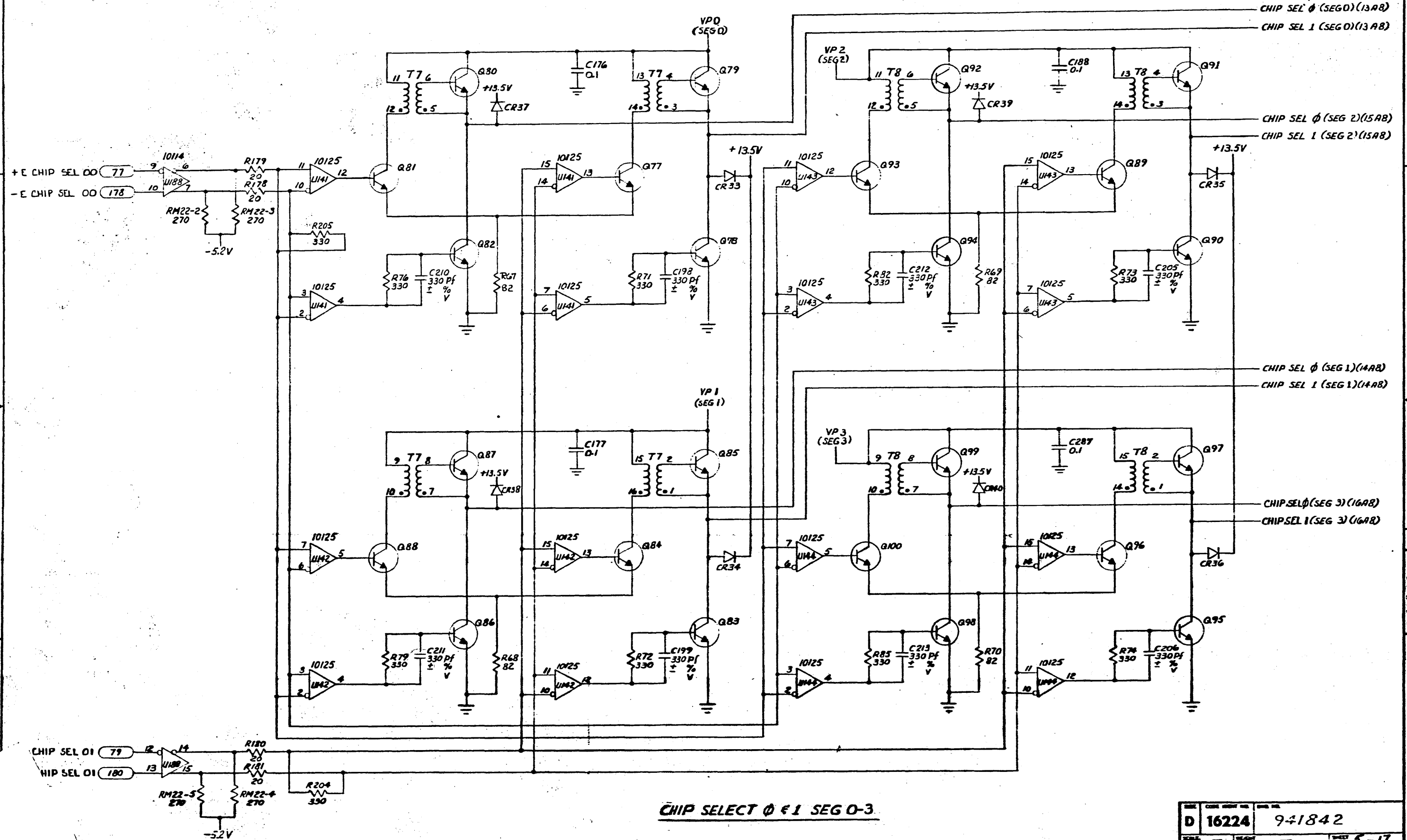
REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



941842 XI B

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REVISIONS					
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			SEE SHEET 1		



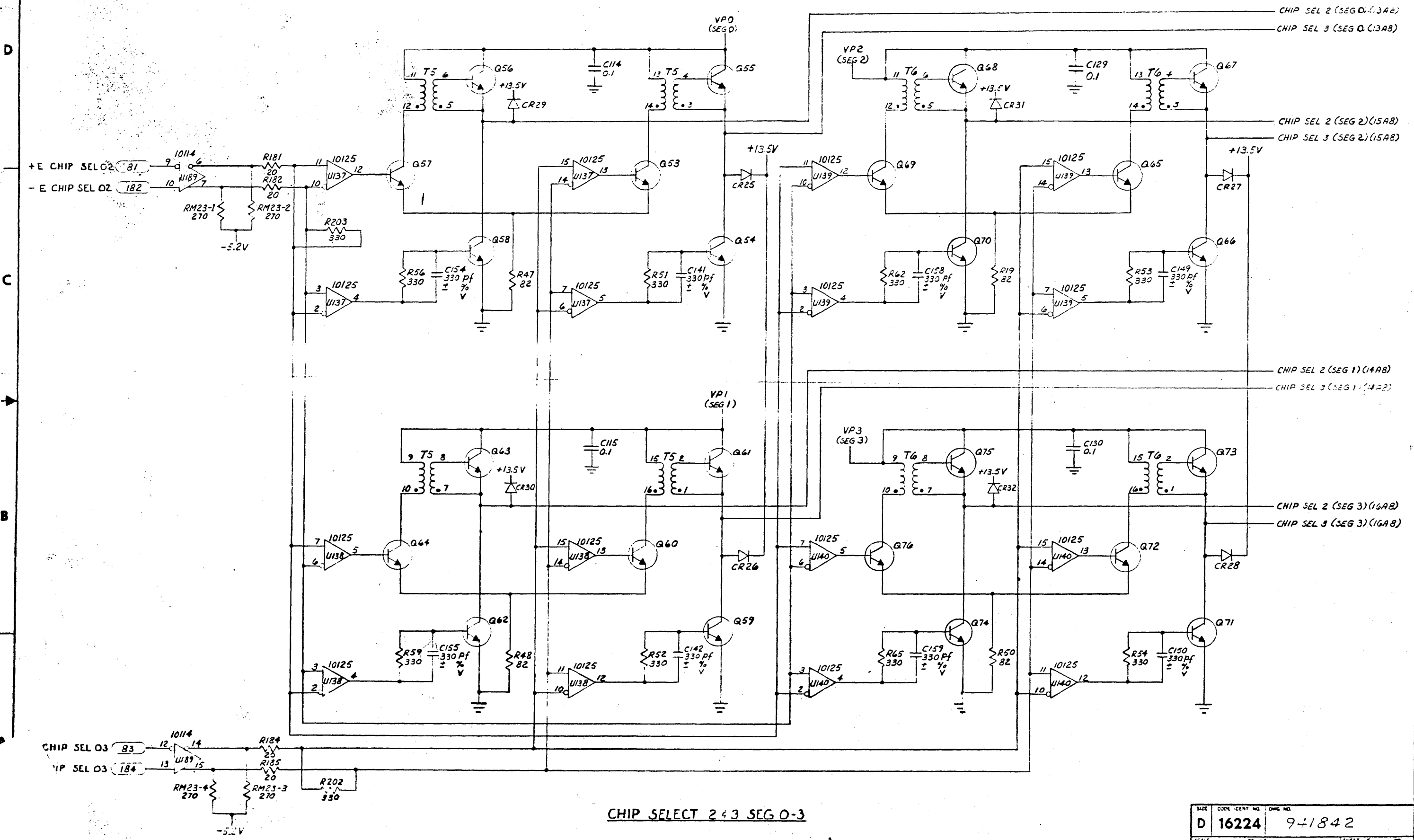
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REV	DATE	BY
D 16224	941842	
SCALE	REACT	SHEET 5 of 17

1941842 171 F

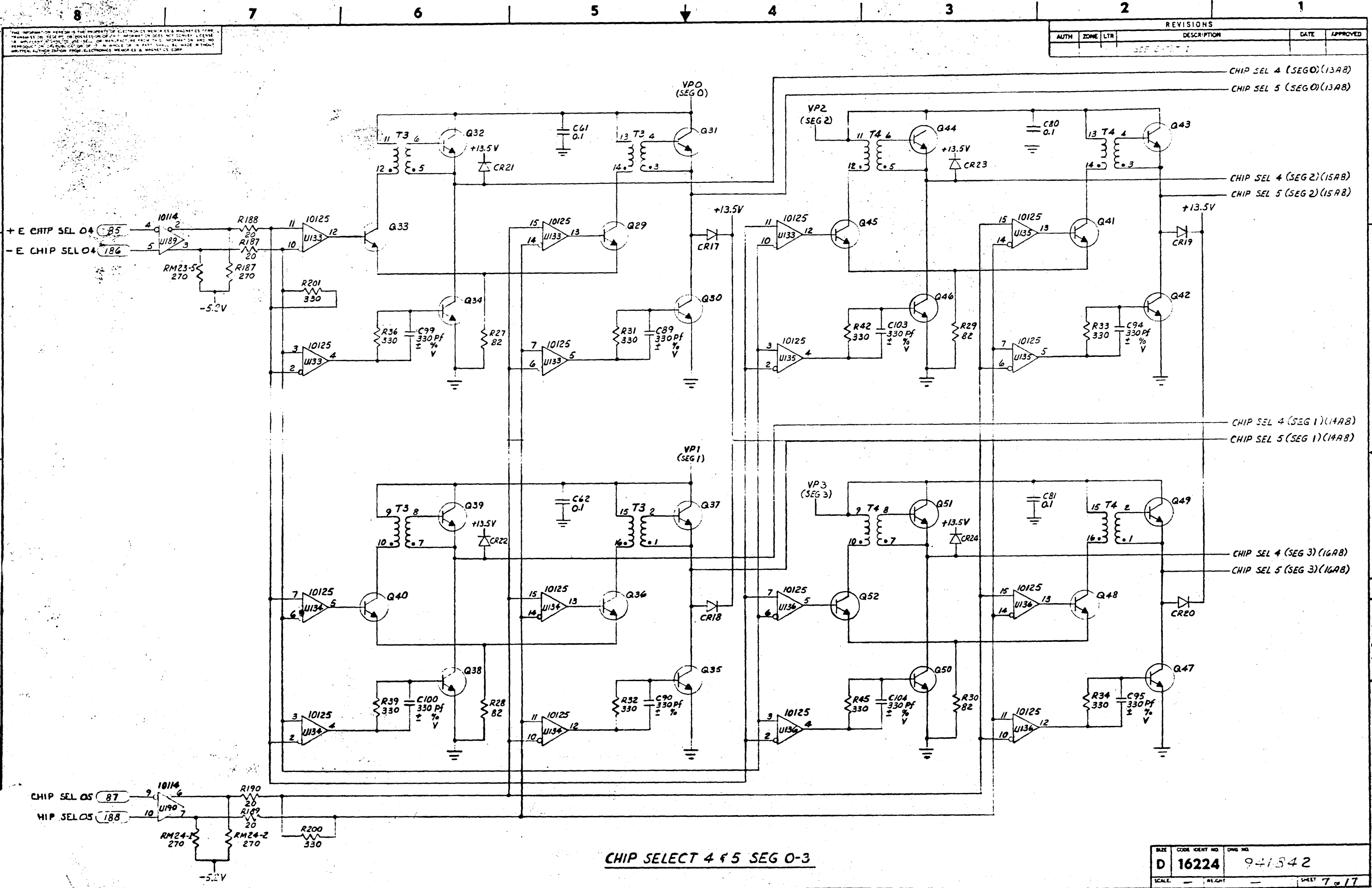
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REVISIONS					
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			SEE SHEET 1		



CHIP SELECT 243 SEG 0-3

SIZE	CODE IDENT NO.	DRWG NO.
D	16224	9-1842
SCALE	WEIGHT	SHEET 6 of 17



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AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
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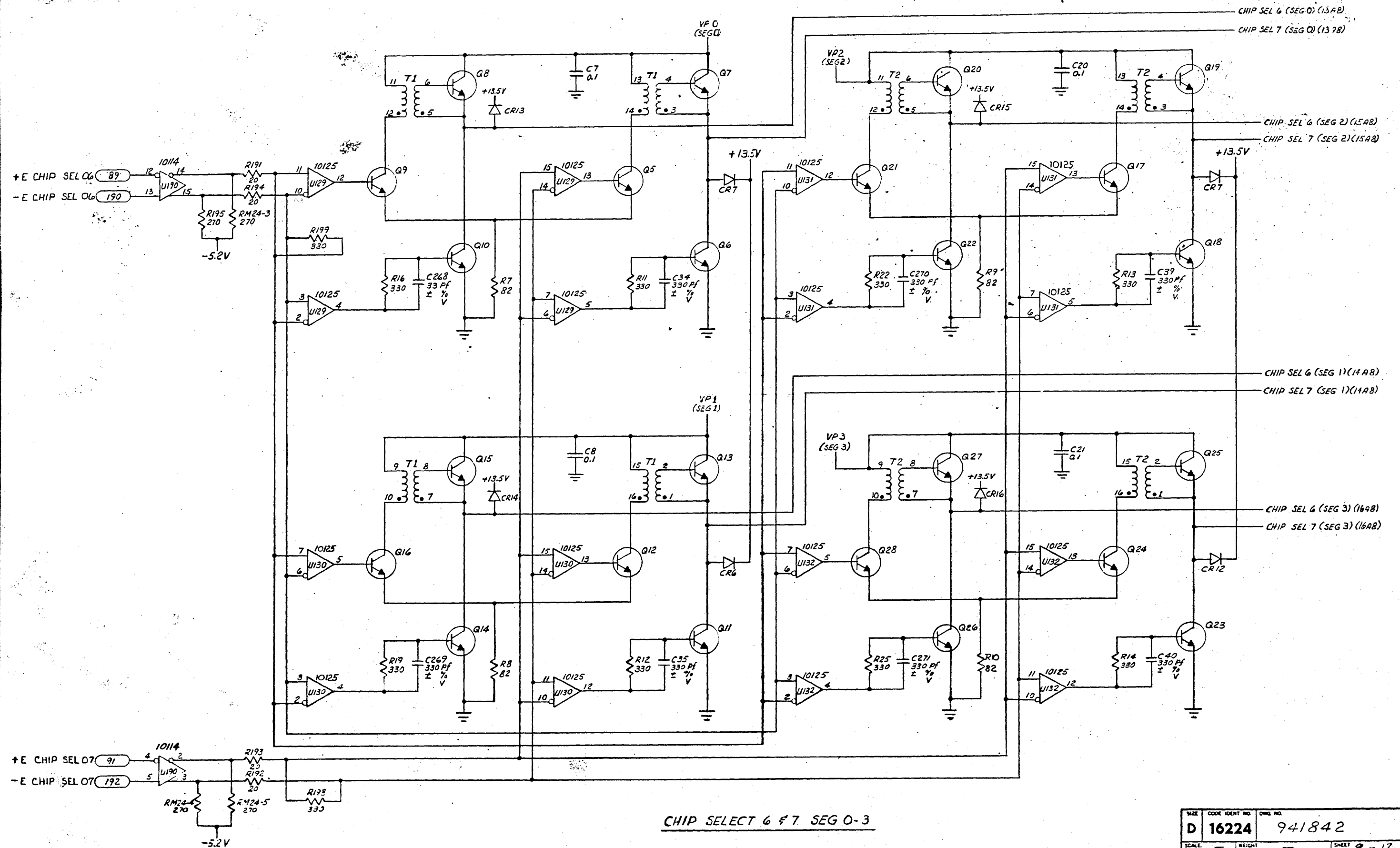
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SIZE	CODE IDENT NO	DRWG NO
D	16224	941542
SCALE	—	—
		SHEET 7 of 17

941842

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AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



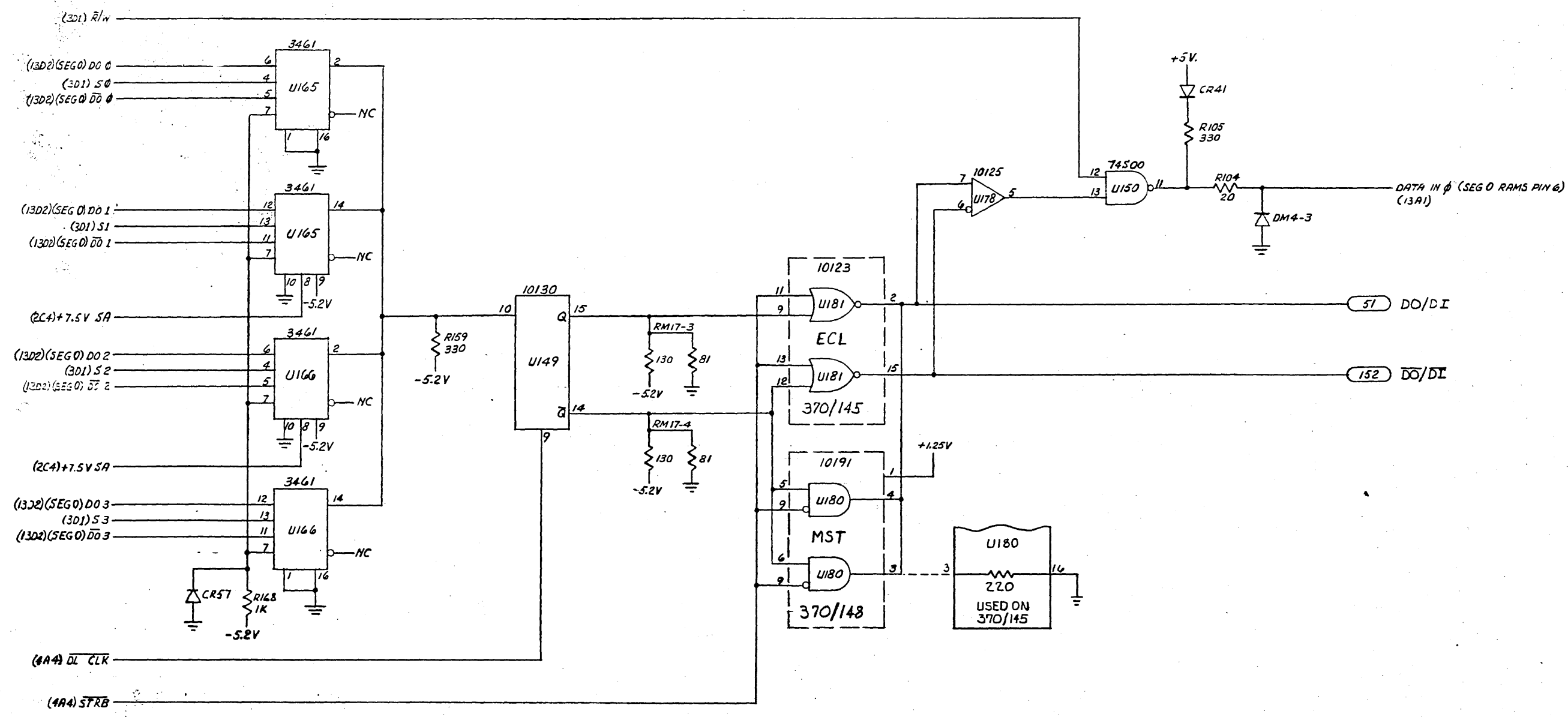
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SIZE	CODE IDENT NO.	ORIG. NO.
D	16224	941842
SCALE	WEIGHT	SHEET 8 of 17

941842

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AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



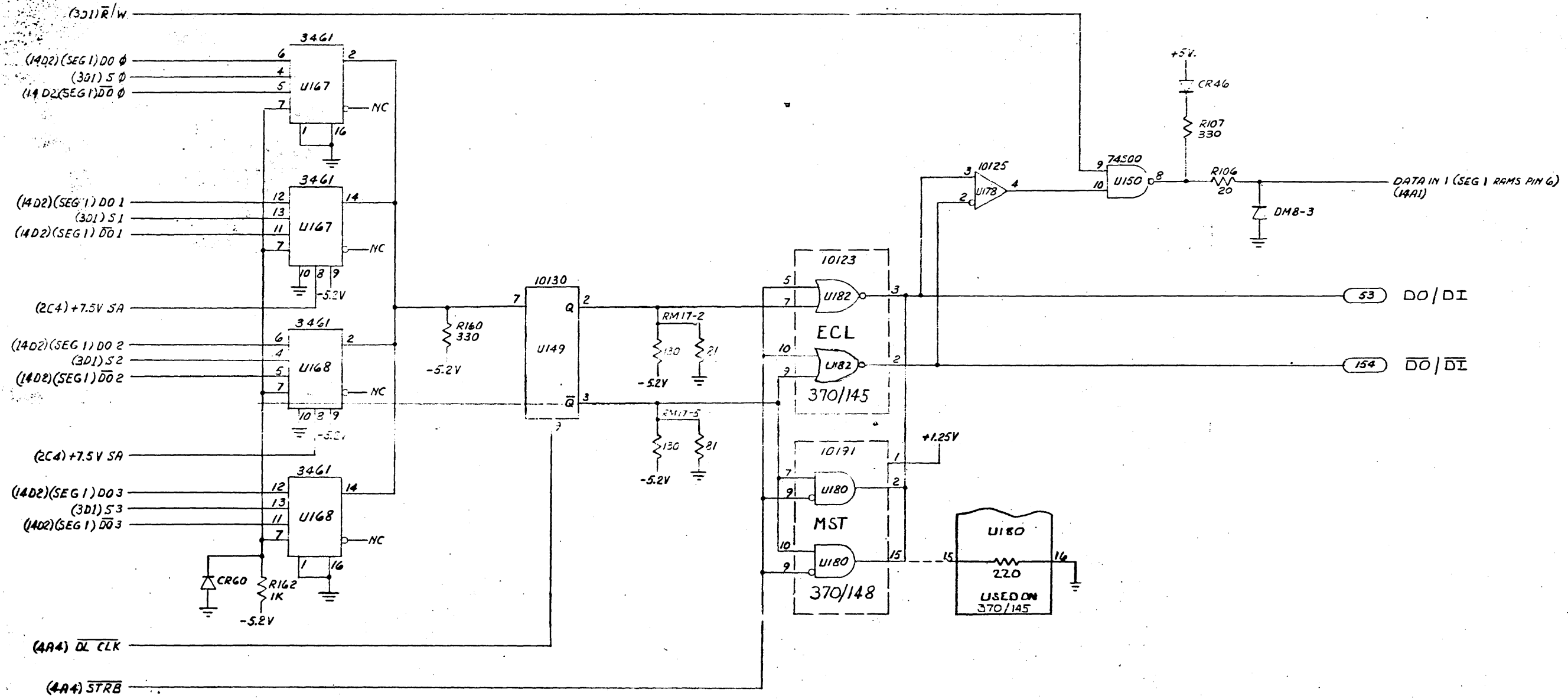
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SIZE	CODE IDENT NO.	DWG NO.
D	16224	941842
SCALE	WEIGHT	SHEET 9 of 17

941842

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			SEE SHEET 1		



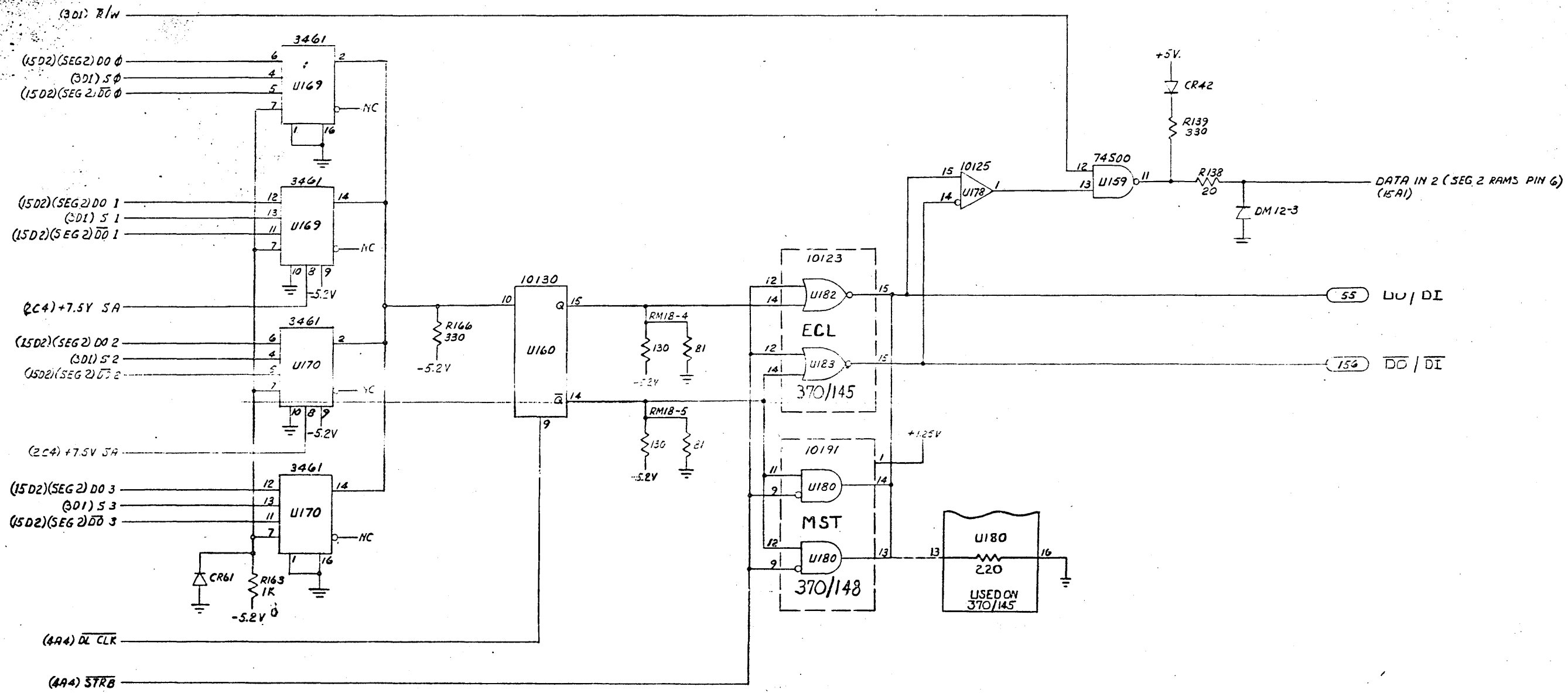
SEG 1

941842

SIZE	CODE IDENT NO.	ORIG NO.
D	16224	94.8-2
SCALE	REV. CAT.	SHEET 10 of 17

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REVISIONS					
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			SEE SHEET 1		

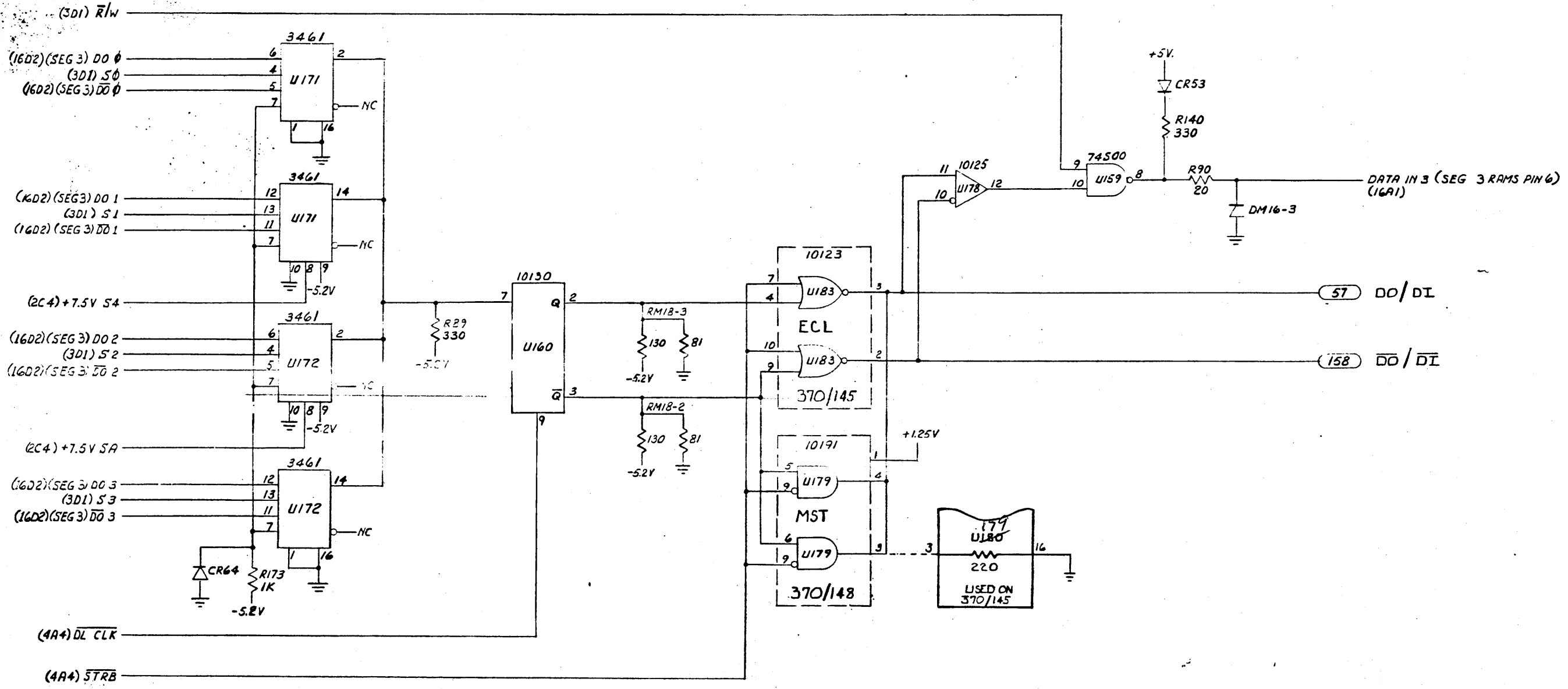


SEG 2

941842

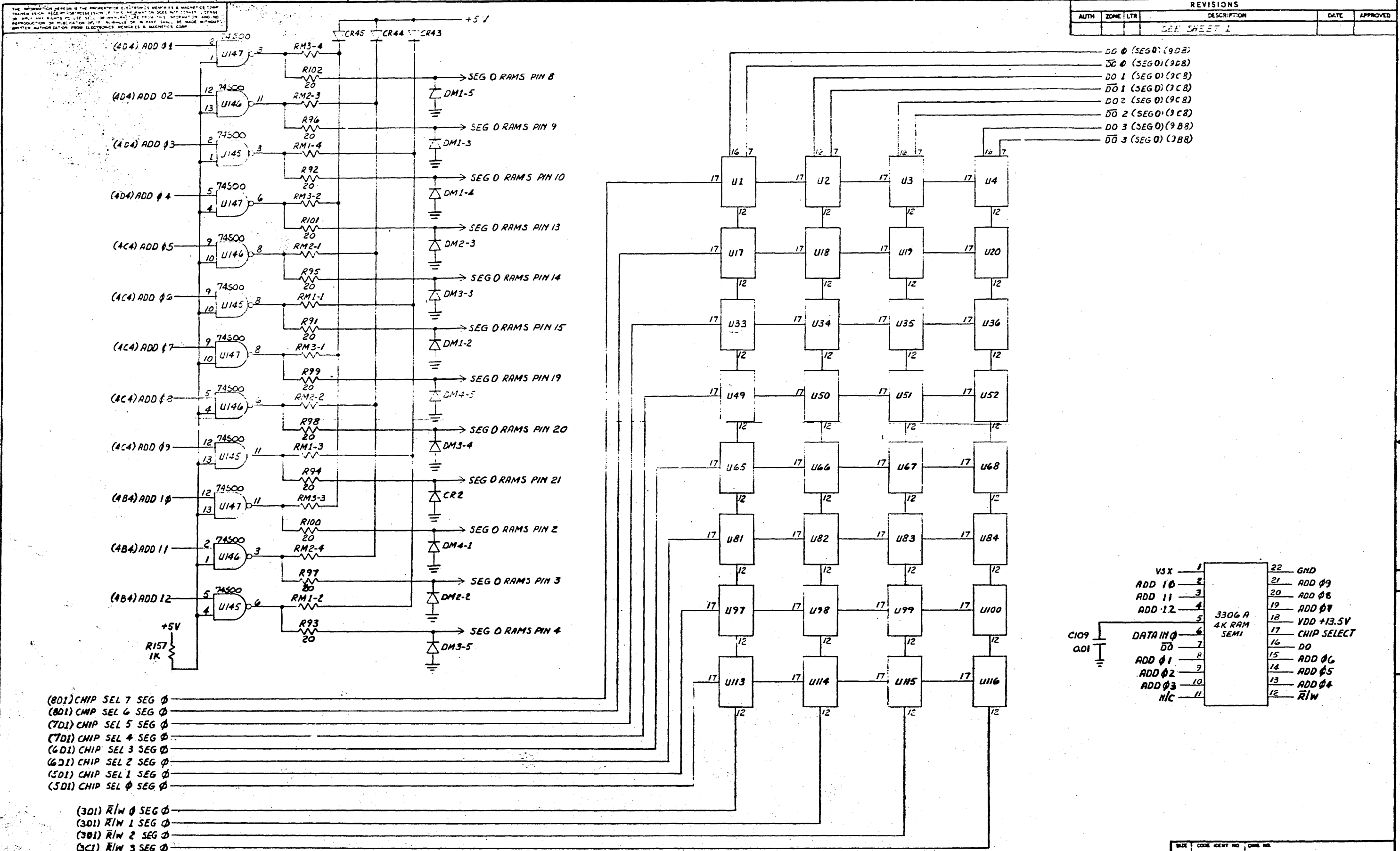
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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE 3-EE7 1		

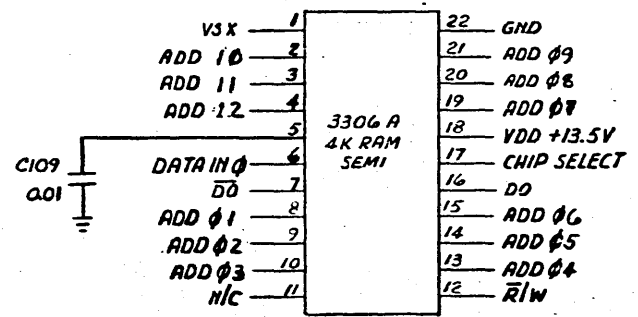


SEG 3

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



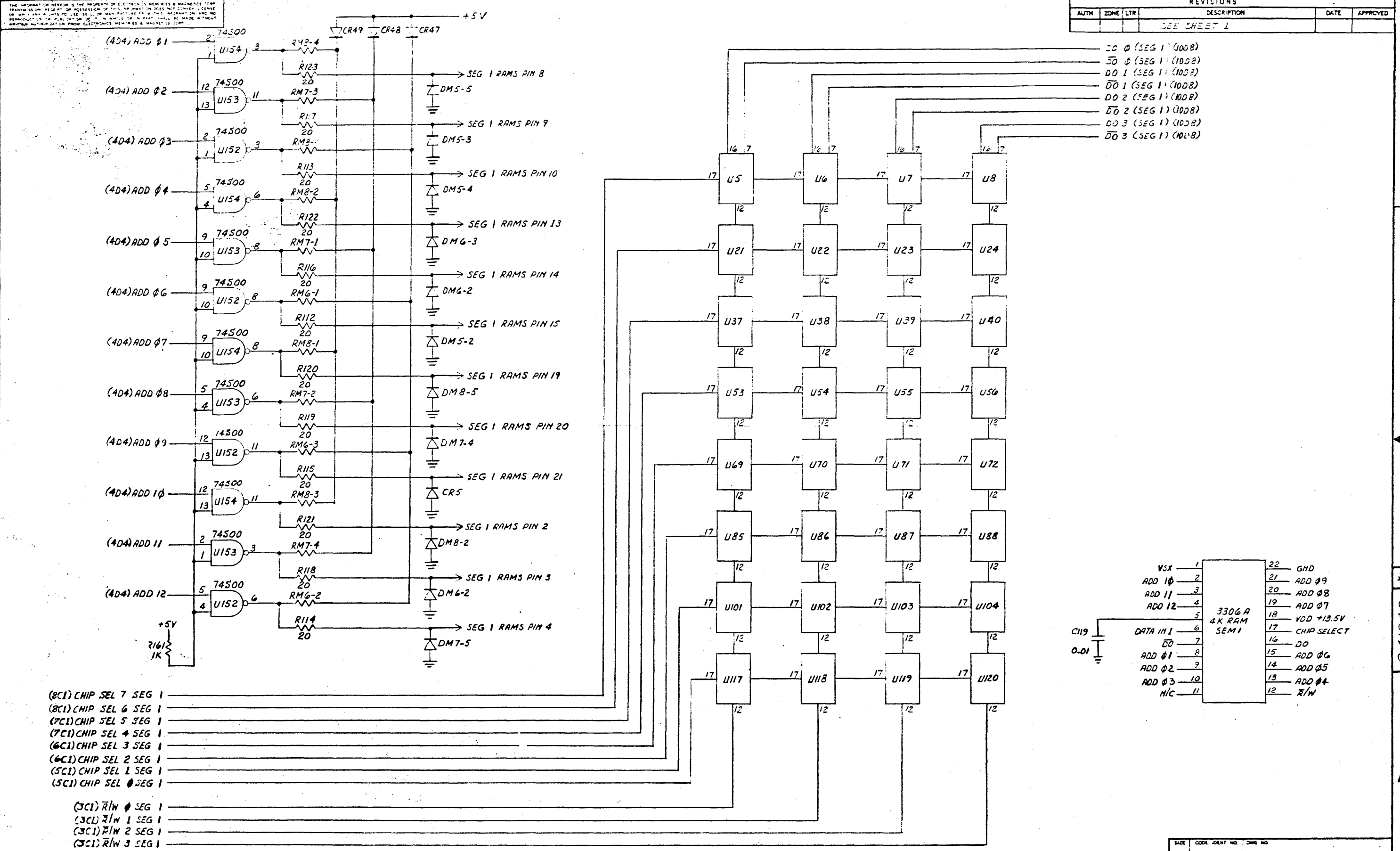
- DO 0 (SEG 0) (9DB)
- DO 0 (SEG 0) (9DB)
- DO 1 (SEG 0) (9CB)
- DO 1 (SEG 0) (9CB)
- DO 2 (SEG 0) (9CB)
- DO 2 (SEG 0) (9CB)
- DO 3 (SEG 0) (9BB)
- DO 3 (SEG 0) (9BB)



- (8D1) CHIP SEL 7 SEG 0
- (8D1) CHIP SEL 6 SEG 0
- (7D1) CHIP SEL 5 SEG 0
- (7D1) CHIP SEL 4 SEG 0
- (6D1) CHIP SEL 3 SEG 0
- (6D1) CHIP SEL 2 SEG 0
- (5D1) CHIP SEL 1 SEG 0
- (5D1) CHIP SEL 0 SEG 0
- (3D1) R/W 0 SEG 0
- (3D1) R/W 1 SEG 0
- (3D1) R/W 2 SEG 0
- (3D1) R/W 3 SEG 0

SEG 0

REVISIONS					
AUTH	IDME	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



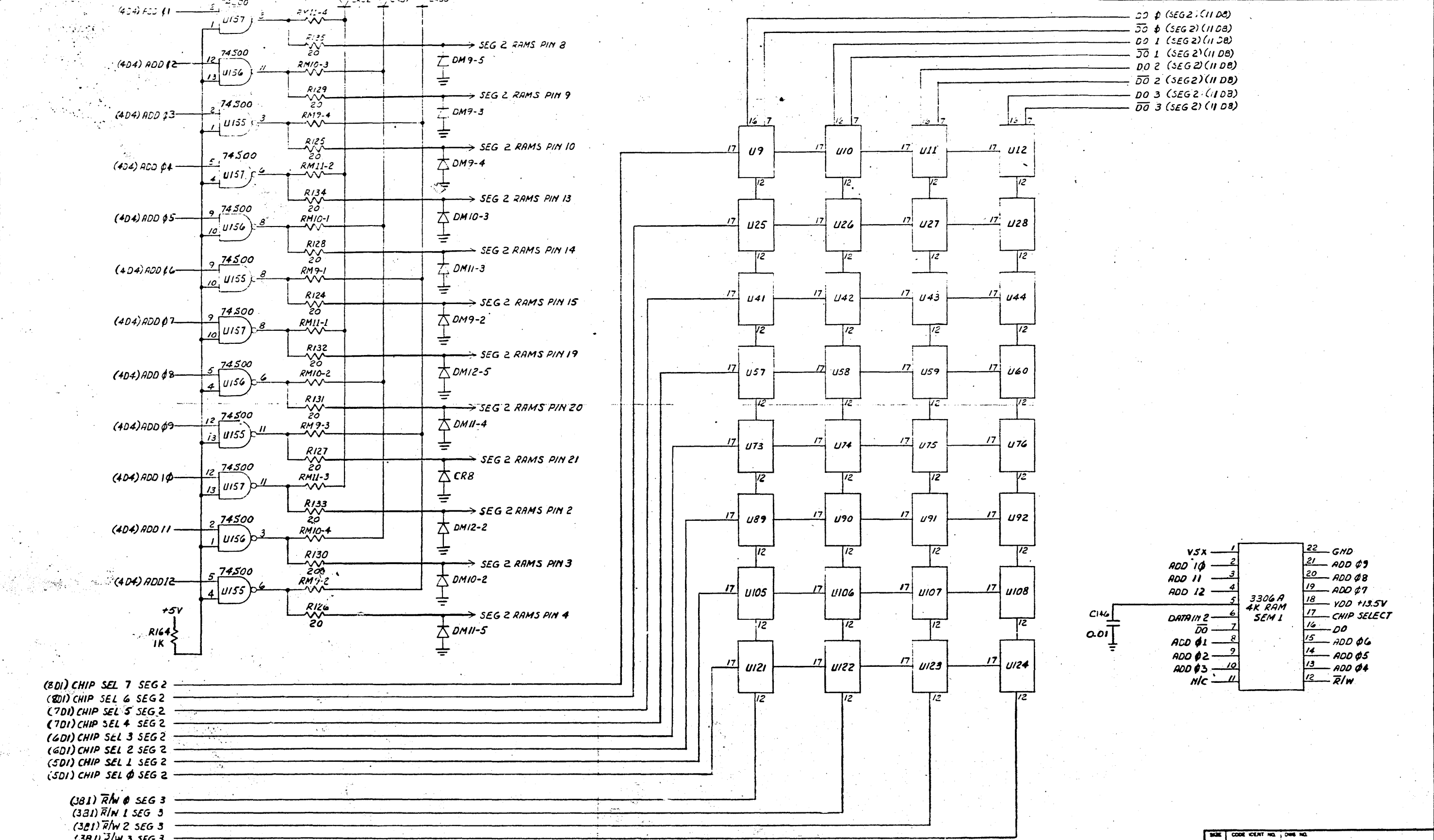
- (8C1) CHIP SEL 7 SEG 1
- (8C1) CHIP SEL 6 SEG 1
- (7C1) CHIP SEL 5 SEG 1
- (7C1) CHIP SEL 4 SEG 1
- (6C1) CHIP SEL 3 SEG 1
- (6C1) CHIP SEL 2 SEG 1
- (5C1) CHIP SEL 1 SEG 1
- (5C1) CHIP SEL 0 SEG 1
- (3C1) R/W 0 SEG 1
- (3C1) R/W 1 SEG 1
- (3C1) R/W 2 SEG 1
- (3C1) R/W 3 SEG 1

- DO 0 (SEG 1) (100B)
- DO 1 (SEG 1) (100B)
- DO 2 (SEG 1) (100B)
- DO 3 (SEG 1) (100B)

SEG 1

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		

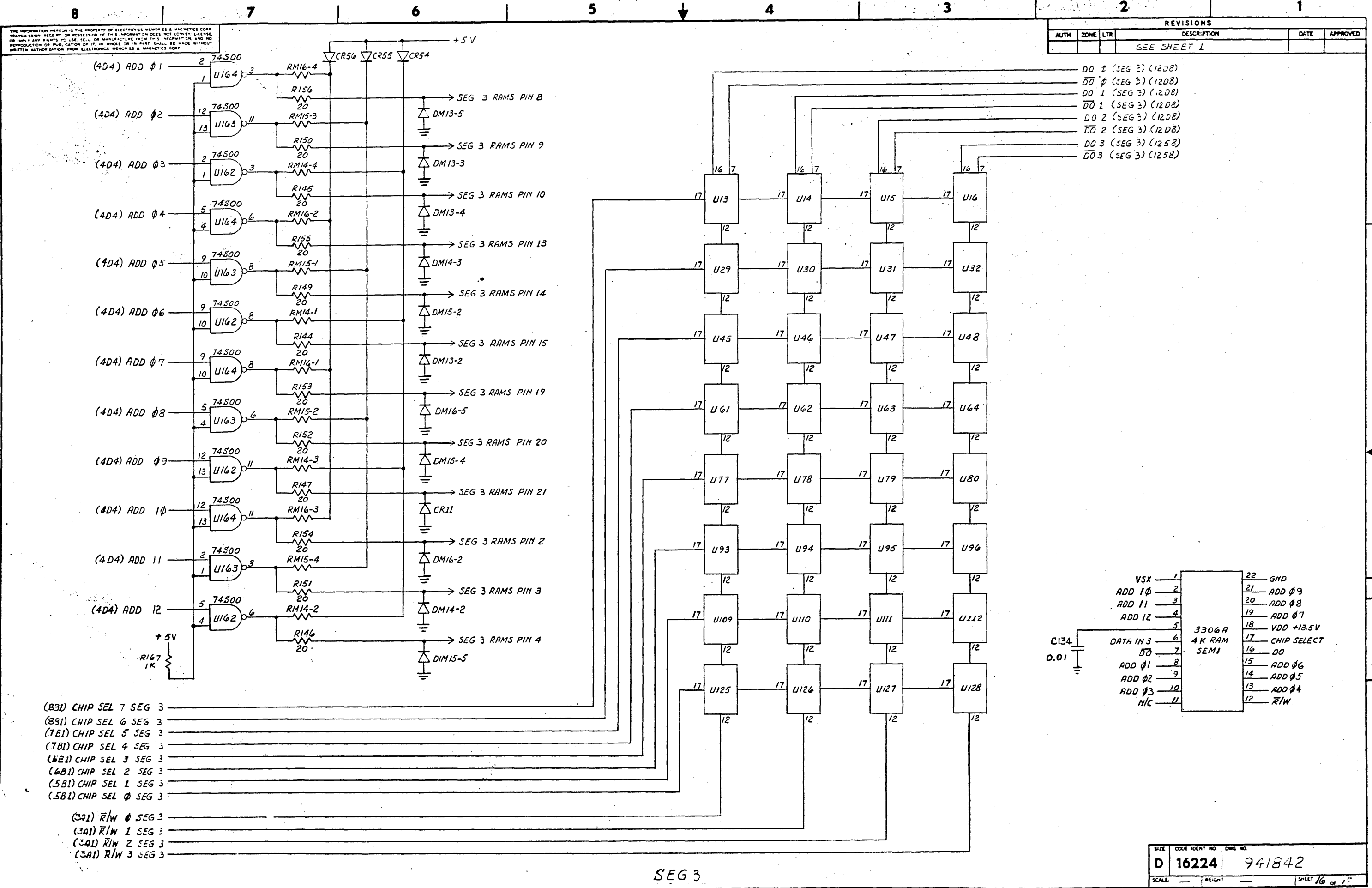


- DO 0 (SEG 2) (11 DB)
- DO 0 (SEG 2) (11 DB)
- DO 1 (SEG 2) (11 DB)
- DO 1 (SEG 2) (11 DB)
- DO 2 (SEG 2) (11 DB)
- DO 2 (SEG 2) (11 DB)
- DO 3 (SEG 2) (11 DB)
- DO 3 (SEG 2) (11 DB)

- (8D1) CHIP SEL 7 SEG 2
- (8D1) CHIP SEL 6 SEG 2
- (7D1) CHIP SEL 5 SEG 2
- (7D1) CHIP SEL 4 SEG 2
- (6D1) CHIP SEL 3 SEG 2
- (6D1) CHIP SEL 2 SEG 2
- (5D1) CHIP SEL 1 SEG 2
- (5D1) CHIP SEL 0 SEG 2
- (3B1) R/W 0 SEG 3
- (3B1) R/W 1 SEG 3
- (3B1) R/W 2 SEG 3
- (3B1) R/W 3 SEG 3

SEG 2

REV	CODE	REV. NO.	DATE
D	16224	941842	
SCALE	PLANT	SHEET 15 of 17	



SEG 3

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8
7
6
5
4
3
2
1

-E ADD 1	1	101	GND
GND	2	102	+E ADD 1
-E ADD 2	3	103	+5V
+5V	4	104	+E ADD 2
-E ADD 3	5	105	GND
GND	6	106	+E ADD 3
-E ADD 4	7	107	-5.2V
-5.2V	8	108	+E ADD 4
-E ADD 5	9	109	GND
GND	10	110	+E ADD 5
-E ADD 6	11	111	+15V
	12	112	+E ADD 6
-E ADD 7	13	113	
GND	14	114	+E ADD 7
-E ADD 8	15	115	+5V
+5V	16	116	+E ADD 8
-E ADD 9	17	117	GND
GND	18	118	+E ADD 9
-E ADD 10	19	119	-5.2V
-5.2V	20	120	+E ADD 10
-E ADD 11	21	121	GND
GND	22	122	+E ADD 11
-E ADD 12	23	123	+15V
+15V	24	124	+E ADD 12
+E DATA LATCH CLK.	25	125	GND
GND	26	126	-E DATA LATCH CLK.
+E STROBE	27	127	+5V
+5V	28	128	-E STROBE
	29	129	
	30	130	
	31	131	
	32	132	
	33	133	
	34	134	
	35	135	
	36	136	
	37	137	
	38	138	
	39	139	
	40	140	
	41	141	
	42	142	
GND	43	143	GND
	44	144	
1.25V	45	145	1.25V
	46	146	
	47	147	
-5.2V	48	148	-5.2V
GND	49	149	GND
+5V	50	150	+5V
DO/DI	51	151	DO/DI
+15V	52	152	
DO/DI	53	153	DO/DI
GND	54	154	DO/DI
DO/DI	55	155	GND
+5V	56	156	DO/DI
DO/DI	57	157	+5V
GND	58	158	DO/DI
	59	159	-5.2V
	60	160	GND
	61	161	
	62	162	GND
	63	163	
	64	164	
	65	165	
	66	166	
	67	167	
	68	168	
	69	169	
	70	170	
	71	171	
	72	172	
	73	173	
	74	174	
	75	175	
	76	176	
+E CHIP SEL 00	77	177	-E CHIP SEL 00
-5.2V	78	178	GND
+E CHIP SEL 01	79	179	-E CHIP SEL 01
GND	80	180	+5V
+E CHIP SEL 02	81	181	-E CHIP SEL 02
+5V	82	182	GND
+E CHIP SEL 03	83	183	-E CHIP SEL 03
GND	84	184	+15V
+E CHIP SEL 04	85	185	-E CHIP SEL 04
+15V	86	186	GND
+E CHIP SEL 05	87	187	-E CHIP SEL 05
GND	88	188	+5V
+E CHIP SEL 06	89	189	-E CHIP SEL 06
+15V	90	190	GND
+E CHIP SEL 07	91	191	-E CHIP SEL 07
GND	92	192	+15V
+E WRITE	93	193	-E WRITE
+5V	94	194	GND
-E ADD 13	95	195	+E ADD 13
GND	96	196	-5.2V
-E ADD 14	97	197	+E ADD 14
-5.2V	98	198	GND
GND	99	199	
	100	200	

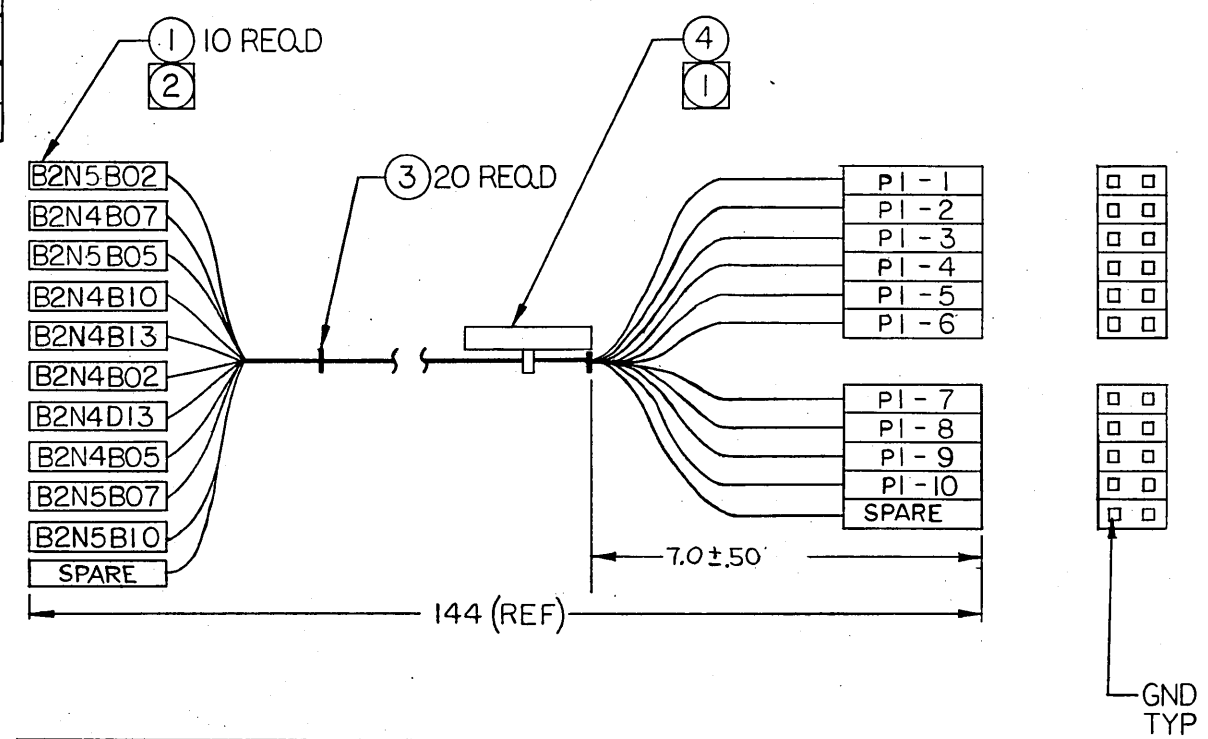
REVISIONS			
AUTH	ZONE	DATE	APPROVED

SCALE	D	DATE	9/4/84
SIZE	16224	DRG. NO.	941842
REVISION		SHEET	17 of 17

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942656-001	B

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/38		XI	ENG. MODEL CONTROL	9/2/77	<i>[Signature]</i>
		A	PRODUCTION RELEASE	12/15/77	<i>[Signature]</i>
ECO 82071		A1	EXT. REVISED TRILEAD CABLE MARKINGS & SIGNAL NAMES. ADDED SPARE & DIM 7.0 ± .50. "PI" CALLOUTS WERE "JI". PART IDENT BLOCK WAS REV A.	4-3-78	<i>[Signature]</i>
ECO 82120		A2	DELETED ITEM 2 FROM P/L & F/D	4-3-78	<i>[Signature]</i>
ECO 82427		B	INCORP ECO'S 82071 & 82120	4-3-78	<i>[Signature]</i>



WIRE LIST MARKING AND TABLE		
② FROM	② TO	SIGNAL NAME (REF)
B2N5B02	PI-1	-M S32
B2N4B07	PI-2	-M S2
B2N5B05	PI-3	-M ST
B2N4B10	PI-4	-M S4
B2N4B13	PI-5	-M S8
B2N4B02	PI-6	-M S0
B2N4D13	PI-7	-M S16
B2N4B05	PI-8	-M S1
B2N5B07	PI-9	+M DBL ERR IND
B2N5B10	PI-10	+M MAIN STORE ACCESS
SPARE	SPARE	

I	TY-53M	MARKER	T & B OR EQUIV	4
20	TY-23M	CABLE TIE	T & B OR EQUIV	3
				2
11	943001-2X-2X-9-144	TRILEAD CABLE ASSY		1

DASH NO. & QTY PER ASSY		CONTRACT NO.		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION	
SEE PART IDENT BLOCK FOR PART MARKING REQ:		DO NOT SCALE DRAWING		DRAWN <i>M. Ritrick</i> 8-24-77	
		SCREW THREADS PER HANDBOOK H-28		CHECK <i>L. Marcus</i> 9-1-77	
		COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM		ENGR <i>A. F. Gagliardi</i> 9/1/77	
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R		PROJ. ENGR <i>R. Brown</i> 9/2/77	
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		PROD. DESIGN	
		STANDARD HOLE TOLERANCE PER AND 10387		SIZE CODE IDENT NO. DWG NO.	
		TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'		C 16224 942656	
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		SCALE: NONE WEIGHT	
-001 942675 148		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH		SHEET 1 OF 1	
DASH NO. NEXT ASSY USED ON APPLICATION		OTHER APPROVALS		DISTR NO. 1410	

② HOT STAMP IDENTIFICATION PER MARKING TABLE, BOTH ENDS.

① MARK P/N & REV. LETTER PER EMPS 6-1, METHOD II OR IV COLOR BLACK.

NOTES: UNLESS OTHERWISE SPECIFIED

4 3 2 1

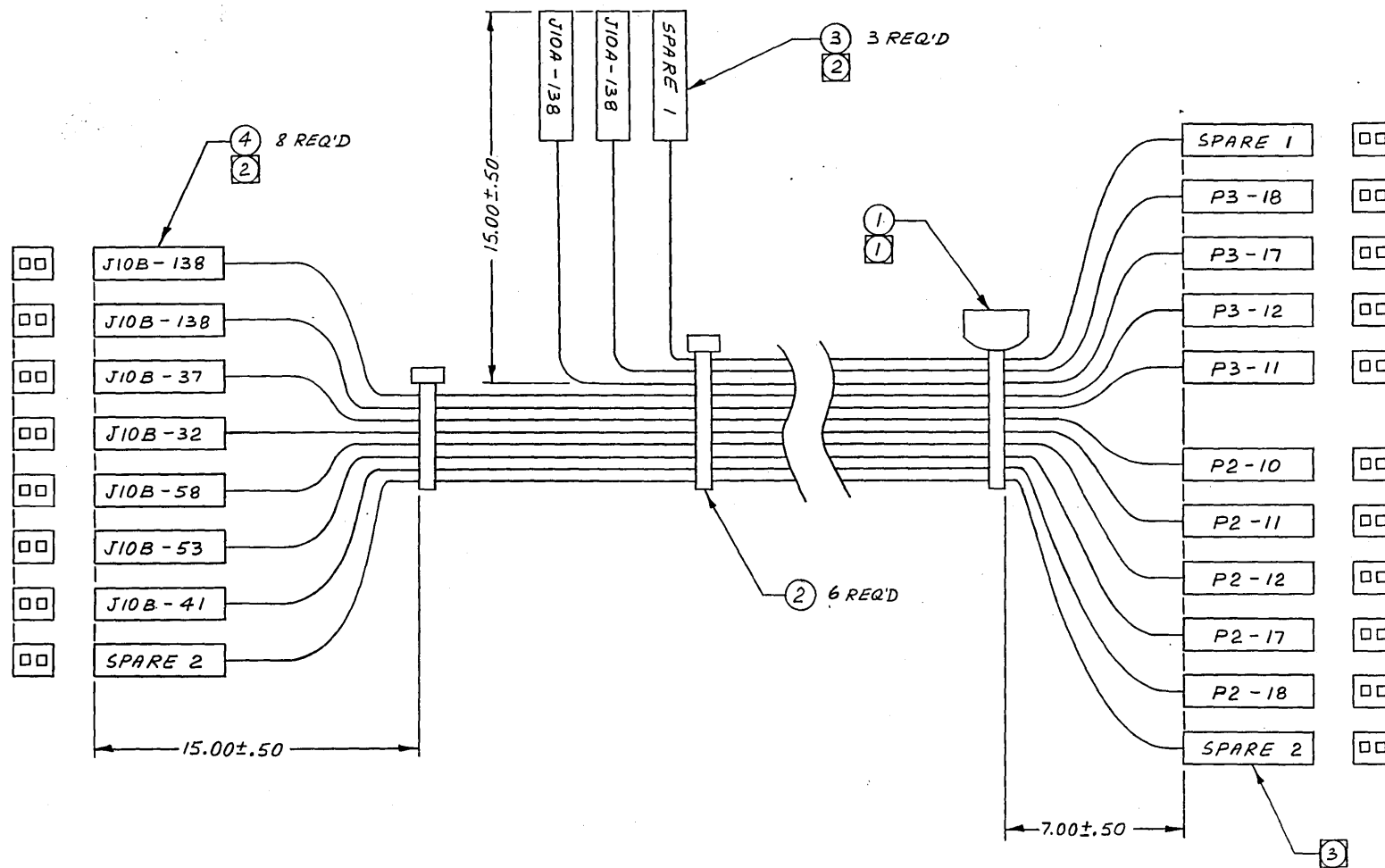
D C B A

942656 B

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942689-001	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA		A	PRODUCTION RELEASE	1/29/78	JL



WIRE LIST AND MARKING TABLE				
FROM EMM BSM	TO ERROR DET. PANEL	SIGNAL NAME 4K ONLY (REF)	SIGNAL NAME 1K ONLY (REF)	
BSM 1	J10B-32	P2-11	+E FAD 13	+E FAD 11
	J10B-33	P2-02	-E FAD 13	-E FAD 11
	J10B-37	P2-10	+E FAD 14	+E FAD 12
	J10B-38	P2-01	-E FAD 14	-E FAD 12
	J10B-41	P2-18	+E FAD 15	+E FAD 13
	J10B-42	P2-09	-E FAD 15	-E FAD 13
	J10B-53	P2-17	+E FAD 16	+E FAD 14
	J10B-52	P2-08	-E FAD 16	-E FAD 14
	J10B-58	P2-12	+E FAD 17	+E FAD 15
	J10B-57	P2-03	-E FAD 17	-E FAD 15
BSM 2	J10B-138	P3-12	+E FCSX-1	+E FCSX-1
	J10B-139	P3-03	-E FCSX-1	-E FCSX-1
BSM 3	J10A-138	P3-11	+E FCSX-2	+E FCSX-2
	J10A-139	P3-02	-E FCSX-2	-E FCSX-2
BSM 4	J10A-138	P3-17	+E FCSX-3	+E FCSX-3
	J10A-139	P3-08	-E FCSX-3	-E FCSX-3
	J10A-138	P3-18	+E FCSX-4	+E FCSX-4
	J10A-139	P3-09	-E FCSX-4	-E FCSX-4
	SPARE-1	SPARE-1		
	SPARE-2	SPARE-2		

- 3. ALL SPARE TRI LEADS TO BE FOLDED BACK AND SECURED TO CABLE.
- 2. HOT STAMP 1 ST. IDENTIFICATION ONLY OF EACH PAIR PER MARKING TABLE, BOTH ENDS. MARK P/N AND REV LETTER EMPS 6-1, METHOD II OR IV COLOR BLACK.

DASH NO. & QTY PER ASSY	PARTS LIST	CONTRACT NO.	SIZE	CODE IDENT NO.	DWG NO.
8	943001-2X-2X-9-49	CABLE ASSY			4
3	943001-2X-2X-9-35	CABLE ASSY			3
6	TY-23M	CABLE TIE			2
1	TY-53M	MARKER			1
-001	NOTE PART OR IDENTIFYING NO. NOMENCLATURE OR DESCRIPTION/MATERIAL				
SEE PART IDENT BLOCK FOR PART MARKING REQ'T		DO NOT SCALE DRAWING		CONTRACT NO.	
SCREW THREADS PER HANDBOOK H-28		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM		DRAWN S. J. Kelly 1-18-78	
REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO 50R		ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1		CHECKED J. Mariani 1-23-78	
STANDARD HOLE TOLERANCE PER AND 10387		TOLERANCES ON: XX ± .03, XXX ± .010, ANGLES ± 0° 30'		ENGR R. J. Brown 1-23-78	
INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.3		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		PROJ. DESIGNER J. Brown 1-29-78	
APPLICATION		OTHER APPROVALS		SCALE: NONE WEIGHT: --- SHEET 1 OF 1	
DASH NO. 942675 148		DISTR NO. 1410		D 16224 942689	

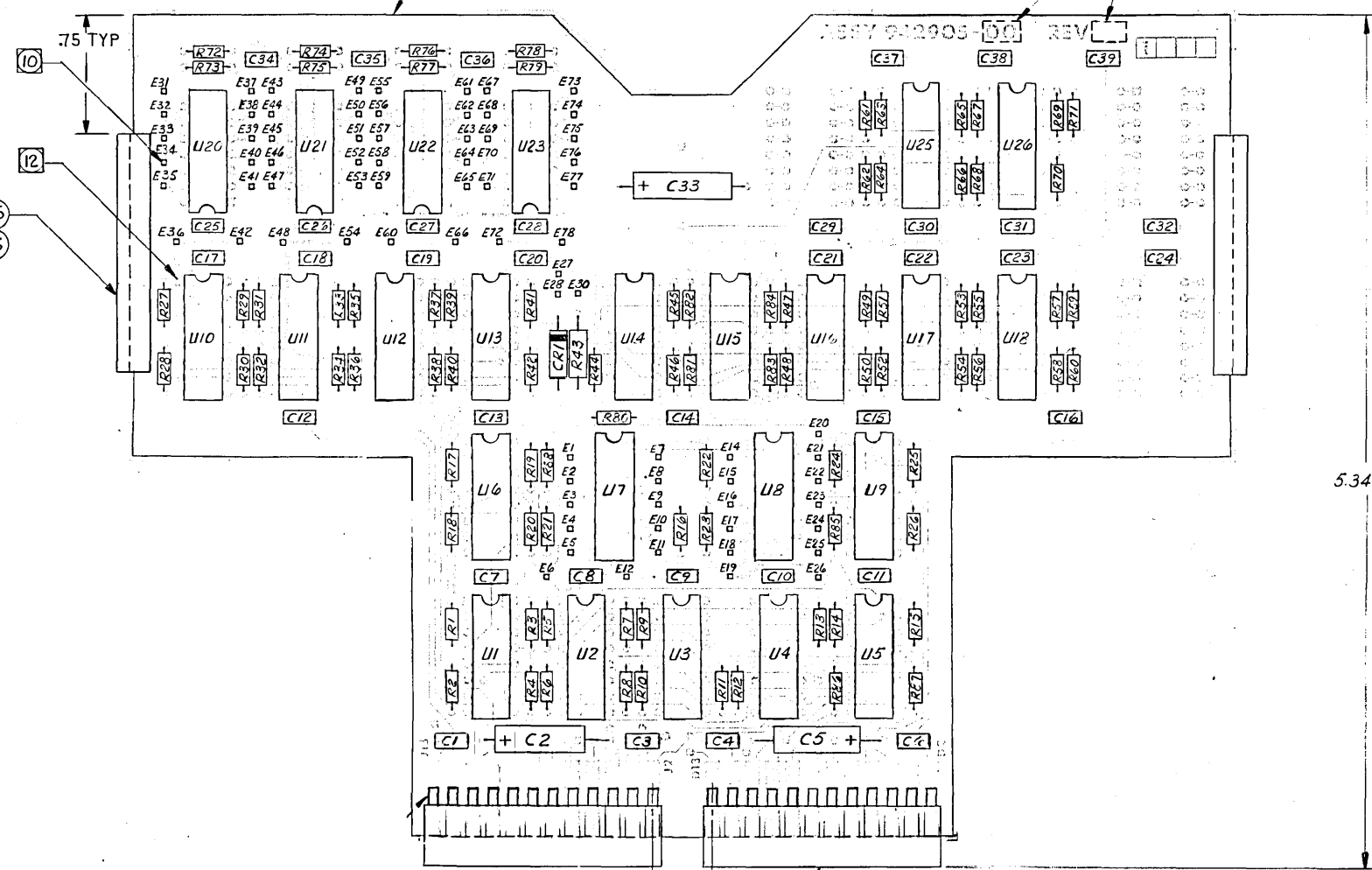
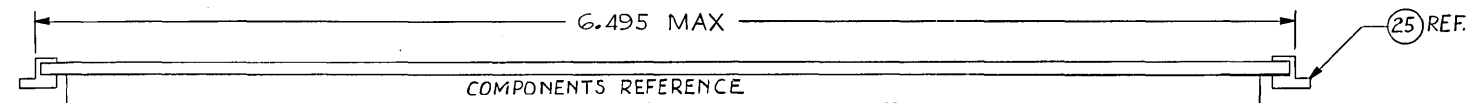
SS OTHERWISE SPECIFIED

942689

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942905-001	A
942905-002	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 16816		X1	ENG. MODEL CONTROL	8/31/77	REID
DWA 16816		X2	REDRAWN TO REV. B A/W	10/7/77	REID
DWA 16816		X3	ADDED SH. 2	10-13-77	REID
DWA 16816		X4	ADDED ITEMS 25 & 26	12-19-77	REID
		A	PRODUCTION RELEASE	12/1/77	REID



TIMING-WIRE WRAP LIST	
FROM	TO
E2	E6
E19	E23
E20	E21
E36	E41
E48	E53
E60	E65
E72	E76

WIRE WRAP LIST VERSION CHART		
DASH NO.	FROM	TO
-001	E27	E28
-002	E28	E30

- (13) ON FINAL ASSEMBLY, TIMING TAPS MAY NOT BE AS SHOWN. THESE ARE SUBJECT TO CHANGE IN TEST.
 - (12) "□" SQUARE PAD INDICATES PIN NO. 1 OF INTEGRATED CIRCUITS.
 - (11) CONNECTOR CONTACT BLADES ARE TO BE CENTERED ON THE ETCH CONNECTOR PADS WITHIN ±.010.
 - (10) INSTALL WIRE WRAP POST ITEM 3 OF P/L IN E1 THRU E28 & E30 THRU E78.
 - (9) IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
 - 8 "—" BAND INDICATES CATHODE END OF DIODE.
 - 7 "+" INDICATES POSITIVE END OF CAPACITOR.
 - 6. SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM 28.
 - 5. COMPONENT HEIGHT NOT TO EXCEED .40.
 - 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
 - 3. COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060, FAR SIDE.
 - 2. ASSEMBLE PER EM MFG STANDARDS.
- FOR SCHEMATIC DIAGRAM SEE PARTS LIST.
UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		MAKE FROM 942905-001		CONTRACT NO.	
-001		SEE SEPARATE PARTS LIST PL-942905-001		1	
NOTE		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL	
-002-001					
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		SCREW THREADS PER HANDBOOK H28	
		COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R	
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		STANDARD HOLE TOLERANCE PER AND 10387	
		TOLERANCES ON: .XX = ±.03 .XXX = ±.010 ANGLES = ± 0° 30'		INTERPRET DIMENSIONS AND TOLERANCES PER USAS 1143	
DASH NO.		NEXT ASSY		USED ON	
-001		148			
APPLICATION		OTHER APPROVALS		SCALE: — WEIGHT: — SHEET 1 OF 2	
				DISTR NO. 1410	

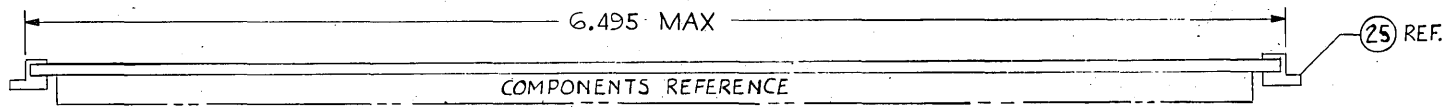
"C" SIZE ONLY

942905 A B

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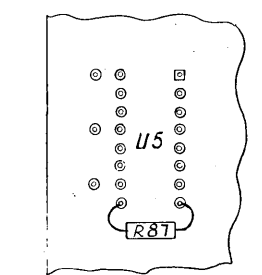
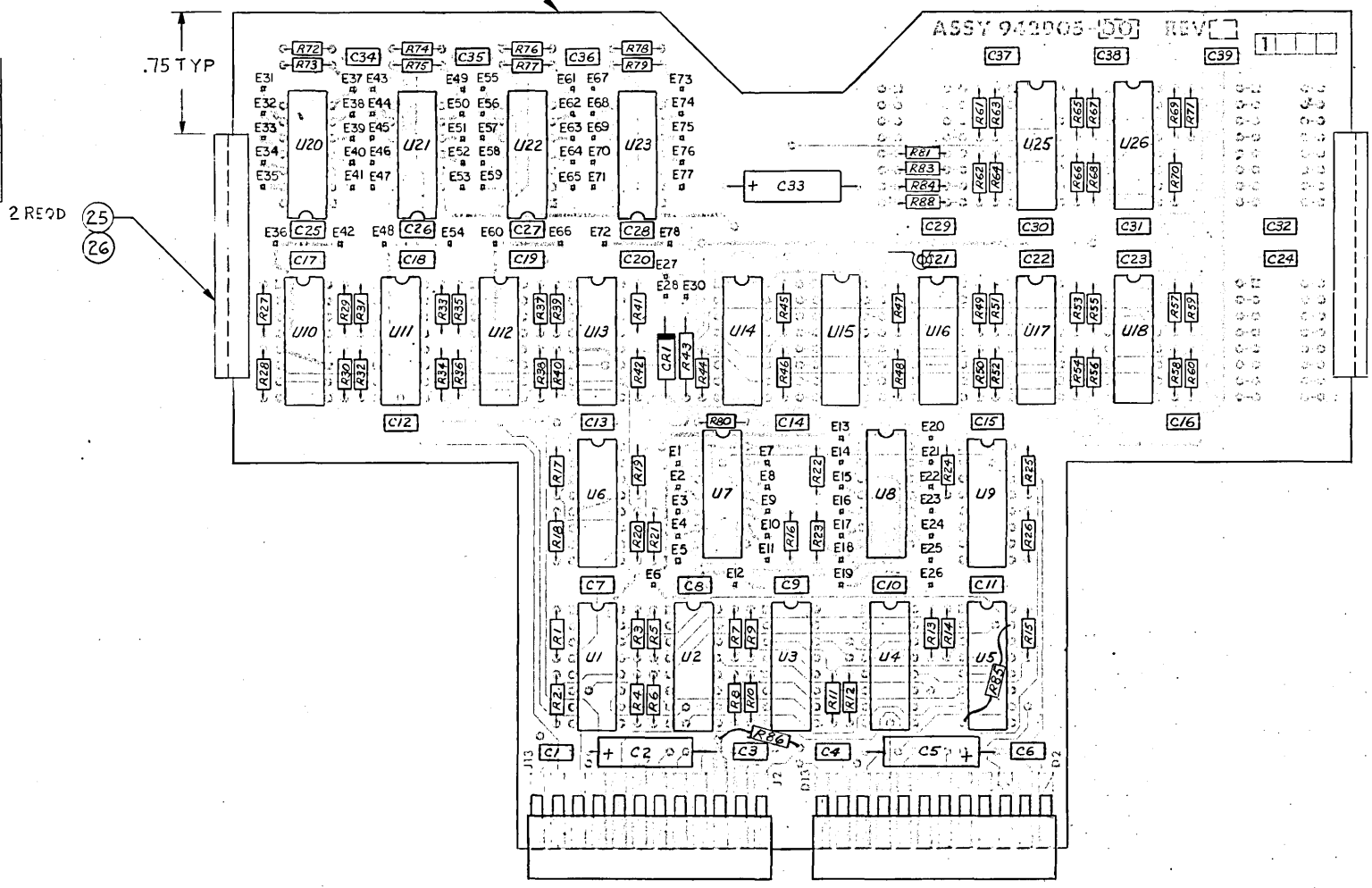
REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		

PART IDENTIFICATION	
PART NUMBER	PART REV.



ETCH CUT LIST
 BETWEEN E13 & E20 COMPONENT SIDE
 BETWEEN FEED THRU ABOVE R12 & TOP PAD OF R12
 ISOLATE LEFT PAD OF C21 (AFTER REMOVING C21) FROM TRACE COMPONENT SIDE

JUMPER LIST
RIGHT SIDE OF R81 TO RIGHT SIDE R83
RIGHT SIDE OF R83 TO RIGHT SIDE R84
RIGHT SIDE OF R84 TO RIGHT SIDE R88
RIGHT SIDE OF R84 TO LOWER END R62
LEFT SIDE OF R81 TO U15-5
U15-5 TO U15-7
LEFT SIDE OF R83 TO U15-4
U15-4 TO U13-14 (FEED THRU)
LEFT SIDE OF R84 TO U15-12
LEFT SIDE OF R88 TO U15-15
U15-15 TO E13
U15-13 TO E20
U15-6 TO TOP OF R12
U15-1 TO U14-16
U15-16 TO U16-1
U15-8 TO LOWER SIDE OF R46



SOLDER SIDE
 R87 BETWEEN U5-8 & U5-9

FOR BOARDS BUILT FROM X1 DETAIL
 SN P001 THRU SN P003

UNLESS OTHERWISE SPECIFIED

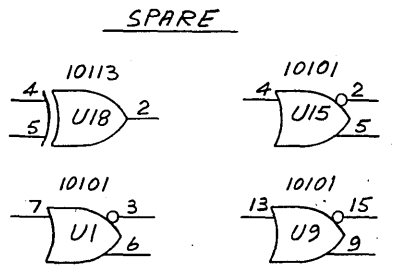
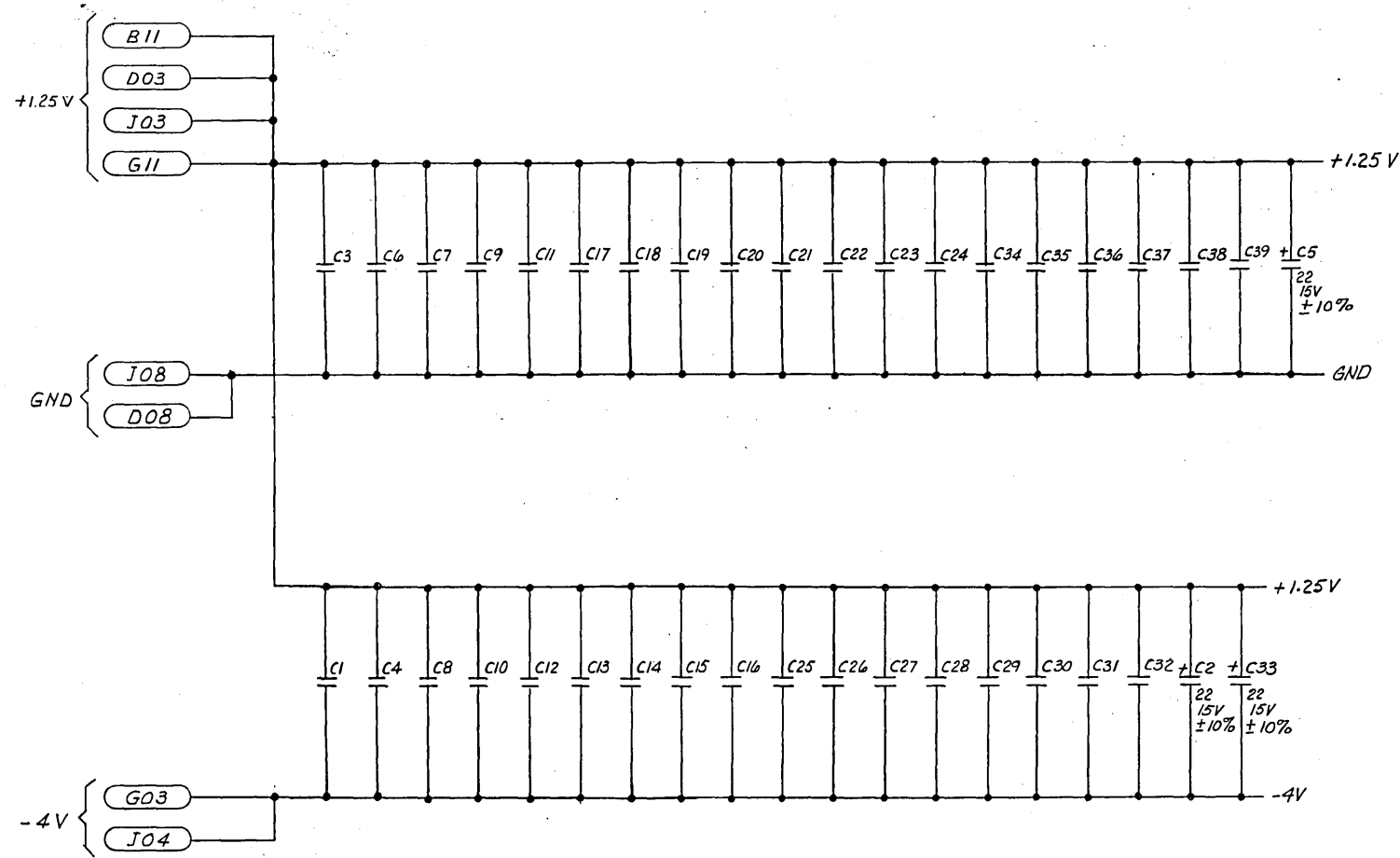
DASH NO. & QTY PER ASSY	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ	DO NOT SCALE DRAWING	PARTS LIST		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION PWBA - BSM SELECT		
	SCREW THREADS PER HANDBOOK H28		CONTRACT NO.	SIZE: D CODE IDENT NO. 16224 DWG NO. 942905		
	COUNTERBORE AND SPOTFACE FILLET RADI TO BE .018 MAXIMUM		DRAWN	SCALE: 2:1 WEIGHT SHEET 2 OF 2		
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .01R		CHECK	DISTR NO. 1410		
	ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		ENGR			
	STANDARD HOLE TOLERANCE PER AND 30387		PROJ. ENGR			
	TOLERANCES ON .XX ± .03 .XXX ± .010 ANGLES ± 0° 30'		PROD. DESIGN			
	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		OTHER APPROVALS			
	DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED					
DASH NO. -001 NEXT ASSY 148 USED ON APPLICATION						

C' SIZE ONLY

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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148-1		X1	ENGINEERING MODEL CONTROL	8/21/77	KES
DWA 148-1		X2	RDD R81-R88, U15 & TIME TAPS	10-7-77	JKL
DWA 148-1		X3	NOTE(8): CHANGED -001 & -002 VERSION OF ASSY NUMBERS. WERE 942910	10-24-77	OPB
		A	PRODUCTION RELEASE	1/5/78	YJ



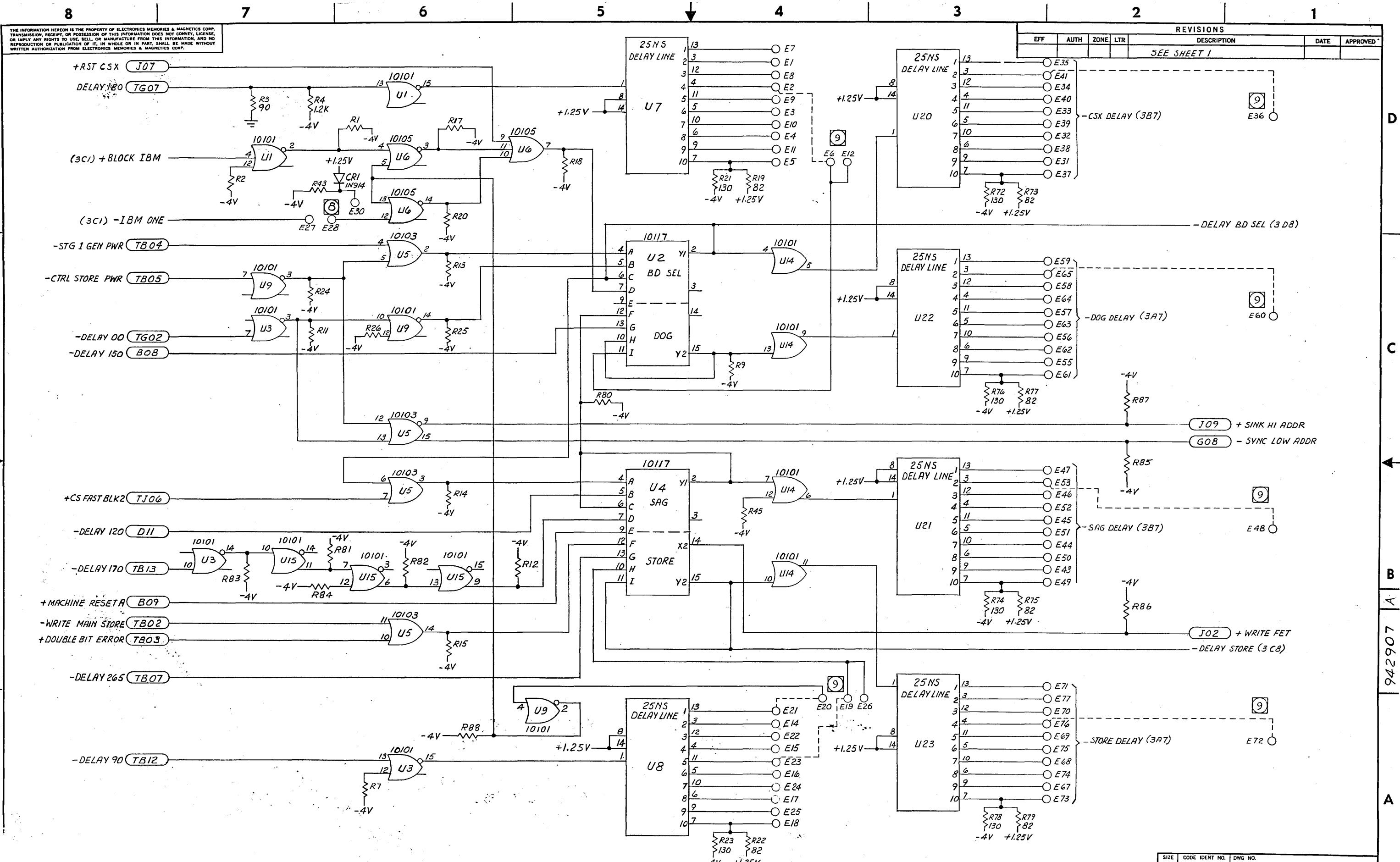
LAST REF. DES. USED	NOT USED
C39	
CRI	
R88	
U26	U24, U9
E78	E29, E13

- 9 ON FINAL ASSEMBLY, TIMING TAPS MAY NOT BE AS SHOWN. THESE ARE SUBJECT TO CHANGE IN TEST.
- 8 FOR -001 VERSION OF ASSY 942905 JUMPER E27 TO E28 FOR -002 VERSION OF ASSY 942905 JUMPER E28 TO E30
- 7 ALL I.C.'S PIN 1 & 16 ARE Vcc (+1.25V); PIN 8 IS VEE (-4V).
- 6 INDICATES AN I/O PIN.
- 5 THIS CARD IS MST-2 ZO = 90 OHMS.
- 4 ALL SIGNALS ARE IBM MST LEVEL.
- 3 ALL CAPACITOR VALUES ARE IN MICROFARADS .1, 100V, ±20%
- 2 ALL RESISTORS ARE 510 OHMS. RESISTOR VALUES ARE IN OHMS 1/8 W ±5% UNLESS OTHERWISE SPECIFIED

OIB-A3V3

DASH NO. & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL		SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		PARTS LIST		CONTRACT NO.		
		SCREW THREADS PER HANDBOOK H28		DRAWN U. SEYDEL 6-10-77		EMM COMPUTER PRODUCTS DIVISION		
		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .015 MAXIMUM		CHECK 6-10-77		ELECTRONIC MEMORIES & MAGNETICS CORPORATION		
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO 20R		ENGR		SCHEMATIC		
		ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1		PROJ. ENGR J. J. J. 7/21/77		BSM SELECT		
		STANDARD HOLE TOLERANCE PER AND 10387		PROD. DESIGN		SIZE CODE IDENT NO. DWG NO.		
		TOLERANCES ON .XX ± .03 .XXX ± .019 ANGLES ± 0° 30'		1-5-78		D 16224 942907		
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		OTHER APPROVALS		SCALE: — WEIGHT: — SHEET 1 of 4		
DASH NO. NEXT ASSY USED ON APPLICATION		148				DISTR NO. 1410		

942907 A B

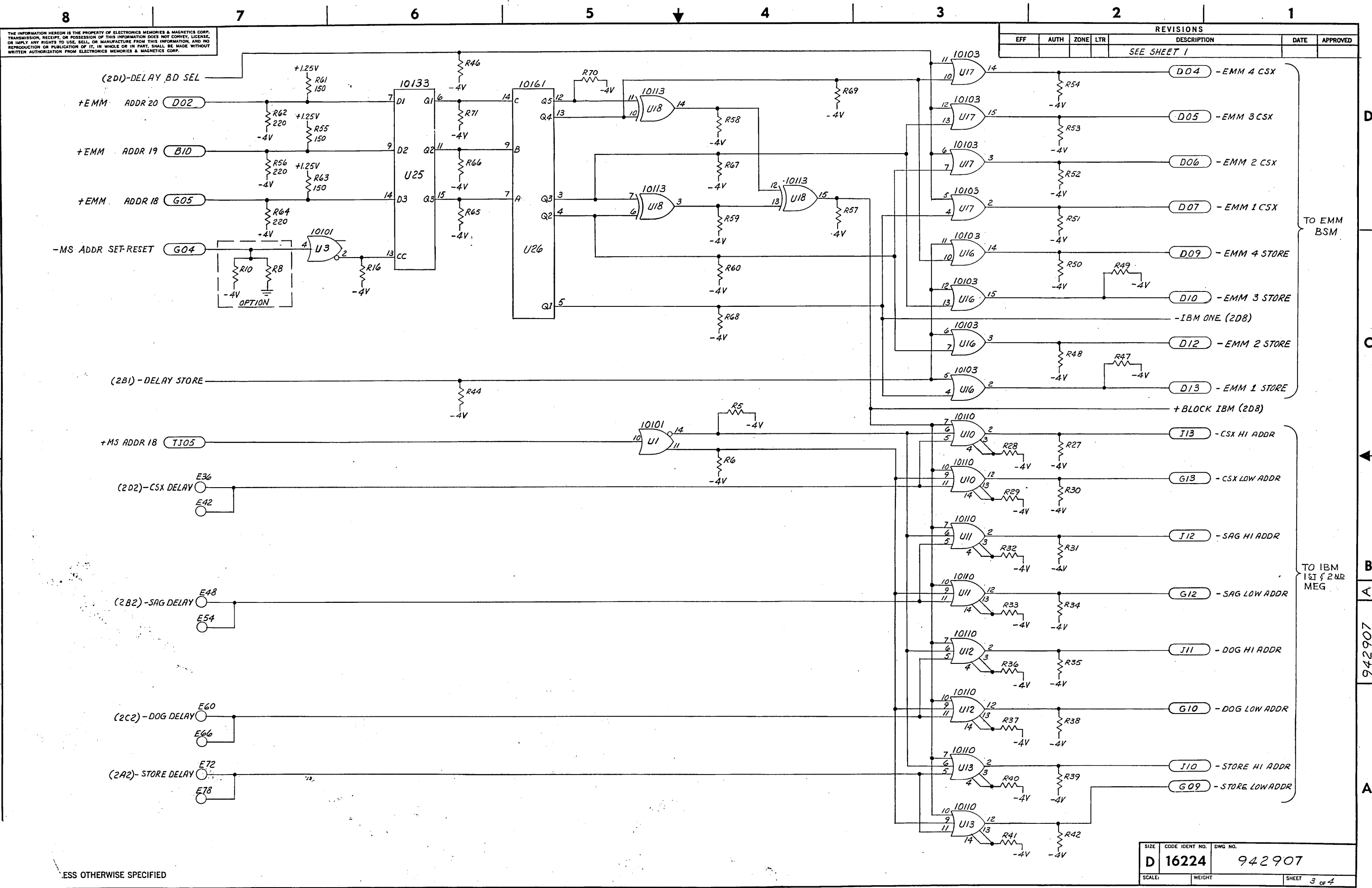


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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SHEET 1		

ESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942907
SCALE	WEIGHT	SHEET 2 OF 4



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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SHEET 1		

ESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942907
SCALE:	WEIGHT	SHEET 3 of 4

942907

8 7 6 5 4 3 2 1

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SHEET 1		

+EMM ADDR 20	D02	B02	-WRITE MAIN STORE
+1.25V	D03	B03	+ DOUBLE BIT ERROR
-EMM 4 CSX	D04	B04	-STG 1 GEN PWR
-EMM 3 CSX	D05	B05	- CTRL STORE PWR
-EMM 2 CSX	D06	B06	
-EMM 1 CSX	D07	B07	- DELAY 265
GND	D08	B08	- DELAY 150
-EMM 4 STORE	D09	B09	+ MACHINE RESET A
-EMM 3 STORE	D10	B10	+EMM ADDR 19
-DELAY 120	D11	B11	+1.25V
-EMM 2 STORE	D12	B12	-DELAY 90
-EMM 1 STORE	D13	B13	-DELAY 170

+WRITE FET	J02	G02	-DELAY 00
+1.25V	J03	G03	-4V
-4V	J04	G04	-MS ADDR SET-RESET
+MS ADDR 18	J05	G05	+EMM ADDR 18
+CS FAST BLK 2	J06	G06	
+RST CSX	J07	G07	-DELAY 180
GND	J08	G08	-SYNC LOW ADDR
+SINK HI ADDR	J09	G09	-STORE LOW ADDR
-STORE HI ADDR	J10	G10	-DOG LOW ADDR
-DOG HI ADDR	J11	G11	+1.25V
-SAG HI ADDR	J12	G12	-SAG LOW ADDR
-CSX HI ADDR	J13	G13	-CSX LOW ADDR

D

C

B

A

D

C

B

A

942907

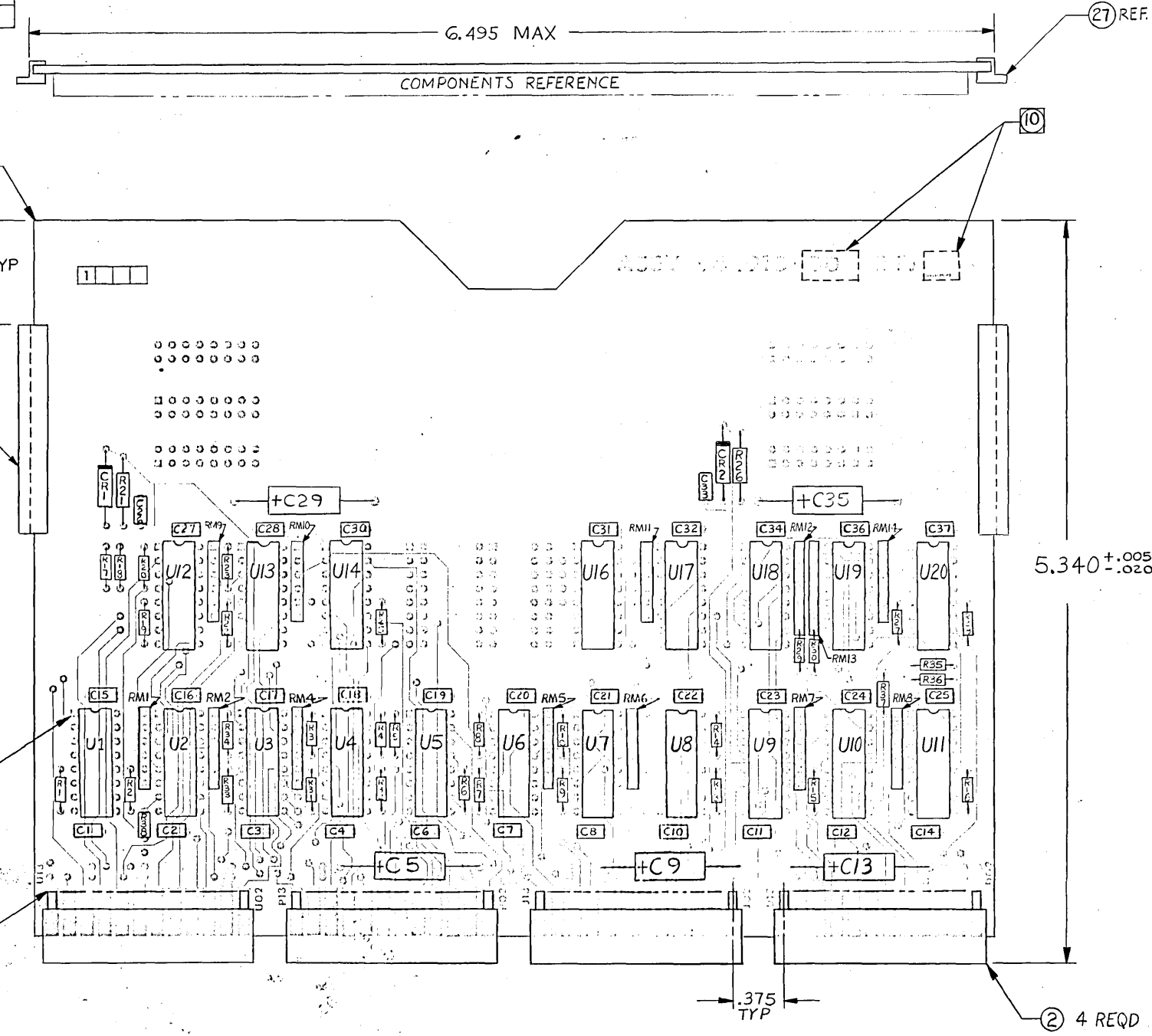
UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942907
SCALE:	WEIGHT	SHEET 4 of 4

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
148/22		X1	ENG MODEL CONTROL	8/31/77	<i>[Signature]</i>
148/22		X2	ADDED ITEMS 27 & 28	12-14-77	<i>[Signature]</i>
		A	PRODUCTION RELEASE	12/19/77	<i>[Signature]</i>

PART IDENTIFICATION	
PART NUMBER	PART REV.
942910-001	A



- 1. CONNECTOR CONTACT BLADES ARE TO BE CENTERED ON THE ETCH CONNECTOR PADS WITHIN ± .010.
- 10. IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
- 9. □ SQUARE PAD INDICATES PIN NO. 1 OF INTEGRATED CIRCUITS AND RESISTOR MODULES.
- 8. — BAND INDICATES CATHODE END OF DIODE.
- 7. + INDICATES POSITIVE END OF CAPACITOR.
- 6. SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM NO. 3
- 5. COMPONENT HEIGHT NOT TO EXCEED .40.
- 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
- 3. COMPONENT LEAD SOLDER BUILD UP NOT TO EXCEED .060, FARSIDE.
- 2. ASSEMBLY PER EM MFG STANDARDS.
- 1. FOR SCHEMATIC DIAGRAM, SEE PARTS LIST.

* UNLESS OTHERWISE SPECIFIED

-001		942910-001	SEE SEPARATE PARTS LIST 942910-001		
DASH NO. & QTY PER ASSY		NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE
SEE PART IDENT BLOCK FOR PART MARKING REQD		PARTS LIST		CONTRACT NO.	CODE IDENT NO.
DO NOT SCALE DRAWING		SCREW THREADS PER HANDBOOK H 28		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .015 MAXIMUM	
REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R		ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1		STANDARD HOLE TOLERANCE PER AND 10387	
TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED	
DASH NO. 001		NEXT ASSY 148		USED ON APPLICATION	
DRAWN S. FLIPIEN 8-24-77		CHECK L. Marcus 8-30-77		ENGR. M. S. 8-31-77	
PROJ. ENGR. L. P. W. 8-31-77		PROD. DESIGN		OTHER APPROVALS	
EMM COMPUTER PRODUCTS DIVISION		ELECTRONIC MEMORIES & MAGNETICS CORPORATION		PWBA-STORAGE PROTECT DATA IN & ADDRESS	
SIZE D		CODE IDENT NO. 16224		DWG NO. 942910	
SCALE: 2:1		WEIGHT		SHEET 1 OF 1	
				DISTR. NO. 1410	

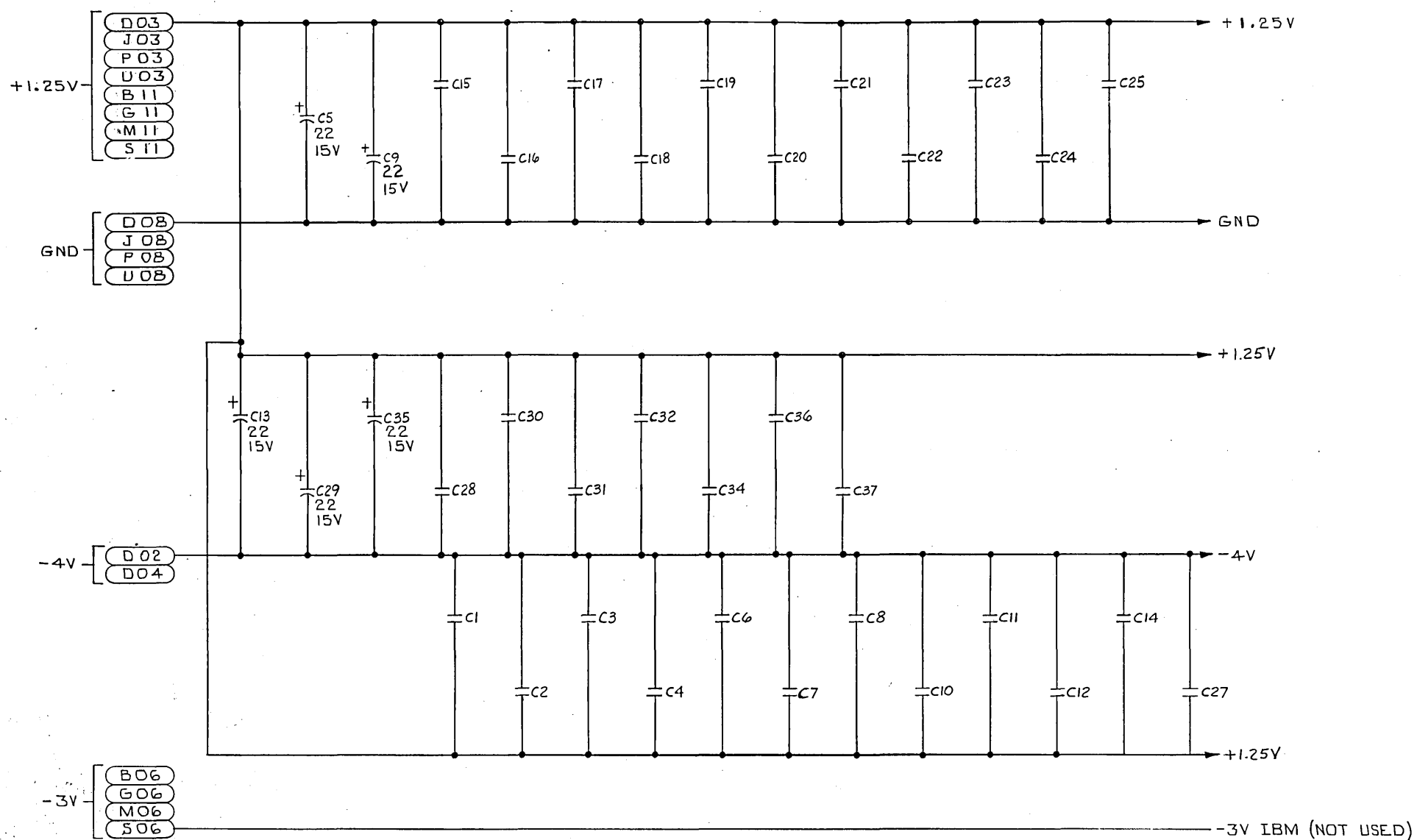
'C' SIZE ONLY

942910 A B

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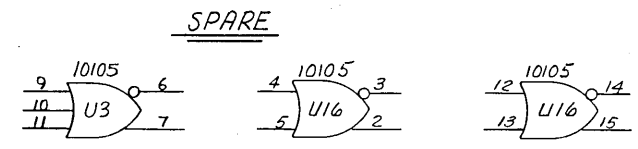
PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA	1+B/2	XI	ENG. MODEL CONTROL DWG	8/2/77	E.D.
		A	PRODUCTION RELEASE	1/5/78	Y



8. ALL RESISTOR MODULE VALUES ARE IN OHMS, $510 \pm 2\%$.
7. INDICATES AN I/O PIN.
6. THIS CARD IS MST-2. $Z_0 = 90$ OHMS.
5. ALL SIGNALS ARE IBM MST LEVEL.
4. ALL CAPACITORS ARE $.01 \mu f$.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS $\pm 10\%$, 50V.
2. ALL RESISTOR VALUES ARE IN OHMS $\pm 5\%$, 1/8W.
1. PIN 1 & 16 OF ALL I.C.'S IS $+1.25V (V_{CC})$;
PIN 8 OF ALL I.C.'S IS $-4.0V (V_{EE})$.

UNLESS OTHERWISE SPECIFIED



LAST REF. DESIG USED	NOT USED
C37	
CR2	
R38	RM12,24
RM14	RM3
U20	U15

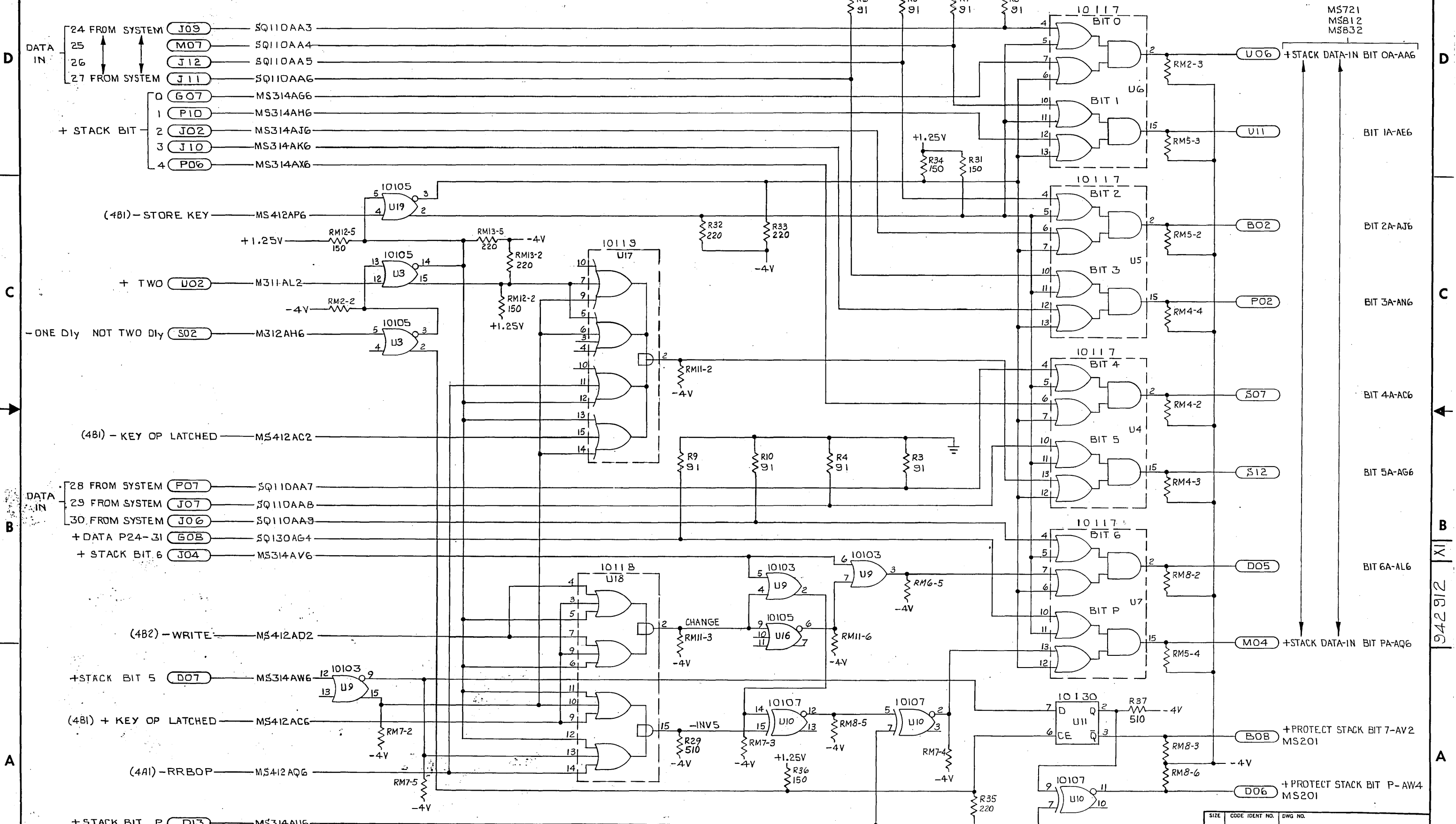
DASH NO. & QTY PER ASSY	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ	DO NOT SCALE DRAWING	PARTS LIST		CONTRACT NO.		
	SCREW THREADS PER HANDBOOK H28			DRAWN <i>L. Marcus</i> 7-9-77		
	COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM			CHECK		
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .01R			ENGR <i>M. J. ...</i> 8-31-77		
	ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1			PROD. DESIGN <i>...</i> 1-5-78		
	STANDARD HOLE TOLERANCE PER AND 10387			OTHER APPROVALS		
	TOLERANCES ON .XX = $\pm .03$.XXX = $\pm .010$ ANGLES = $\pm 0^\circ 30'$			SIZE CODE IDENT NO. DWG NO.		
	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.3			D 16224 942912		
DASH NO.	NEXT ASSY	USED ON	APPLICATION	SCALE:	WEIGHT	SHEET 1 OF 6
						DISTR NO. 14-10

942912

A

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REVISIONS				DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION	
				SEE SH 1	



NOTES: UNLESS OTHERWISE SPECIFIED

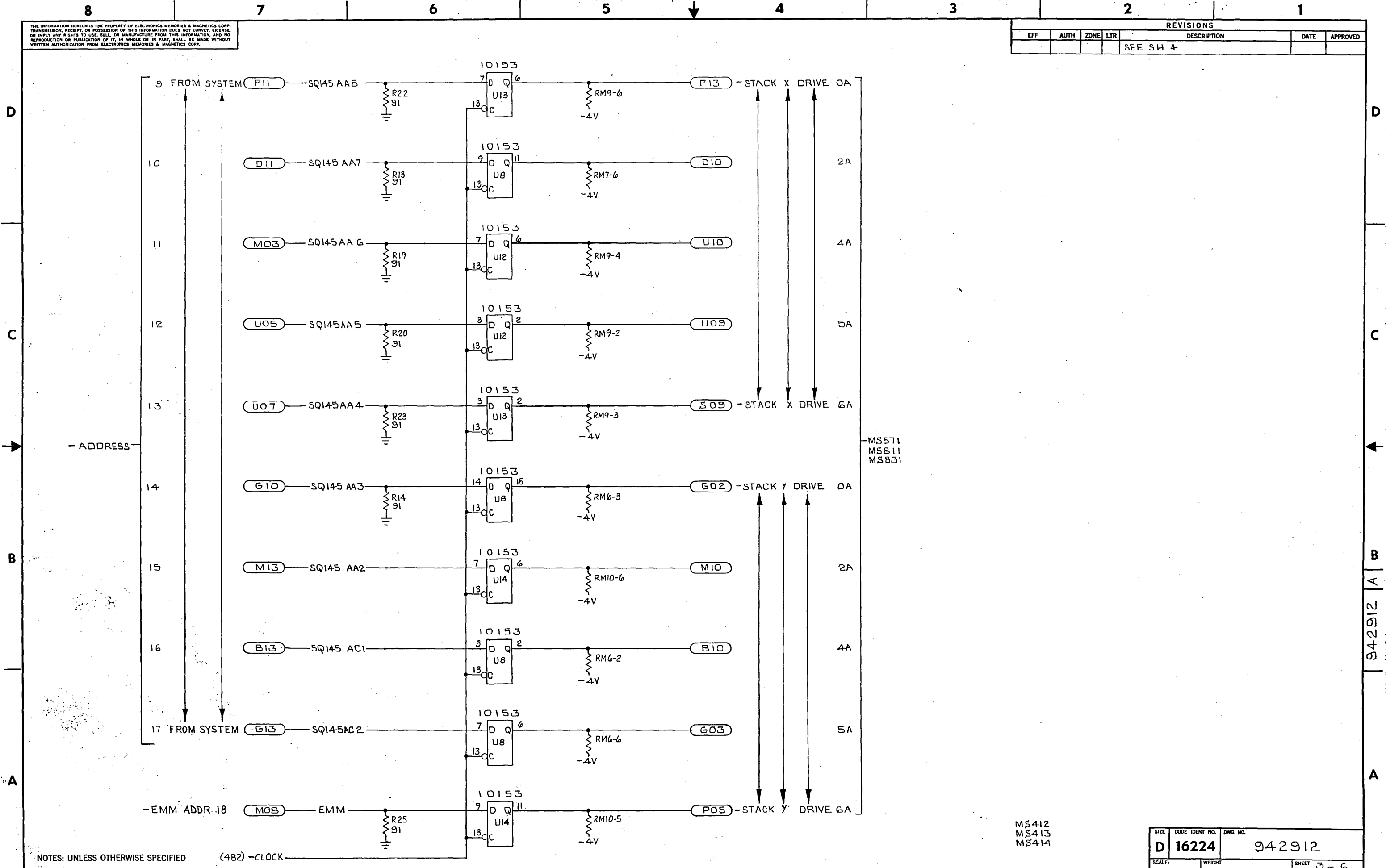
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942912
SCALE:	WEIGHT	SHEET 2 OF 6

MS411

942912 XI

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH 4		



MS571
MS811
MS831

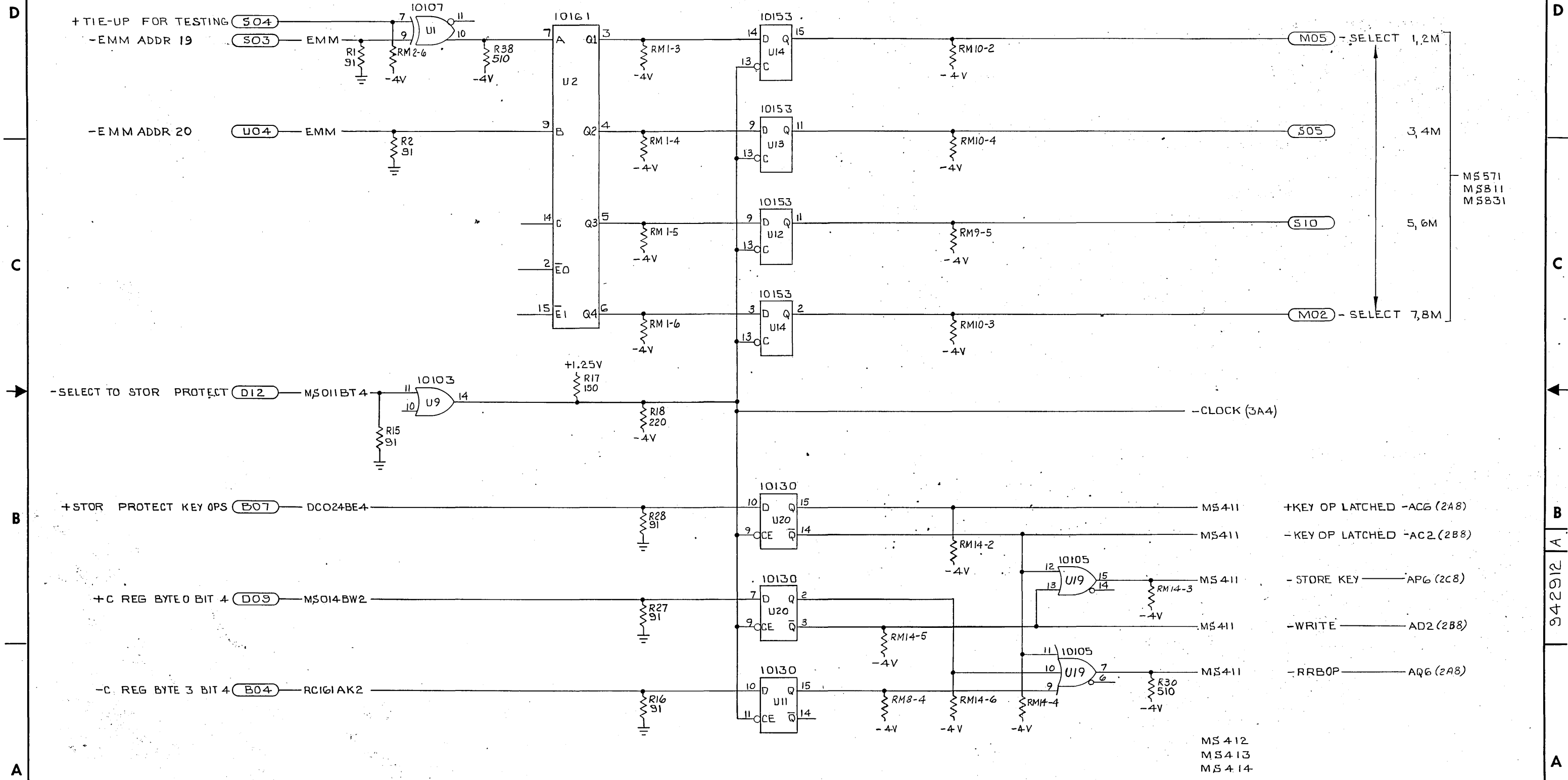
MS412
MS413
MS414

NOTES: UNLESS OTHERWISE SPECIFIED (482) -CLOCK

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942912
SCALE:	WEIGHT	SHEET 3 of 6

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH 1		



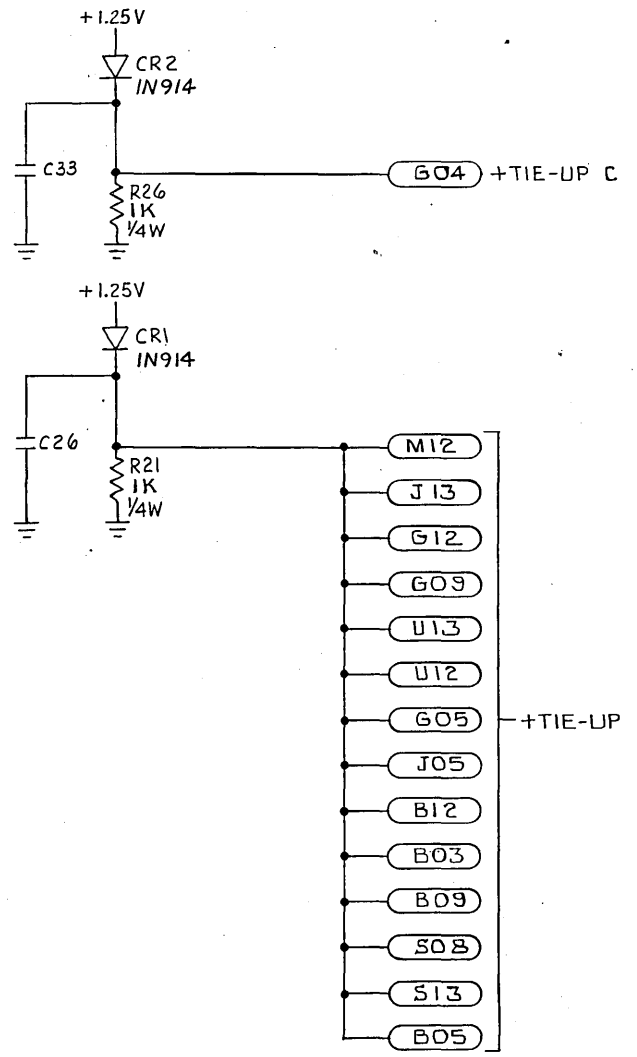
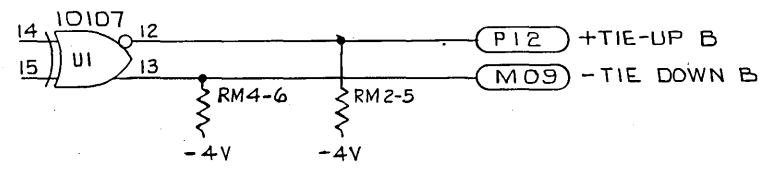
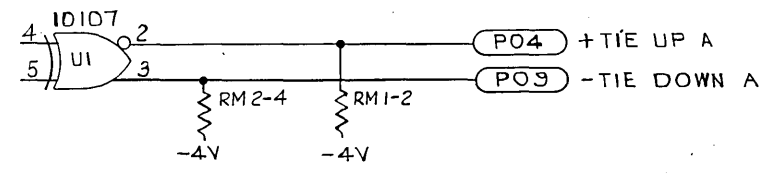
MS 412
MS 413
MS 414

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942912
SCALE:	WEIGHT	SHEET 4 OF 6

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH 1		



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942912
SCALE:	WEIGHT	SHEET 5 OF 6

942912 A B

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		

-4V	D02	B02	+STACK DATA-IN BIT 2A
+1.25V	D03	B03	+TIE-UP
-4V	D04	B04	-C REG BYTE 3 BIT 4
+ STACK DATA-IN BIT 6A	D05	B05	+TIE-UP
+PROTECT STACK BIT P	D06	B06	-3V
+ STACK BIT 5	D07	B07	+STOR PROTECT KEY OPS
GND	D08	B08	+PROTECT STACK BIT 7
+C REG BYTE 0 BIT 4	D09	B09	+TIE-UP
-STACK X DRIVE 2A	D10	B10	-STACK Y DRIVE 4A
-ADDRESS 10 FROM SYSTEM	D11	B11	+1.25V
-SELECT TO STOR PROTECT	D12	B12	+TIE-UP
+STACK BIT P	D13	B13	-ADDRESS 16 FROM SYSTEM

+STACK BIT 2	J02	G02	-STACK Y DRIVE 0A
+1.25V	J03	G03	-STACK Y DRIVE 5A
+STACK BIT 6	J04	G04	+TIE-UP C
+TIE-UP	J05	G05	+TIE-UP
DATA-IN 30 FROM SYSTEM	J06	G06	-3V
DATA-IN 29 FROM SYSTEM	J07	G07	+ STACK BIT 0
GND	J08	G08	+DATA P24-31
DATA-IN 24 FROM SYSTEM	J09	G09	+TIE-UP
+STACK BIT 3	J10	G10	-ADDRESS 14 FROM SYSTEM
DATA-IN 27 FROM SYSTEM	J11	G11	+1.25V
DATA-IN 26 FROM SYSTEM	J12	G12	+TIE-UP
+TIE-UP	J13	G13	-ADDRESS 17 FROM SYSTEM

+STACK DATA-IN BIT 3A	P02	M02	-SELECT 7, 8M
+1.25V	P03	M03	-ADDRESS 11 FROM SYSTEM
+TIE-UP A	P04	M04	+STACK DATA-IN BIT PA
-STACK Y DRIVE 6A	P05	M05	-SELECT 1, 2M
+STACK BIT 4	P06	M06	-3V
DATA-IN 28 FROM SYSTEM	P07	M07	DATA IN 25 FROM SYSTEM
GND	P08	M08	-EMM ADDR 18
-TIE DOWN A	P09	M09	-TIE DOWN B
+STACK BIT 1	P10	M10	-STACK Y DRIVE 2A
-ADDRESS 9 FROM SYSTEM	P11	M11	+1.25V
+TIE-UP B	P12	M12	+TIE-UP
-STACK X DRIVE 0A	P13	M13	-ADDRESS 15 FROM SYSTEM

+TWO	U02	S02	-ONE DIY NOT TWO DIY
+1.25V	U03	S03	-EMM ADDR 19
-EMM ADDR 20	U04	S04	+TIE-UP FOR TESTING
-ADDRESS 12 FROM SYSTEM	U05	S05	-SELECT 3, 4M
+STACK DATA-IN BIT 0A	U06	S06	-3V
-ADDRESS 13 FROM SYSTEM	U07	S07	+STACK DATA-IN BIT 4A
GND	U08	S08	+TIE-UP
-STACK X DRIVE 5A	U09	S09	-STACK X DRIVE 6A
-STACK X DRIVE 4A	U10	S10	-SELECT 5, 6M
+STACK DATA-IN BIT 1A	U11	S11	+1.25V
+TIE-UP	U12	S12	+STACK DATA-IN BIT 5A
+TIE-UP	U13	S13	+TIE-UP

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942912
SCALE:	WEIGHT	SHEET 6 OF 6

942912

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942915-001	A
942915-002	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA		X1	ENGINEERING MODEL CONTROL	8/31/77	K.E.P.
148/23		X2	ADDED ITEM 5FG	12-14-77	J.P.
		A	PRODUCTION RELEASE	12/9/77	J.P.

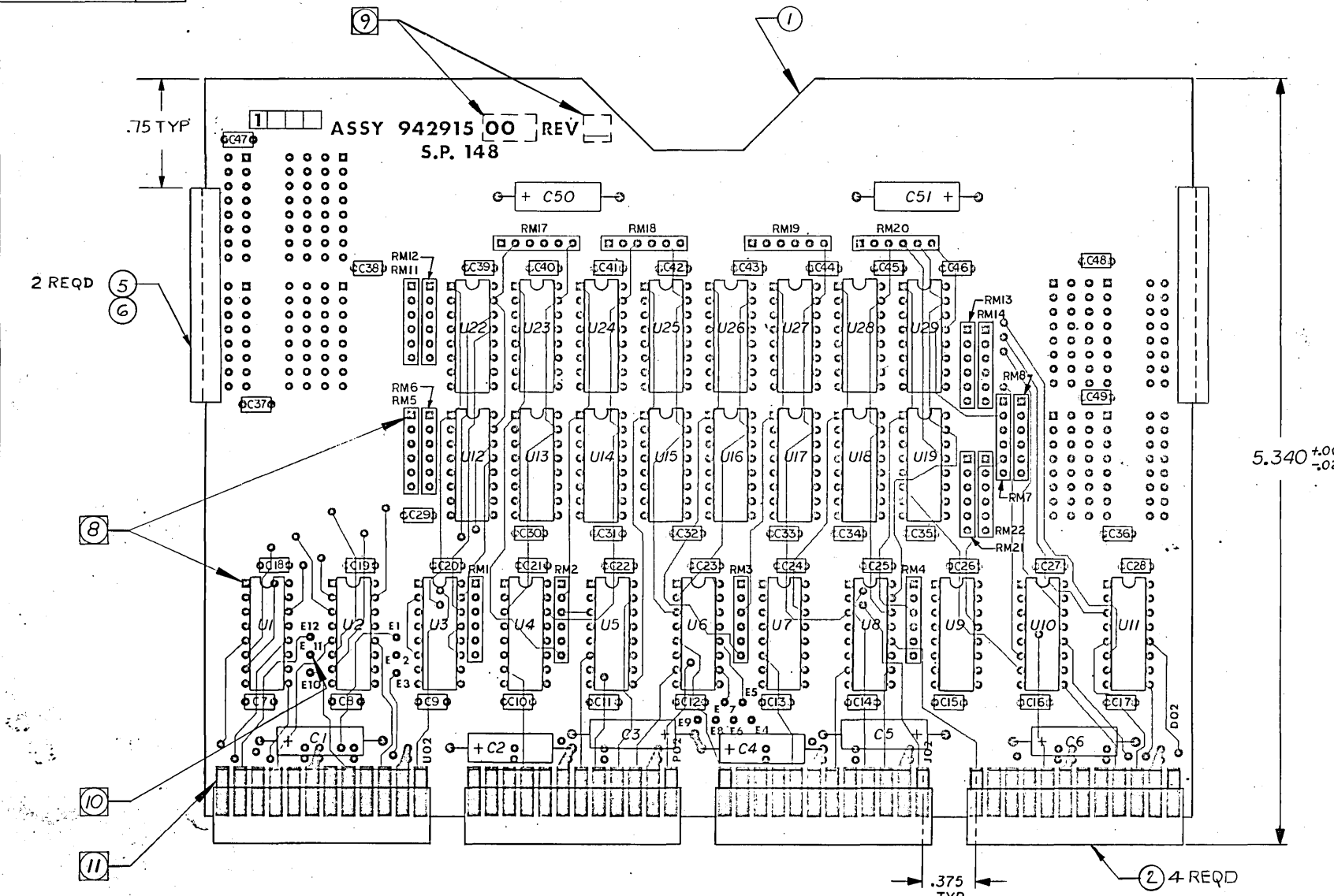


TABLE 1
942915-001
(10) JUMPER

FROM	TO
E10	E11
E4	E5
E6	E7
E1	E2

TABLE 2
942915-002
(10) JUMPER

FROM	TO
E12	E11
E8	E5
E9	E7
E3	E2

- 11 CONNECTOR CONTACT BLADES ARE TO BE CENTERED ON THE ETCH CONNECTOR PADS WITHIN ±.010.
- 10 INSTALL WIRE WRAP POST ITEM 3 OF P/L ON E1 THRU E12 AND WIRE WITH ITEM 4 PER TABLE 1 & 2.
- 9 IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
- 8 □ SQUARE PAD INDICATES PIN NO. 1 OF I.C.s AND RES. MODULES.
- 7 "+" INDICATES POSITIVE END OF CAPACITOR.
- 6. SOLDER COMPONENTS TO ITEM NO.1 USING ITEM 24.
- 5. COMPONENT HEIGHT NOT TO EXCEED .40.
- 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
- 3. COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060, FARSIDE.
- 2. ASSEMBLE PER EM MFG STANDARDS.
- 1. FOR SCHEMATIC DIAGRAM, SEE PARTS LIST PL942915.

NOTES: UNLESS OTHERWISE SPECIFIED

SEE SEPARATE PARTS LIST PL 942915-002		SPEC/SOURCE		CODE IDENT NO.	FIND NO.
SEE SEPARATE PARTS LIST PL 942915-001		SPEC/SOURCE		CODE IDENT NO.	FIND NO.
-002 -001		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL	
DASH NO. & QTY PER ASSY		PARTS LIST		CONTRACT NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQD		DO NOT SCALE DRAWING		DRAWN <i>H. Chaffin</i> 22 AUG 1977	
		SCREW THREADS PER HANDBOOK H 28		CHECK <i>L. Marcus</i> 8-22-77	
		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .015 MAXIMUM		ENGR <i>M. Saphir</i> 8-21-77	
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010		PROJ. ENGR <i>K. J. ...</i> 8/31/77	
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		PROD. DESIGN	
		STANDARD HOLE TOLERANCE PER AND 30387		SIZE CODE IDENT NO. DWG NO.	
		TOLERANCES ON: XX = ± .03 XXX = ± .010 ANGLES = ± 0° 30'		D 16224 942915	
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		SCALE: 2:1 WEIGHT SHEET 1 OF 1	
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		DISTR NO. 1410	
APPLICATION		OTHER APPROVALS			

C1 SIZE ONLY

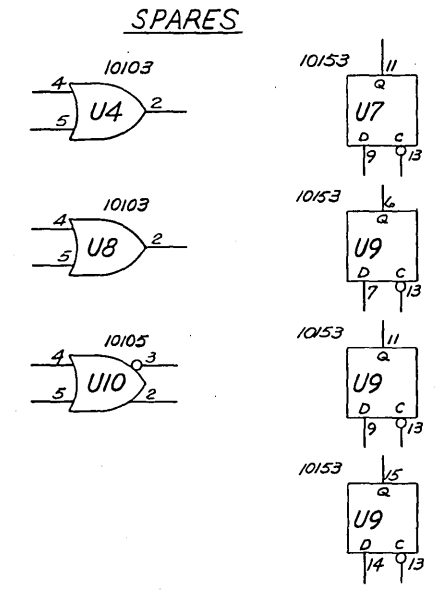
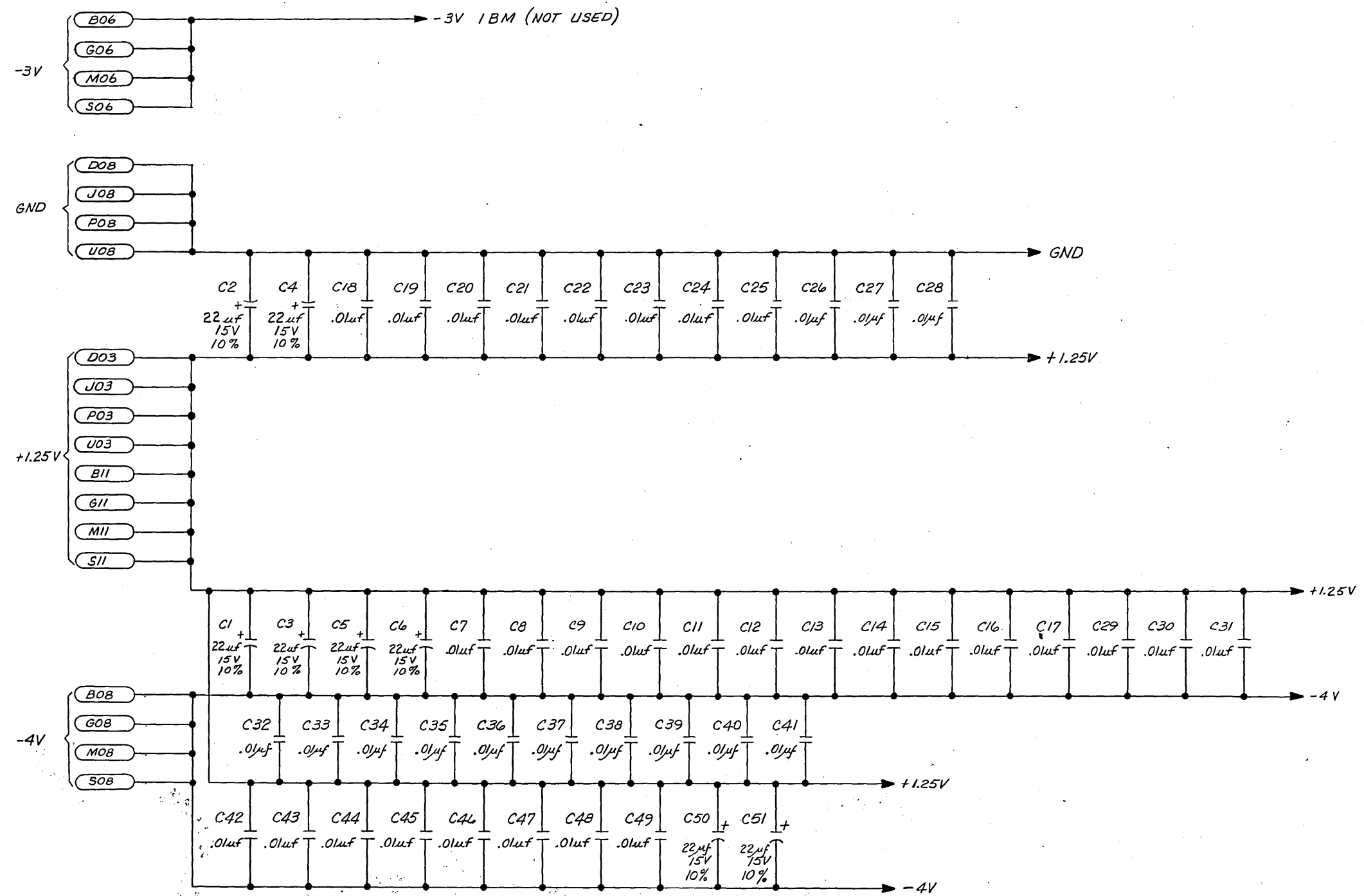
942915 1A B

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PART IDENTIFICATION

PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA	148/10	XI	ENGINEERING MODEL CONTROL	8/21/77	KGP
		A	ADDED ⑨. PRODUCTION RELEASE	1/5/78	YR



REFERENCE DESIGNATIONS	
LAST USED	NOT USED
C51	
RM22	RM9,10,15,16
U29	U20,U21

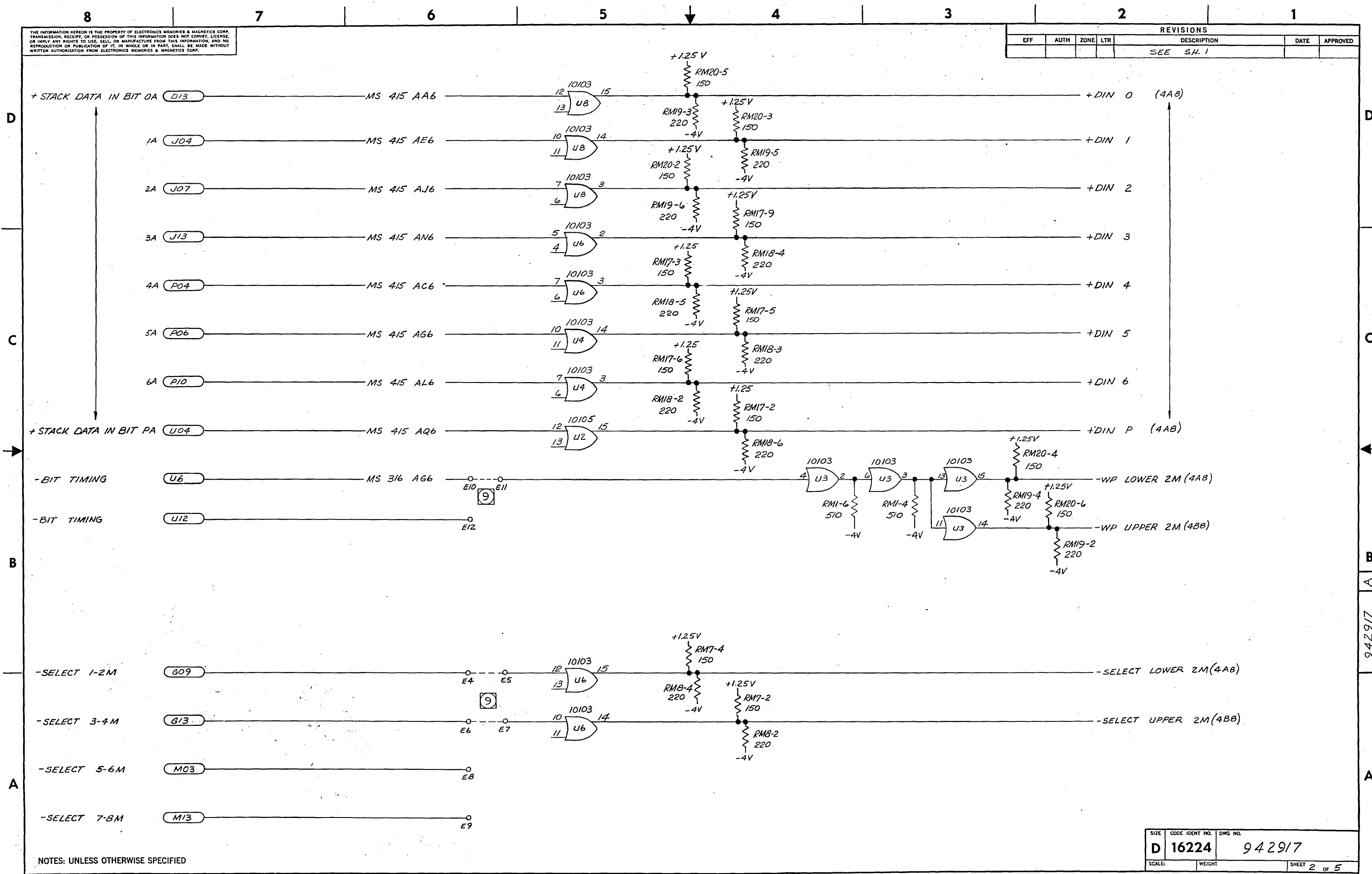
- ⑨ JUMPERS SHOWN FOR -001 VERSION
- ALL RESISTOR MODULES ARE ± 2% PIN 1 COMMON
 - THIS IS A MST-2 CARD. ZO = 90 Ω
 - ALL SIGNALS ARE IBM MST LEVEL
 - PIN 1 OF U1 THRU U11 IS +1.25V(Vcc)
 - PIN 8 OF ALL IC'S IS -4V(VEE)
 - ALL .01μf CAPACITORS ARE 50V, ±10%

NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ	DO NOT SCALE DRAWING	CONTRACT NO.	PARTS LIST			
	SCREW THREADS PER HANDBOOK H28		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION			
	COUNTERBORE AND SPOTFACE FILLET RADII TO BE .218 MAXIMUM	DRAWN: <i>H. J. Goulet</i> 6-21-77	SCHEMATIC - STORAGE PROTECT-148			
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .518R	CHECK: <i>L. M. ...</i> 8-22-77	SIZE: D CODE IDENT NO. 16224 DWG NO. 942917			
	ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1	ENGR: <i>M. ...</i> 8-31-77	SCALE: NONE WEIGHT SHEET 1 OF 5			
	STANDARD HOLE TOLERANCE PER AND 20387	PROJ. ENGR: <i>R. ...</i> 8/21/77	DISTR NO. 1412			
	TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 5°	PROD. DESIGN: <i>...</i> 1-5-78				
	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5	OTHER APPROVALS:				
	DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED					
DASH NO. 942915	NEXT ASSY 7370/148	USED ON	APPLICATION			

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH. 1		



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942917
SCALE:	WEIGHT	SHEET 2 of 5

8

7

6

5

4

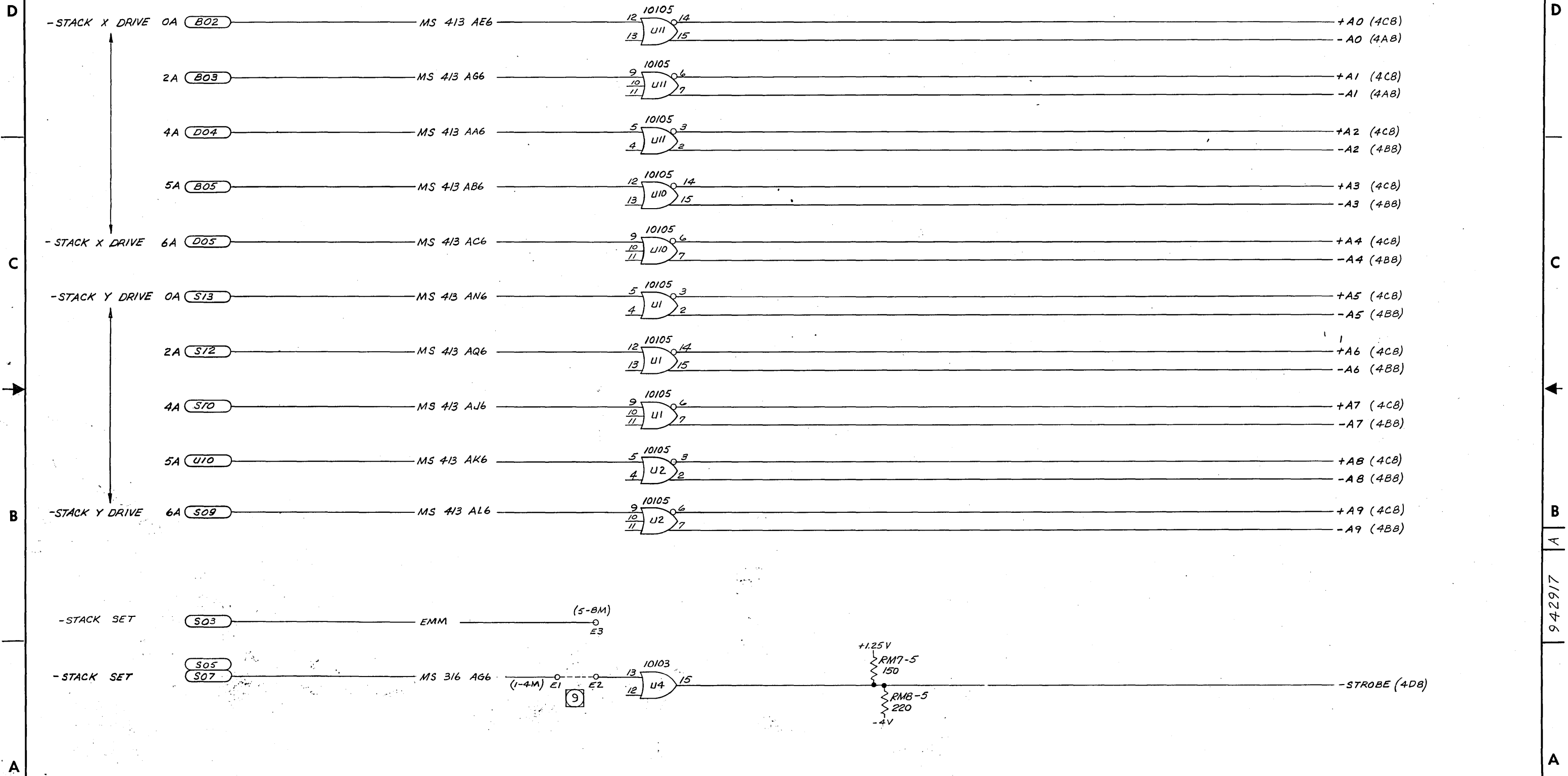
3

2

1

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REVISIONS				
EFF	AUTH	ZONE	LTR	DESCRIPTION
				SEE SH. 1
				DATE
				APPROVED



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942917
SCALE:	WEIGHT	SHEET 3 OF 5

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH. 1		

D

D

C

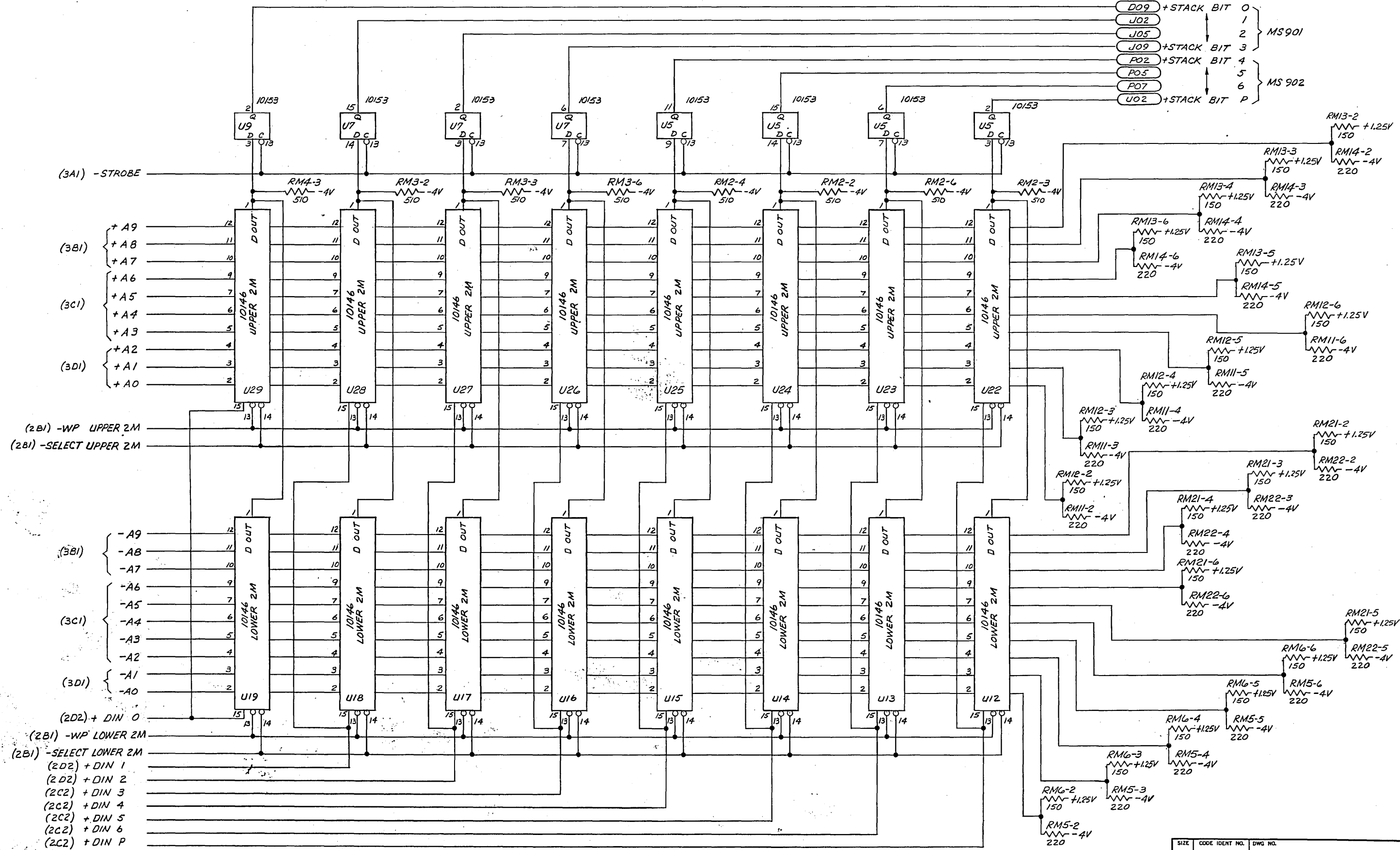
C

B

B

A

A



- (3A1) -STROBE
- (3B1) +A9
- +A8
- +A7
- (3C1) +A6
- +A5
- +A4
- (3D1) +A3
- +A2
- +A1
- +A0
- (2B1) -WP UPPER 2M
- (2B1) -SELECT UPPER 2M
- (3B1) -A9
- A8
- A7
- (3C1) -A6
- A5
- A4
- A3
- A2
- (3D1) -A1
- A0
- (2D2) +DIN 0
- (2B1) -WP LOWER 2M
- (2B1) -SELECT LOWER 2M
- (2D2) +DIN 1
- (2D2) +DIN 2
- (2C2) +DIN 3
- (2C2) +DIN 4
- (2C2) +DIN 5
- (2C2) +DIN 6
- (2C2) +DIN P

- DO9 +STACK BIT 0
 - JO2 1
 - JO5 2
 - JO9 +STACK BIT 3
 - PO2 +STACK BIT 4
 - PO5 5
 - PO7 6
 - UO2 +STACK BIT P
- MS 901
- MS 902

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942917
SCALE:	WEIGHT	SHEET 4 OF 5

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SHEET 1		

+1.25V
 -STACK X DRIVE 4A
 -STACK X DRIVE 6A
 GND
 + STACK BIT 0
 + STACK DATA IN BIT 0A

D02	B02	-STACK X DRIVE 0A
D03	B03	-STACK X DRIVE 2A
D04	B04	
D05	B05	-STACK X DRIVE 5A
D06	B06	-3V (IBM) NOT USED
D07	B07	
D08	B08	-4V
D09	B09	
D10	B10	
D11	B11	+1.25V
D12	B12	
D13	B13	

+STACK BIT 1
 +1.25V
 +STACK DATA IN BIT 1A
 +STACK BIT 2
 +STACK DATA IN BIT 2A
 GND
 +STACK BIT 3
 -SELECT 3-4M/7-8M
 -SELECT 1-2M/5-6M
 +STACK DATA IN BIT 3A

J02	G02	
J03	G03	
J04	G04	
J05	G05	
J06	G06	-3V (IBM) NOT USED
J07	G07	
J08	G08	-4V
J09	G09	-SELECT 1-2M
J10	G10	
J11	G11	+1.25V
J12	G12	
J13	G13	-SELECT 3-4M

+STACK BIT 4
 +1.25V
 +STACK DATA IN BIT 4A
 +STACK BIT 5
 +STACK DATA IN BIT 5A
 +STACK BIT 6
 GND
 +STACK DATA IN BIT 6A

P02	M02	
P03	M03	-SELECT 5-6M
P04	M04	
P05	M05	
P06	M06	-3V (IBM) NOT USED
P07	M07	
P08	M08	-4V
P09	M09	
P10	M10	
P11	M11	+1.25V
P12	M12	
P13	M13	-SELECT 7-8M

+STACK BIT P
 +1.25V
 +STACK DATA IN BIT PA
 GND
 -STACK Y DRIVE 5A
 -BIT TIMING

U02	S02	
U03	S03	-STACK SET
U04	S04	
U05	S05	-STACK SET
U06	S06	-3V (IBM) NOT USED
U07	S07	-STACK SET
U08	S08	-4V
U09	S09	-STACK Y DRIVE 6A
U10	S10	-STACK Y DRIVE 4A
U11	S11	+1.25V
U12	S12	-STACK Y DRIVE 2A
U13	S13	-STACK Y DRIVE 0A

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942917
SCALE:	WEIGHT	SHEET 5 OF 5

942917

8 7 6 5 4 3 2 1

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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/14		X1	ENGINEERING MODEL CONTROL	6-24-77	R.L.
DWA 148/14		X2	ENG. MODEL CONTROL		
DWA 148/28	2C3	X3	ADDED KB RELAY & EXTENSIVELY REVISED WIRING.	11/17	(S)
DWA 148/28	2B6	X4	REVISED WIRING; J2 PIN 1 WAS 29, J2 PIN 2 WAS 50.	11/28/77	R.L.
		A	PRODUCTION RELEASE	1/6/78	YH



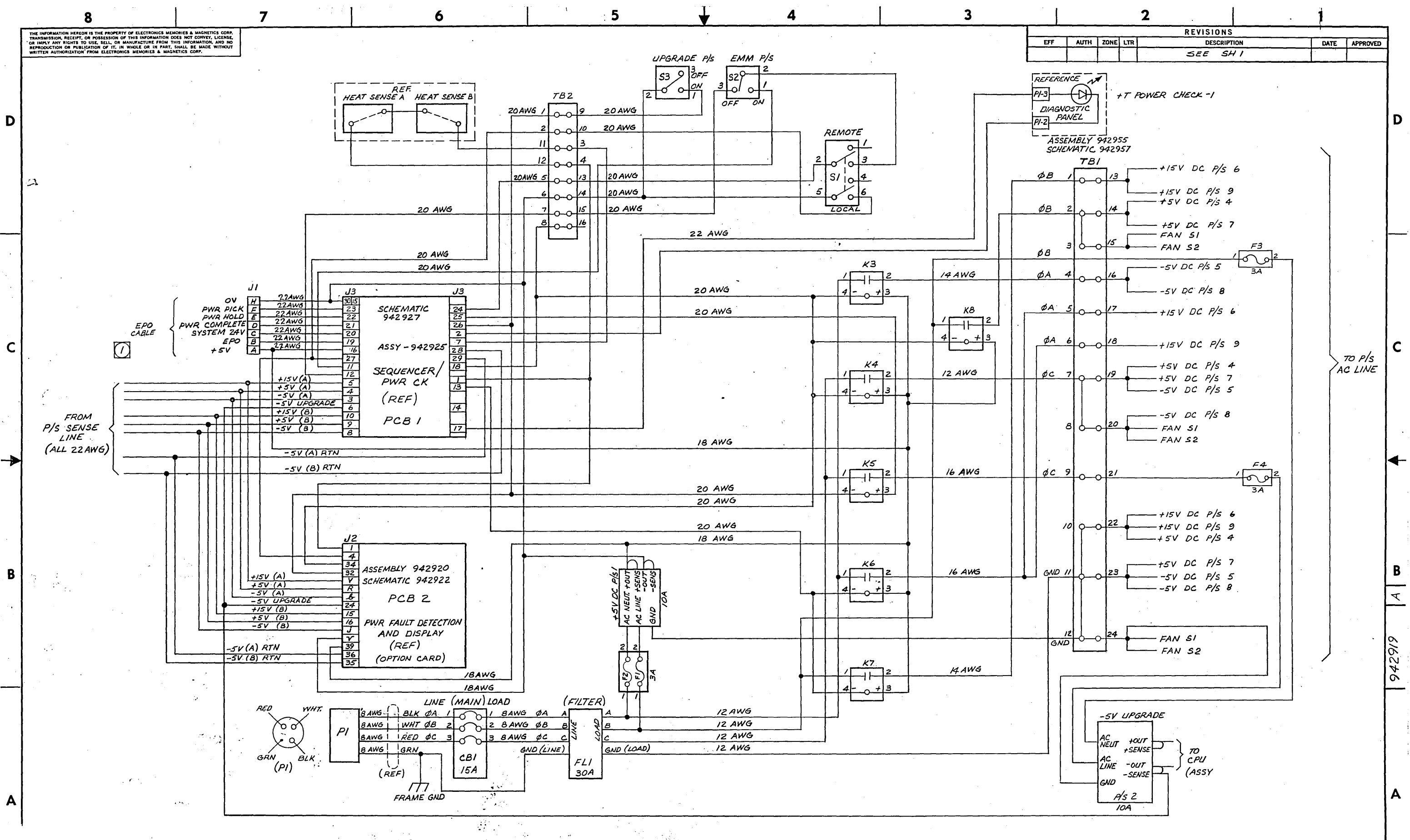
942919

① WHEN EPO CABLE IS NOT INSTALLED SHORT PINS A & B AND MEMORY SYSTEM WILL POWER UP IN LOCAL MODE, UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		PARTS LIST			
		SCREW THREADS PER HANDBOOK H28		CONTRACT NO.			
		COUNTERBORE AND SPOTFACE FILLET RADIUS TO BE .010 MAXIMUM		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION			
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010		DRAWN <i>AGUILAR</i> 6-24-77 CHECK <i>L. Marcus</i> 7-8-77 ENGR <i>R. J. Brown</i> 7-8-77 PROF. ENGR <i>R. J. Brown</i> 11/1/77 PROD. DESIGN			
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		SCHEMATIC - AC POWER DISTRIBUTION/CONTROL			
		STANDARD HOLE TOLERANCE PER AND 10387		SIZE CODE IDENT NO. DWG NO. D 16224 942919			
		TOLERANCES ON: XX = ± .03 XXX = ± .010 ANGLES = ± 30°		SCALE: WEIGHT SHEET 1 OF 2 DISTR NO. 1910			
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		OTHER APPROVALS			
DASH NO. NEXT ASSY USED ON		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED					
APPLICATION		7370/148					

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		



ES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942919
SCALE:	WEIGHT	SHEET 2 OF 2

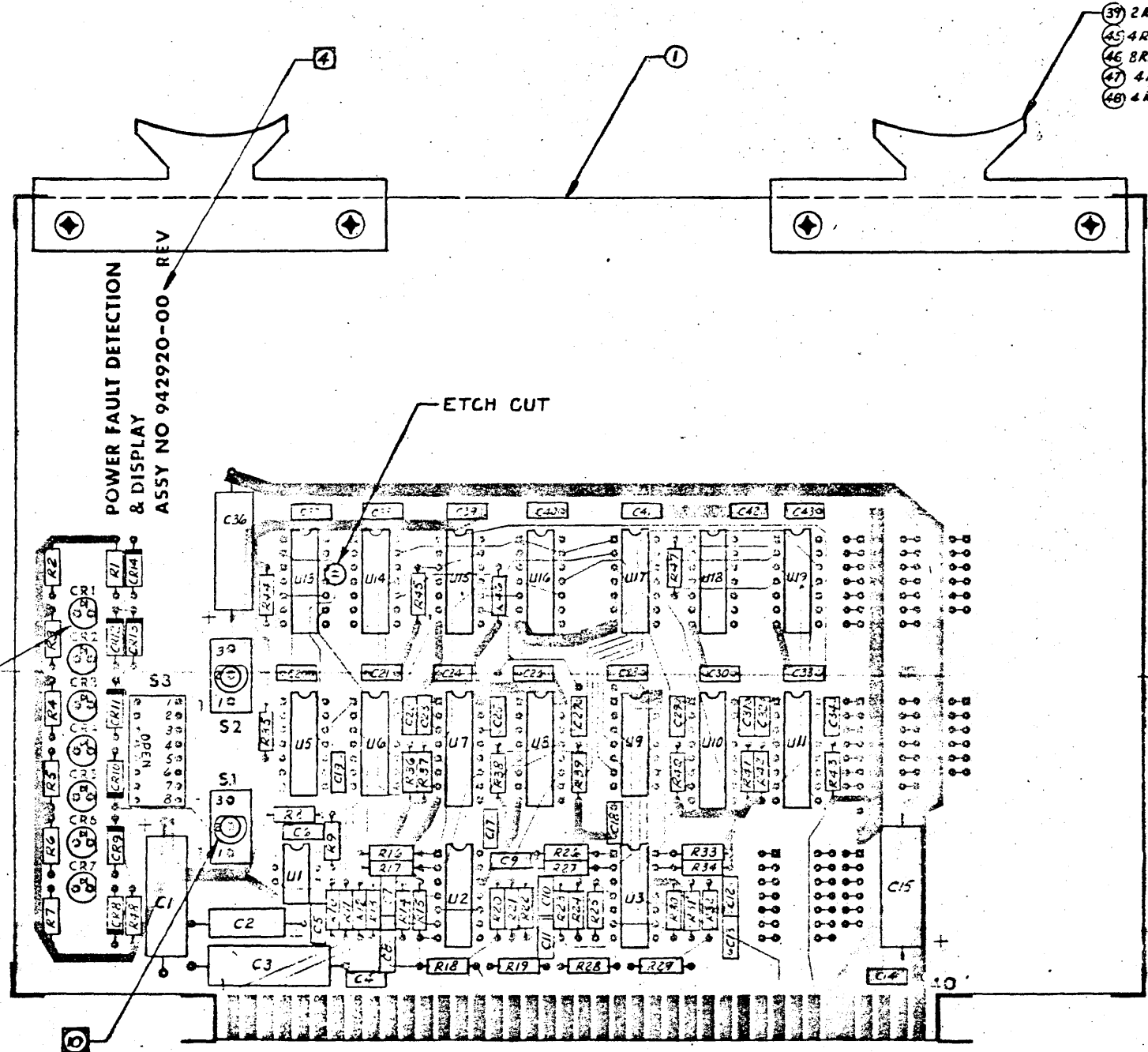
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PART IDENTIFICATION	
PART NUMBER	PART REV
942920-001	X3

JUMPER CHART	
COMPONENT SIDE	
FROM	TO
U13-1	U13-2

ETCH CUT CHART	
COMPONENT SIDE	
U13-2 (RIGHT OF U13-1)	

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DAW		X1	ENG. MODEL CONTROL	5/17/78	
DAW		X2	REMOVED L.E.D. SOCKETS	5/24/78	
DAW		X3	ADDED ETCH CUT JUMPER CHARTS	7/14/78	



- 39) 2 REQD
- 45) 4 REQD
- 46) 8 REQD
- 47) 4 REQD
- 48) 4 REQD

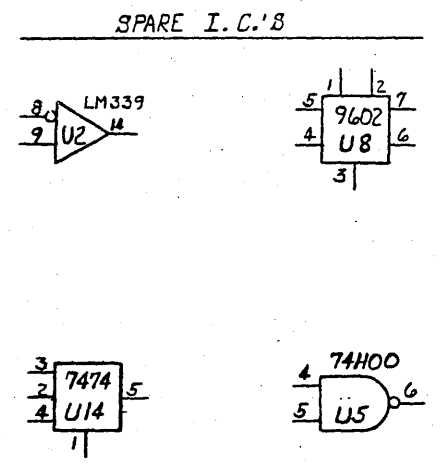
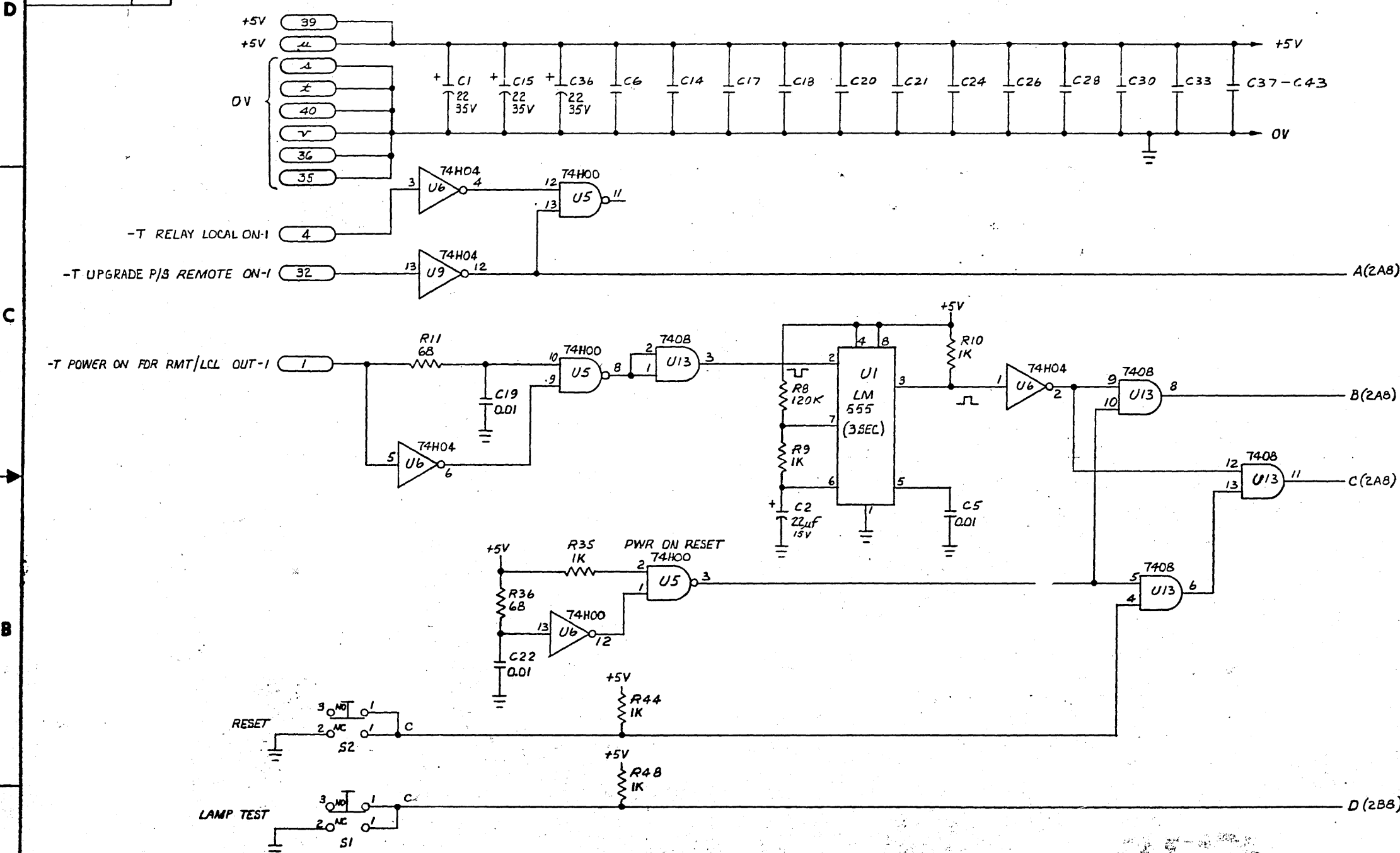
- 10) REMOVE HARDWARE (NUT & WASHER) FROM S1 & S2 BEFORE INSTALLING.
 - 9) SOLDER COMPONENTS TO BOARD USING ITEM 39.
 - 8) REF. DESIGNATIONS ARE FOR REF ONLY AND MAY NOT APPEAR ON PART.
 - 7) COMPONENT HEIGHT NOT TO EXCEED .600 INCH.
 - 6) ■ INDICATES PIN #1 OF I.C.S.
 - 5) ——— HEAVY LINE INDICATES CATHODE END OF DIODE.
 - 4) MARK WITH PIN, REV. LETTER & SIN PER EMPS 6-1 METHOD II IF NOT ETCHED ON BOARD.
 - 3) COMPONENT LEAD & BUILD UP FAR SIDE SHALL NOT EXCEED .060 INCH.
 - 2) ASSEMBLE PER EM MFG STDS, BOARD TO BE FLAT WITHIN .010 INCH IN ANY DIRECTION.
 - 1) FOR SCHEMATIC DIAGRAM SEE 942922.
- NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		SEE SEPARATE PARTS LIST PL 942920-001	
NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION MATERIAL	SPEC SOURCE
DO NOT SCALE DRAWING		PARTS LIST	
SEE PART IDENT BLOCK FOR PART MARKING PROT.	CONTRACT NO.	EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION	
		PWBA - POWER FAULT DETECTION AND DISPLAY	
		SCALE	CODE IDENT NO. / DASH NO.
		D 16224	942920
		SCALE 2/1	SHEET 1 of 1

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
SLA		X1	ENGINEERING MODEL CONTROL	1/6/77	SL
SLA		X2	DELETED CONNECTION US-1170UI32	2/10/78	SL

PART IDENTIFICATION	
PART NUMBER	PART REV.



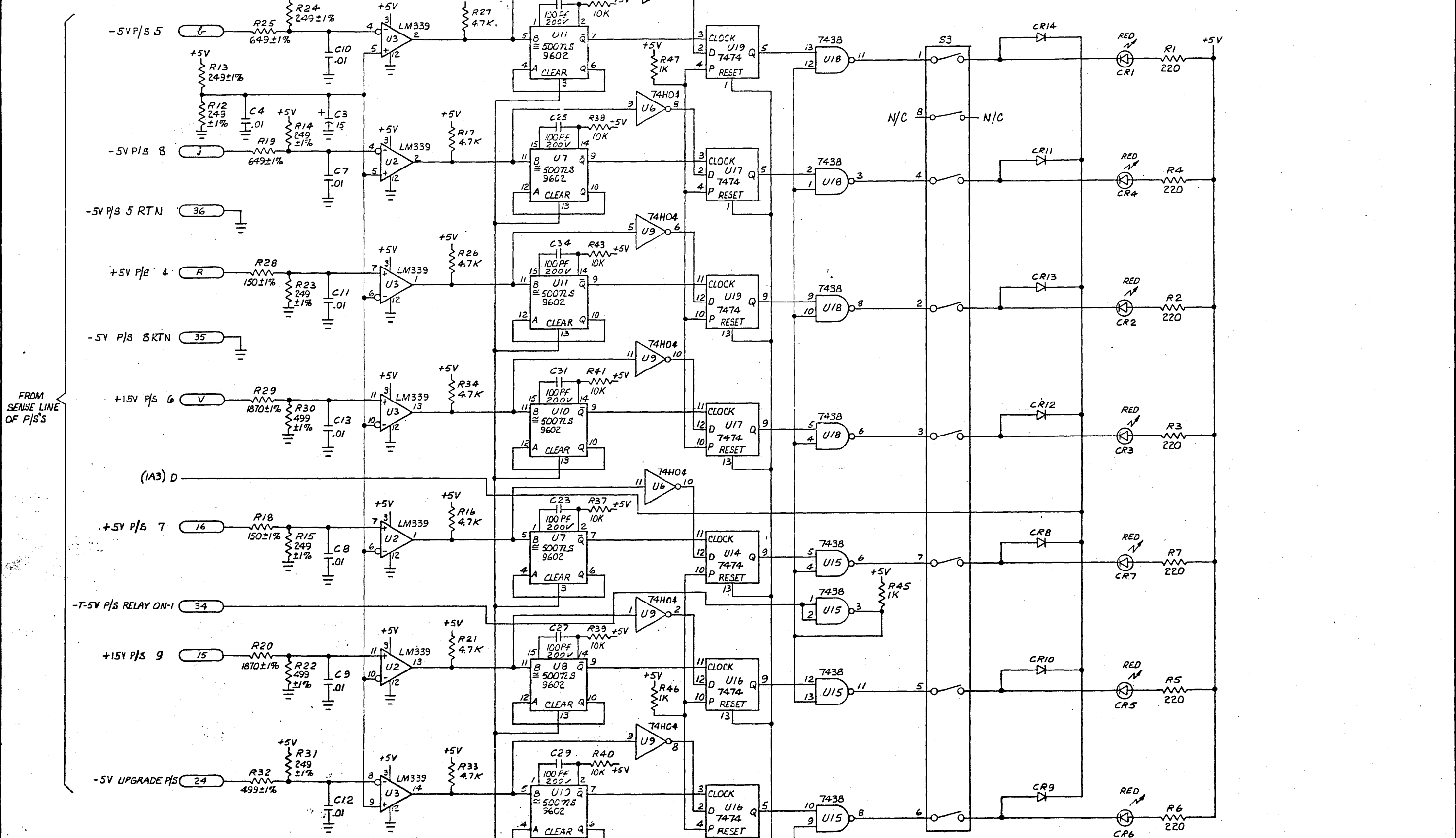
LAST USE DES.	NOT USE DES.
R48	
C14	
C43	C16,35
U19	U4,12
S3	

- 7 ALL 1% RESISTORS ARE 1/8W.
 - 6 ALL LED'S ARE PIN 999205-001.
 - 5 IC 9602 IS CONNECTED, +5V TO PIN 16 & GND TO PIN 8.
 - 4 7400 SERIES IC'S ARE CONNECTED, +5V TO PIN 14 & GND TO PIN 7.
 - 3. ALL RESISTORS ARE IN CHMS, ±5%, 1/4W.
 - 2. ALL CAPACITORS ARE IN MICROFARADS, -44F, ±10%, 50V.
 - 1. ALL DIODES ARE IN914A
- NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		SITE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION MATERIAL		SPEC. SOURCE		CODE IDENT NO.		FIND NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		CONTRACT NO.		ELECTRONIC MEMORIES & MAGNETICS CORPORATION		SCHEMATIC - POWER FAULT DETECTION & DISPLAY		D 16224 942922	
942920 7370/148		REWORK ALL BOLTS AND BREAK SWAMP EDGES E.D. TALENT TO 100% FINISHNESS OF MACHINED SURFACES UNLESS OTHERWISE SPECIFIED		DRAWN H. AGUILAR 11-30-77		SIZE CODE IDENT NO. DWG NO.		SCALE NONE WEIGHT		SHEET 1 of 2	
NEXT ASSY USED ON		STANDARD HOLE TOLERANCE PER AND H&B		CHECK 2/11 11-30-77		D 16224 942922		OTHER APPROVALS		DISTR NO. 1472	
APPLICATION		TOLERANCES ON DR = ±.03 MAX ±.02 ANGLES 2.5 BY DR		ENGR [Signature] 12-1-77		D 16224 942922		APPROVALS		DISTR NO. 1472	

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SH. 1		



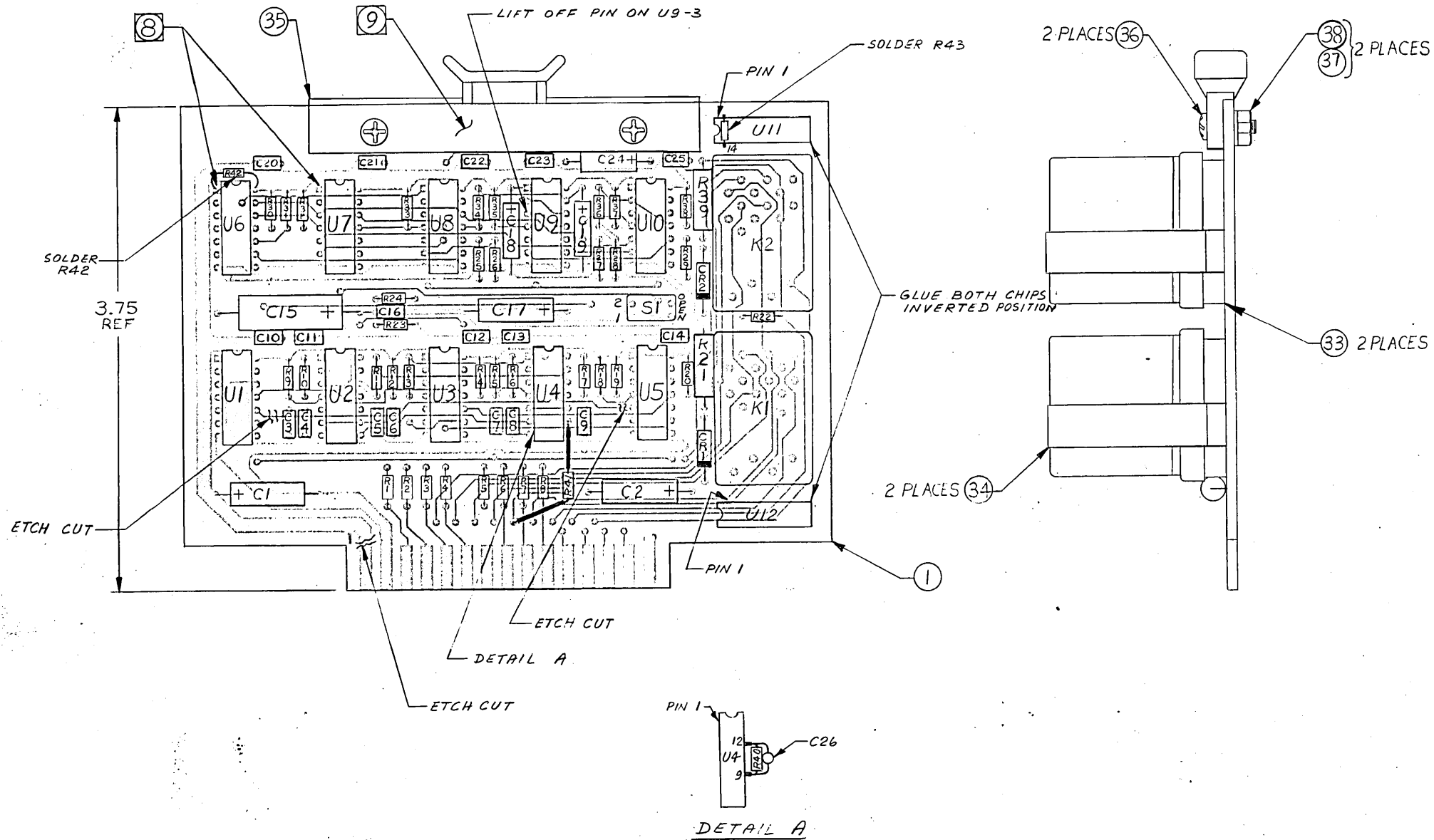
(IC3) {
B
C
A

SIZE	CODE IDENT NO.	QWG NO.
D	16224	942922
SCALE	WEIGHT	SHEET 2 OF 2

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942925-001	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/27		X1	ENG. MODEL CONTROL DWG.	9/6/77	RSC
DWA 148/27		X2	ADD PIN NO. TO SI	10-3-77	JMH
DWA 148/27		X3	ADD JUMPER TABLE AND CUT CIRCUIT TABLE. ADD: U11, U12, R40, R41, R42, R43, C26	11-16-77	RL
		A	PRODUCTION RELEASE	12/19/77	JL



- ① IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD III, BLACK CHARACTERS
- ② □ SQUARE PAD INDICATES PIN NO. 1 OF INTEGRATED CIRCUITS.
- ③ — BAND INDICATES CATHODE END OF DIODE
- ④ + INDICATES POSITIVE END OF CAPACITOR
- ⑤ SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM NO. 39.
- ⑥ REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
- ⑦ COMPONENT LEAD & SOLDER BUILD-UP NOT TO EXCEED .060, FAR SIDE.
- ⑧ ASSEMBLE PER EM MFG STANDARDS
- ⑨ FOR SCHEMATIC DIAGRAM, SEE PARTS LIST

NOTES: UNLESS OTHERWISE SPECIFIED

SEE SEPARATE PARTS LIST, PL 942925-001		SPEC/SOURCE		CODE IDENT NO.	FIND NO.
DASH NO. & QTY PER ASSY		PARTS LIST			
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		CONTRACT NO.	
		SCREW THREADS PER HANDBOOK H 28		DRAWN S. FLIPPEN 8/30/77	
		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .012 MAXIMUM		CHECK L. Marenz 9-1-77	
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .008		ENGR Richard Loh 9-2-77	
		ROUGHNESS OF MACHINED SURFACES IS PER USAS B46.1		PROJ. ENGR D. Starn 9/1/77	
		STANDARD HOLE TOLERANCE PER AND 10187		PROD. DESIGN	
		TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'		SCALE: 2/1 WEIGHT	
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		D 16224 942925	
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		SHEET 1 OF 2	
DASH NO. 001		NEXT ASSY 148		DISTR NO. 1410	
APPLICATION		OTHER APPROVALS			

"C" SIZE - ONLY

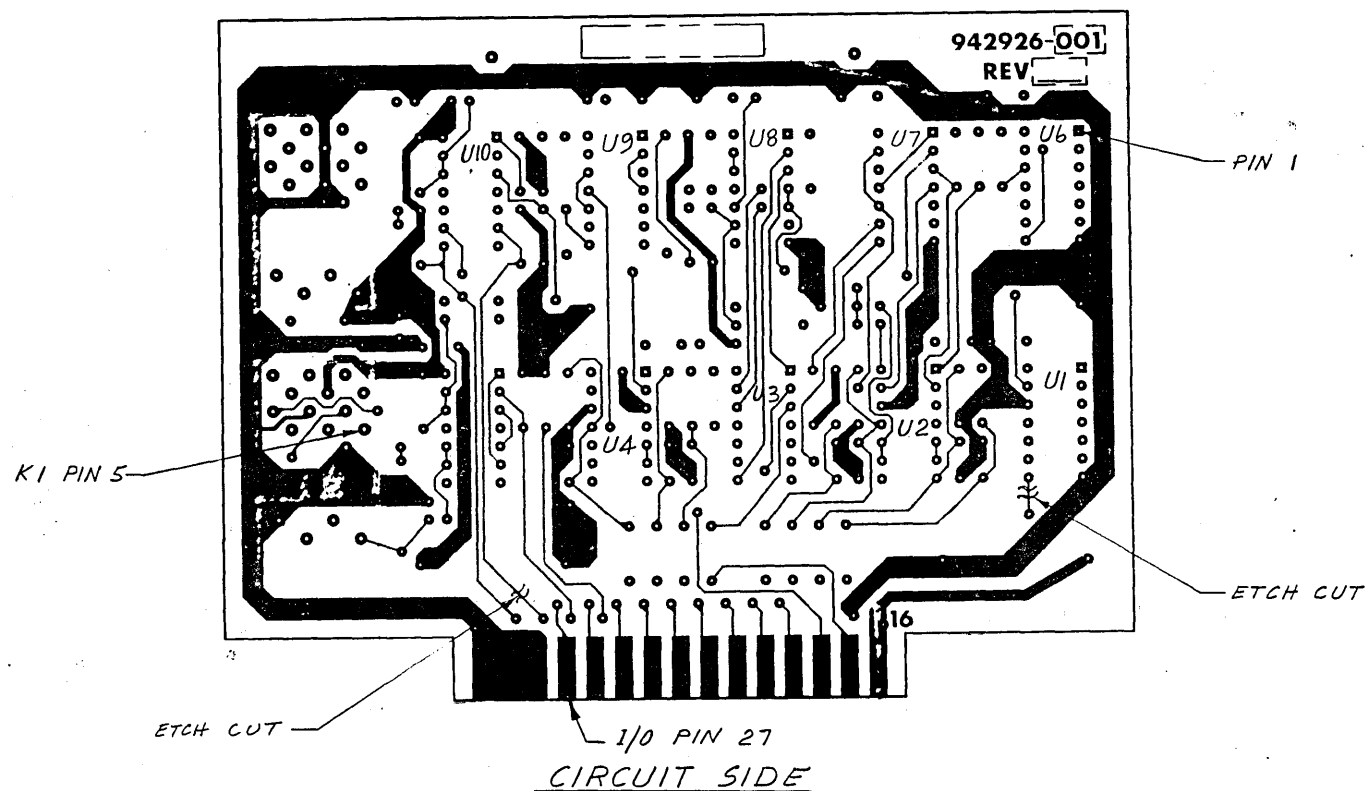
942925 | A | B

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHT. 1		

D
C
B
A

D
C
B
A



JUMPER WIRE LIST COMP. SIDE

FROM	TO
U4-14	U6-1
U4-8	U4-10
U6-6	U5-4
U6-4	U5-2
I/O PIN 7	U11-1
U11-1	U3-4
U3-5	U7-4
U3-6	U9-11
U12-4	U3-4
U12-5	U7-13
U12-6	U9-3 (LIFTED PIN)
U5-12	U11-9
U11-10	U9-1
U11-8	U12-2
U12-1	U9-13
U12-3	U11-2
U5-3	I/O PIN 1
U11-3	U1-10
U11-7	U10-7
U11-14	U10-14
U12-7	U5-7
U12-14	U5-14
U3-1	U12-9
U12-10	U5-5
U12-8	U11-5
U11-4	U1-8
U11-6	U5-10
U11-12	U10-6
U11-13	U12-11
U11-11	I/O-13
U12-12	U10-8
U12-13	U3-10

JUMPER WIRE LIST CIRCUIT SIDE

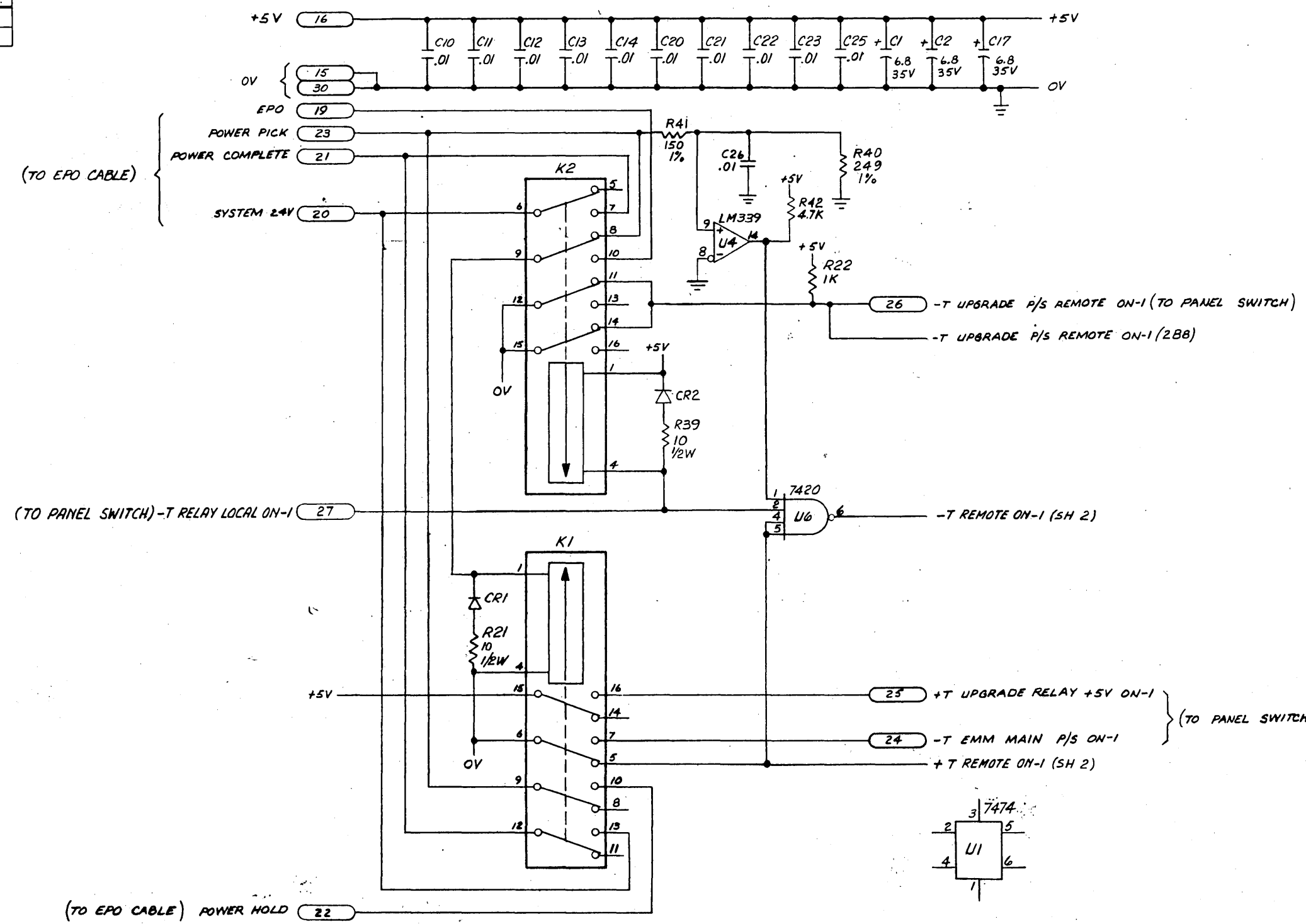
K1-5	U6-4
I/O PIN 27	U6-2
U6-4	U6-5

1942925A

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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA	148/118	X1	ENG. MODEL CONTROL	9/9/77	DES
DWA	148/113	X2	EXTENSIVELY REV. & REDRAW SH 2	11/16/77	RL
		A	PRODUCTION RELEASE	1/6/78	YJ



LAST REF. DES. USED	NOT USED
C25	
CR2	
K2	
R39	
S1	
U10	

- ALL I.C.'S PIN 7 IS VEE (GND) PIN 14 IS VCC (+5V)
- ALL SIGNAL LEVELS ARE TTL LEVEL
- INDICATES AN I/O PIN
- ALL CAPACITOR VALUES ARE IN MICROFARADS ± 10%, 50V
- ALL RESISTOR VALUES ARE IN OHMS 4.7K, ± 5%, 1/8 W

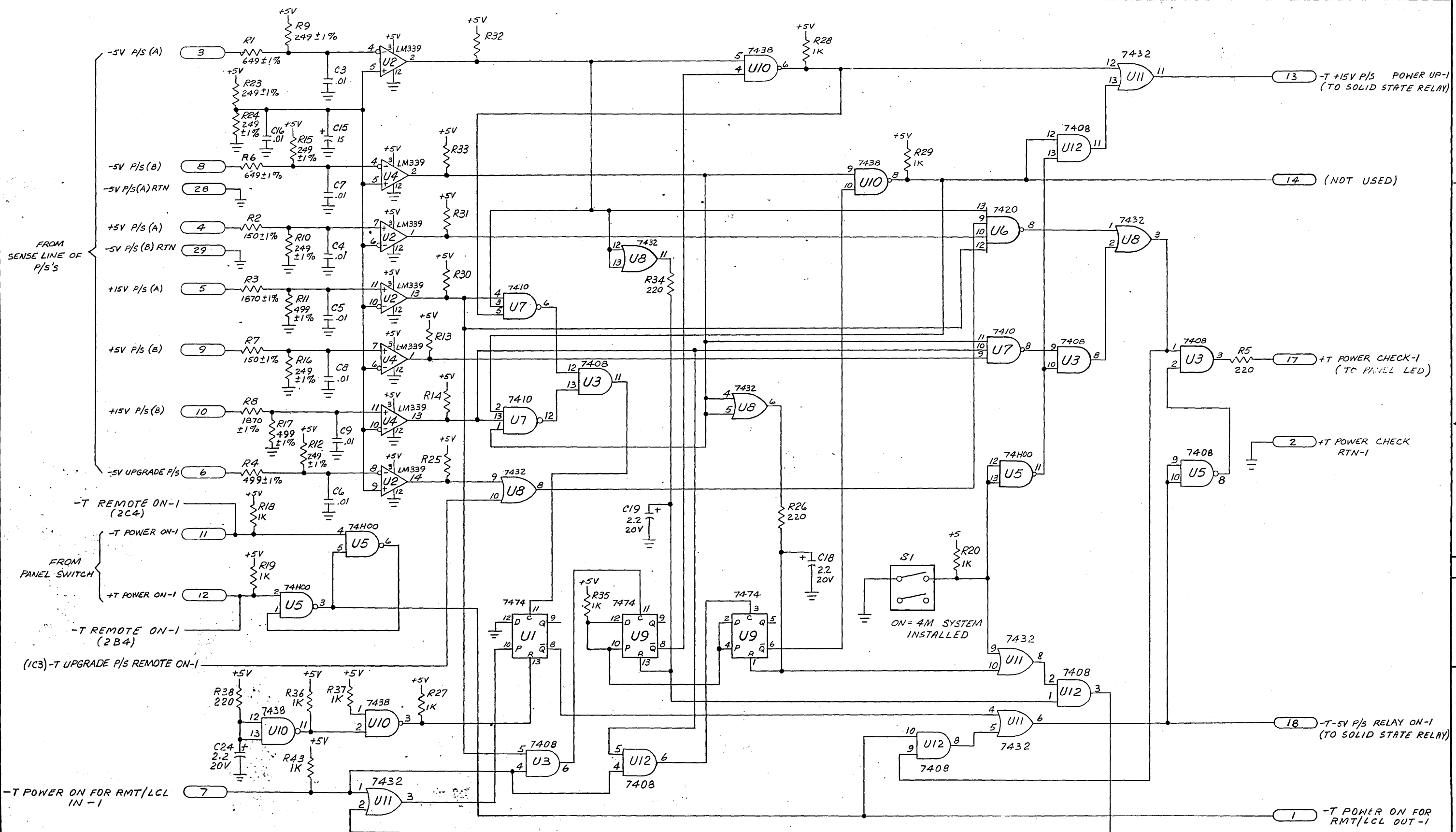
NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL		SPEC/SOURCE		CODE IDENT NO.		FIND NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		CONTRACT NO.		COMPUTER PRODUCTS DIVISION		ELECTRONIC MEMORIES & MAGNETICS CORPORATION		SCHEMATIC-SEQUENCER/POWER CHECK	
		SCREW THREADS PER HANDBOOK H-28		DRAWN AGUILAR 6-24-77						SIZE D 16224 942927	
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO 25R		CHECK L. Masera 6-30-77						SCALE: — WEIGHT: — SHEET 1 OF 3	
		ROUNDSNESS OF MACHINED SURFACES 125 PER USAS B46.1		ENGR. Richard L. 7-14-77						DISTR. NO. 1410	
		STANDARD HOLE TOLERANCE PER AND 300P		PROL. ENGR. J. J. 9/9/77							
		TOLERANCES ON: XX = .01 XXX = .015 ANGLES = ± 9° ± 30°		PROD. DESIGN							
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y32.5		OTHER APPROVALS							
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED									
		APPLICATION									

942927

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH1		



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942927
SCALE:	WEIGHT	SHEET 2 OF 3

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REVISIONS				
EFF	AUTH	ZONE	LTR	DESCRIPTION
				SEE SH. 1
DATE				APPROVED

	+5V	16	1	-T POWER ON RMT/LCL OUT -1	
(TO PANEL LED)	+T POWER CHECK -1	17	2	+T POWER CHECK RTN -1	
(TO SOLID STATE RELAY)	-T -5V P/S RELAY ON -1	18	3	-5V P/S (A)	} FROM P/S SENSE LINE
	EPO	19	4	+5V P/S (A)	
TO EPO CABLE	SYSTEM 24V POWER COMPLETE	20	5	+15V P/S (A)	} FROM P/S SENSE LINE
		21	6	-5V UPGRADE P/S	
		POWER HOLD	22	7	-T POWER ON RMT/LCL IN -1
	POWER PICK	23	8	-5V P/S (B)	} FROM P/S SENSE LINE
	-T EMM MAIN P/S ON -1	24	9	+5V P/S (B)	
TO PANEL SWITCH	+T UPGRADE RELAY +5V ON -1	25	10	+15V P/S (B)	} FROM PANEL SWITCH
	-T UPGRADE P/S REMOTE ON -1	26	11	-T POWER ON -1	
	-T RELAY LOCAL ON -1	27	12	+T POWER ON -1	
	-5V P/S (A) RTN	28	13	-T +15V P/S	POWER UP -1 TO SOLID STATE RELAY
	-5V P/S (B) RTN	29	14	NOT USED	
	0V	30	15	0V	

NOTES: UNLESS OTHERWISE SPECIFIED

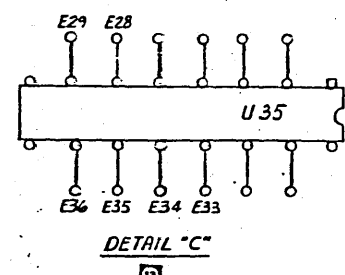
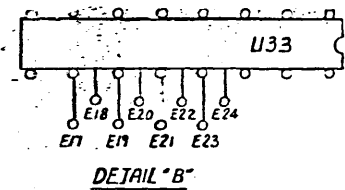
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942927
SCALE	WEIGHT	SHEET 3 of 3

942927

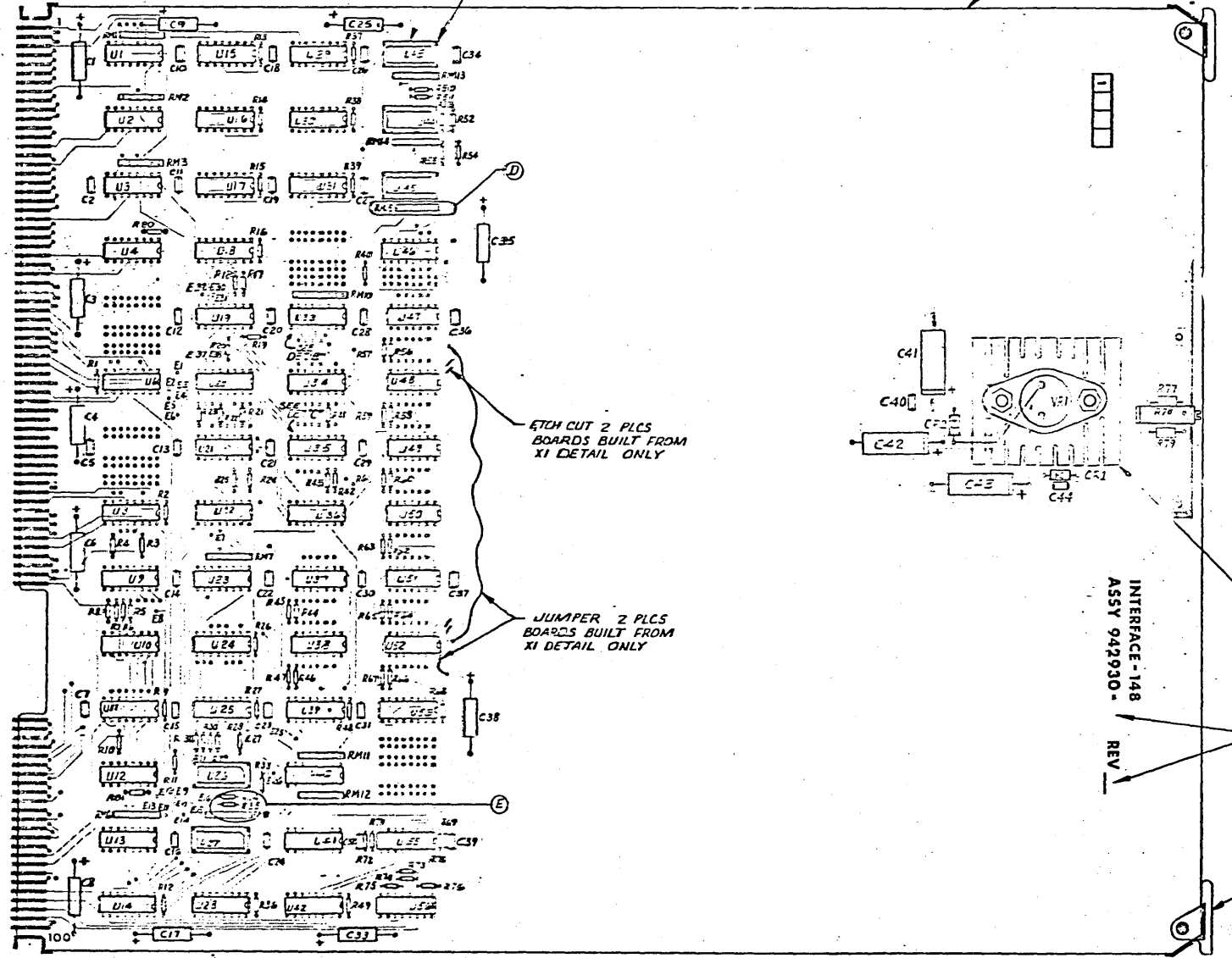
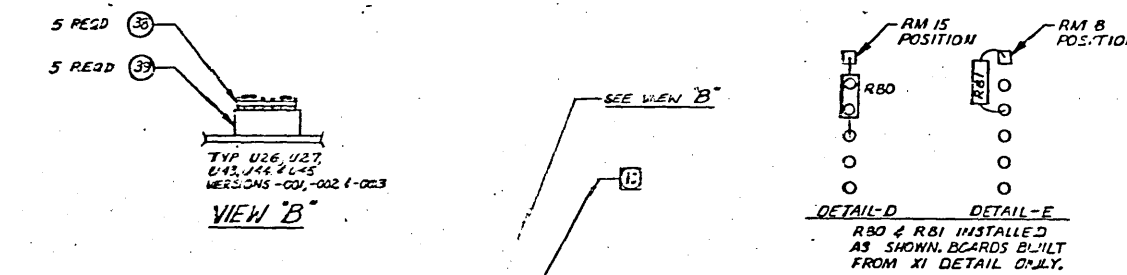
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PART IDENTIFICATION	
PART NUMBER	PART REV.
942930-001	A
942930-002	A
942930-003	A

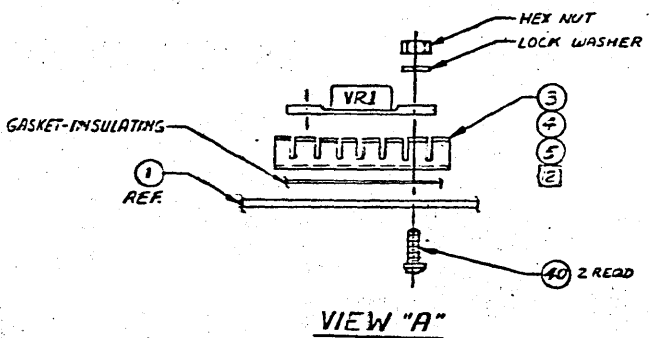
TIMING WIRE WRAP LIST		
FROM	TO	
E17(U33-10)	U47-13	
E12(U33-7)	U37-7	
E19(U33-11)	U38-7	
E20(U33-6)	U49-4	
E21(U33-12)	U47-4	
E22(U33-5)	U52-4	
E23(U33-13)	U52-4	
E24(U33-4)	U38-10	
E28(U35-6)	U38-4	
E29(U35-7)	U38-7	
E30(U19-6)	U38-4	
E31(U19-4)	U49-3	
E32(U19-10)	U47-3	
E33(U35-13)	U37-4	
E34(U35-12)	U50-13	
E35(U35-11)	U37-6	
E36(U35-10)	U49-13	



- ON FINAL ASSEMBLY, TIMING TAPS MAY NOT BE AS SHOWN. THESE ARE SUBJECT TO CHANGE IN TEST.
 - INSTALL WIRE WRAP POST ITEM 36 SP/PL ON E1 THRU E38, U37-PINS 3-7 & 9-13, U38-PINS 3-7 & 9-13, U52-PINS 3-7 & 9-13, U47-PINS 3-7 & 9-13, U48-PINS 3-7 & 9-13, U49-PINS 3-7 & 9-13, U50-PINS 3-7 & 9-13, U51-PINS 3-7 & 9-13.
 - INSTALL ITEM NO. 5 (THERMAL COMPOUND) BETWEEN VRI AND ITEM NO. 3 (HEATSINK) USING HARDWARE FROM ITEM NO. 4.
 - IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD II, BLACK CHARACTERS.
 - SQUARE PAD INDICATES PIN NO. 1 OF INTEGRATED CIRCUITS.
 - "-|-|" BAND INDICATES CATHODE END OF DIODE.
 - "+" INDICATES POSITIVE END OF CAPACITOR.
 - SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM 36.
 - COMPONENT HEIGHT NOT TO EXCEED .40.
 - REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
 - COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060, FARSIDE.
 - BOARD TO BE FLAT (0.001" INCH) IN ALL DIRECTIONS AFTER SOLDER APPLICATION.
 - ASSEMBLE PER EN: MFS STANDARDS.
 - FOR SCHEMATIC DIAGRAM, SEE PARTS LIST.
- NOTES: UNLESS OTHERWISE SPECIFIED



4K OPTION WIRE LIST	
FROM	TO
E2	E3
E4	E5
E9	E12
E10	E13
E14	E11
E16	E15
E27	E25



DASH NO. & QTY PER ASSY		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION MATERIAL		SPEC. SOURCE		CODE IDENT NO.		FIND NO.	
003	942	138		SEE SEPARATE PARTS LIST PL 942930-003							3
002	942	138		SEE SEPARATE PARTS LIST PL 942930-002							2
001	942850	143		SEE SEPARATE PARTS LIST PL 942930-001							1

CONTRACT NO.		COMPUTER PRODUCTS DIVISION					
DRAWN		ELECTRONIC MEMORIES & MAGNETICS CORPORATION					
U. SEYDEL	7-8-77	ASSEMBLY- INTERFACE CARD					
CHKD	7-15-77						
PROJ. ENGR		SIZE	CODE IDENT NO.	DWG NO.			
		D	16224	942930			
PROJ. DESIGN		SCALE	1:1	WEIGHT		SHEET	1 of 1
							1410

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA	148/7	X1	ENG MODEL CONTROL		
DWA	148/7	X2	UPGRADED FOR 'B' REV A/W		
DWA	148/7	X3	ADDED JUMPERS & ETCH CUTS FOR ASSY BUILT FROM REV XI DETAIL ONLY	1/11/77	JTG
DWA	149/7	X4	WIRE WRAP LIST: E17 TO U47-13 WAS E17 TO U47-10, E33 TO U37-4 WAS E33 TO U37-3, E34 TO U50-13 WAS E34 TO U49-9. ADDED (B)	1/22/77	JTG
		A	PRODUCTION RELEASE	1/5/78	JTG

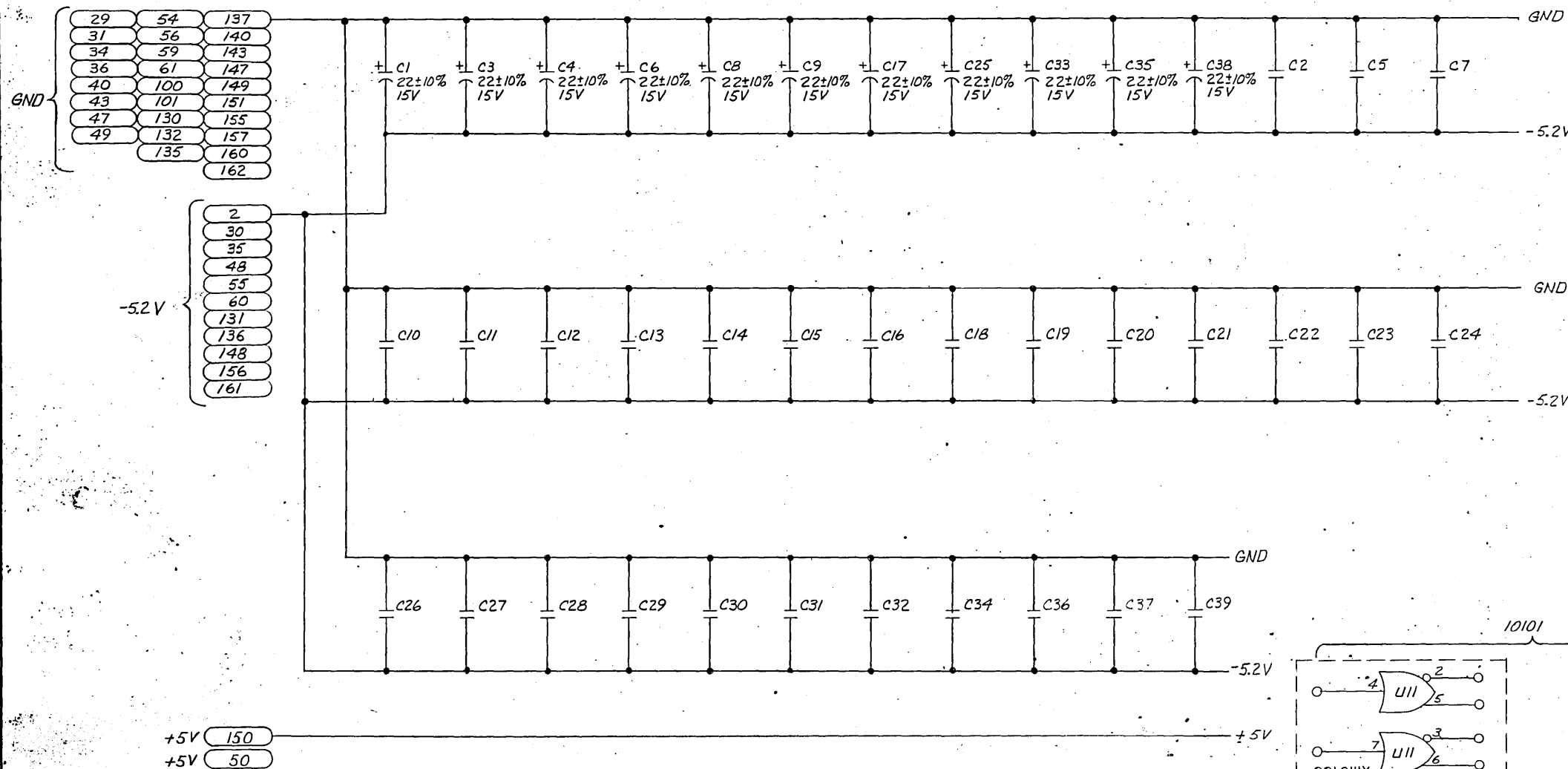
942930

A

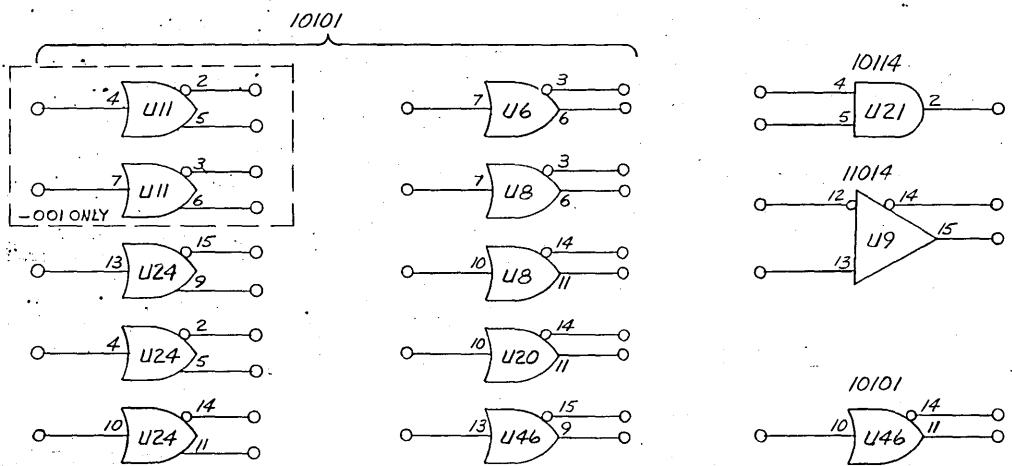
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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/7		X1	ENG CONTROL MODEL		
DWA 148/7		X2	UPGRADED; ADDED 3N 11; ADDED 3N'S 12 & 13 & ADDED "M" TO SIGNALS; PINS 15 & 145 WERE B45 & B145. ADD R60 & R61	9/11/77	RED
		A	EXTENSIVE REVISION OF SIGNAL NAMES. ADDED NOTE 13 PRODUCTION RELEASE	1/5/78	YD



SPARE GATES



- 15 ON FINAL ASSEMBLY, TIMING TAPS MAY NOT BE AS SHOWN. THESE ARE SUBJECT TO CHANGE.
- 14 -OOI ONLY
- 13 MST LEVELS.
- 12 INPUT IS GROUNDED IN SYSTEM.
- 11. PIN 16, U34 IS GND.
- 10. INDICATES I/O PIN.
- 9. ALL CAPACITOR VALUES ARE IN MICRO FARADS .01, 50V ± 10%.
- 8. ALL RESISTORS ARE 1/8 W, ± 5%.
- 7. ALL RESISTOR VALUES ARE 510 OHMS.
- 6. ALL RESISTOR MODULE VALUES ARE 510 OHMS ± 2%.
- 5. PIN 8 OF U1-U4, U6, U8-U31, U33-U36, U39-U46, U53, U55, U56 IS -5.2V.
- 4. PIN 1 OF U34 IS +1.25V.
- 3. PIN 8 & 14 OF U37, U38, U47-U52 ARE GND.
- 2. PIN 1 & 16 OF U1-U4, U6, U8-U31, U33, U35, U36, U39-U46, U53, U55, U56 ARE GND.
- 1. PIN 1 OF ALL RESISTOR MODULES ARE -5.2V.

NOTES: UNLESS OTHERWISE SPECIFIED

HIGH REF
C44
CR2
R81
RM15
U56
VRI
E38

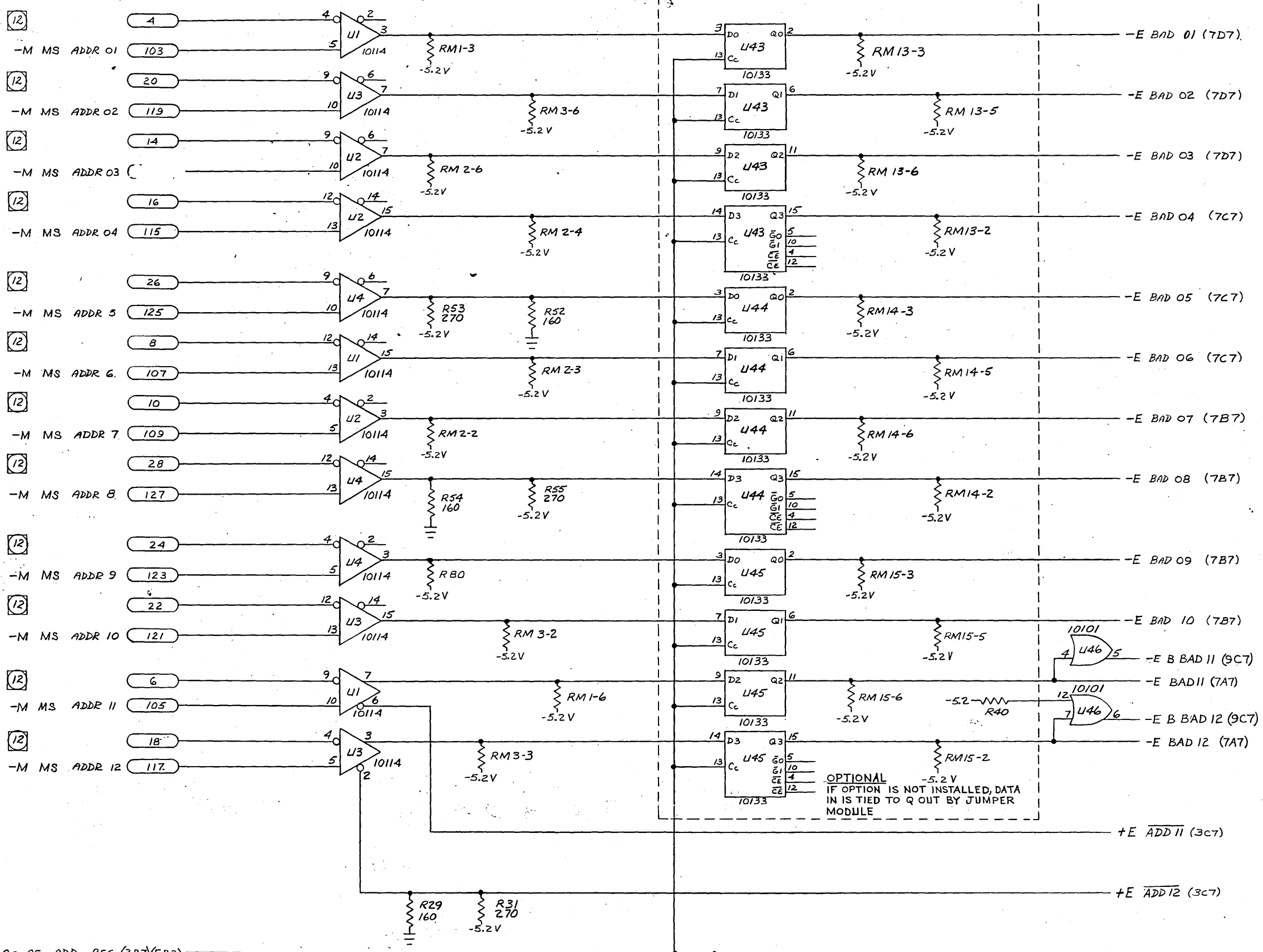
DASH NO. & QTY PER ASSY		NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		CONTRACT NO.		PARTS LIST	
		SCREW THREADS PER HANDBOOK H-28					
		COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM		DRAWN G. CAMPSON 6-29-77			
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010"		CHECK <i>[Signature]</i> 7-20-77			
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		ENGR			
		STANDARD HOLE TOLERANCE PER AND 10387		PROJ. ENGR <i>[Signature]</i> 9/11/77			
		TOLERANCES ON: .XX = ± .01 .XXX = ± .010 ANGLES = ± 0° 30'		PROD. DESIGN <i>[Signature]</i> 1/5/78			
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5					
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED					
DASH NO.	942932		148			SIZE	D 16224
NEXT ASSY						CODE IDENT NO.	942932
USED ON						OWG NO.	
APPLICATION						SCALE:	
						WEIGHT	
						SHEET	1 OF 10
						DISTR NO.	1412

942932 A B

A

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		



Cc OF ADD. REG (3B7)(5B2)

OPTIONAL
IF OPTION IS NOT INSTALLED, DATA
IN IS TIED TO Q OUT BY JUMPER
MODULE

NOTES: UNLESS OTHERWISE SPECIFIED

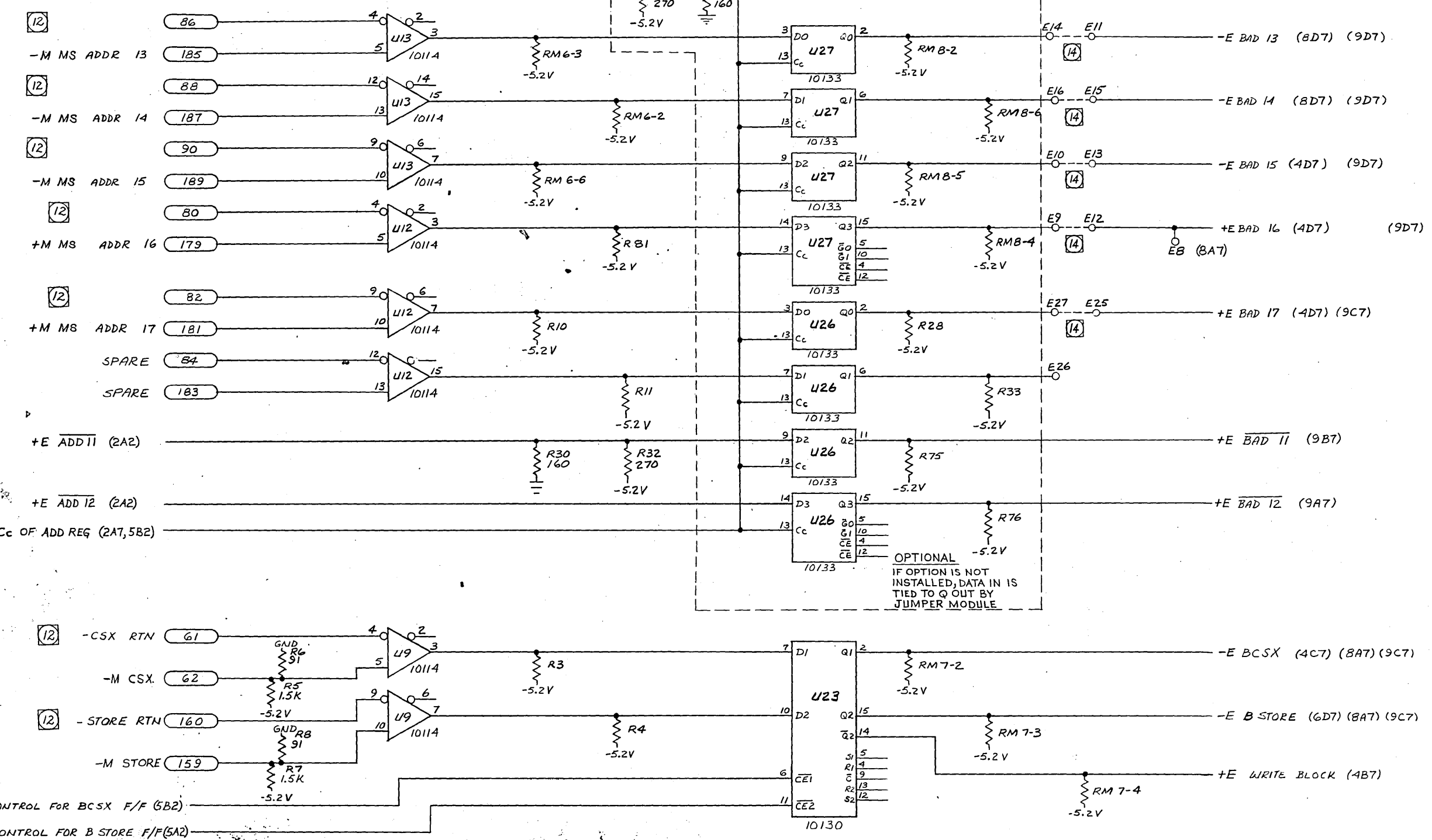
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE:	WEIGHT:	SHEET 2 of 10

942932 A B

A

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		



OPTIONAL
IF OPTION IS NOT
INSTALLED, DATA IN IS
TIED TO Q OUT BY
JUMPER MODULE

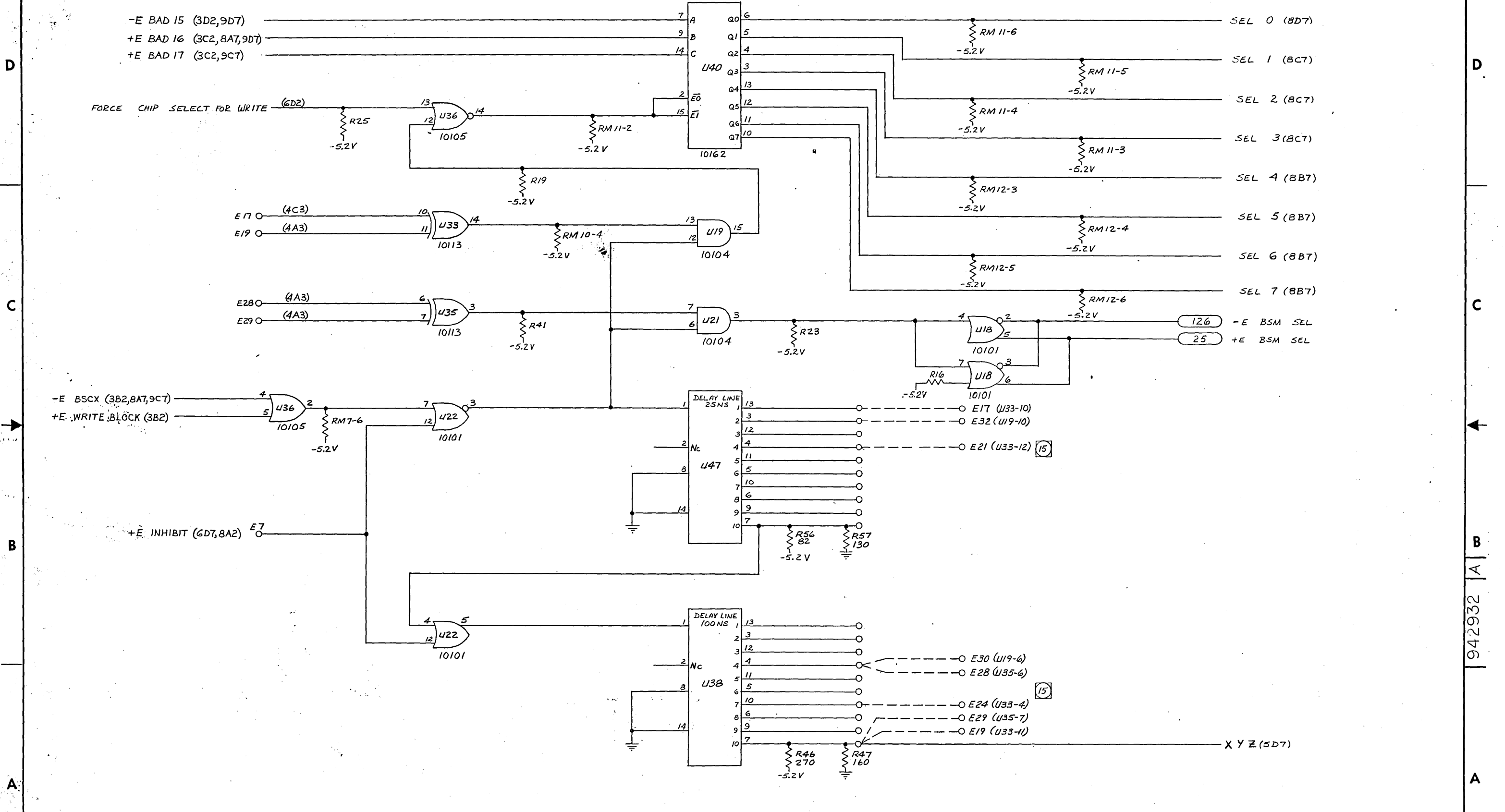
NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 3 OF 10

942932 A B A

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH 1		



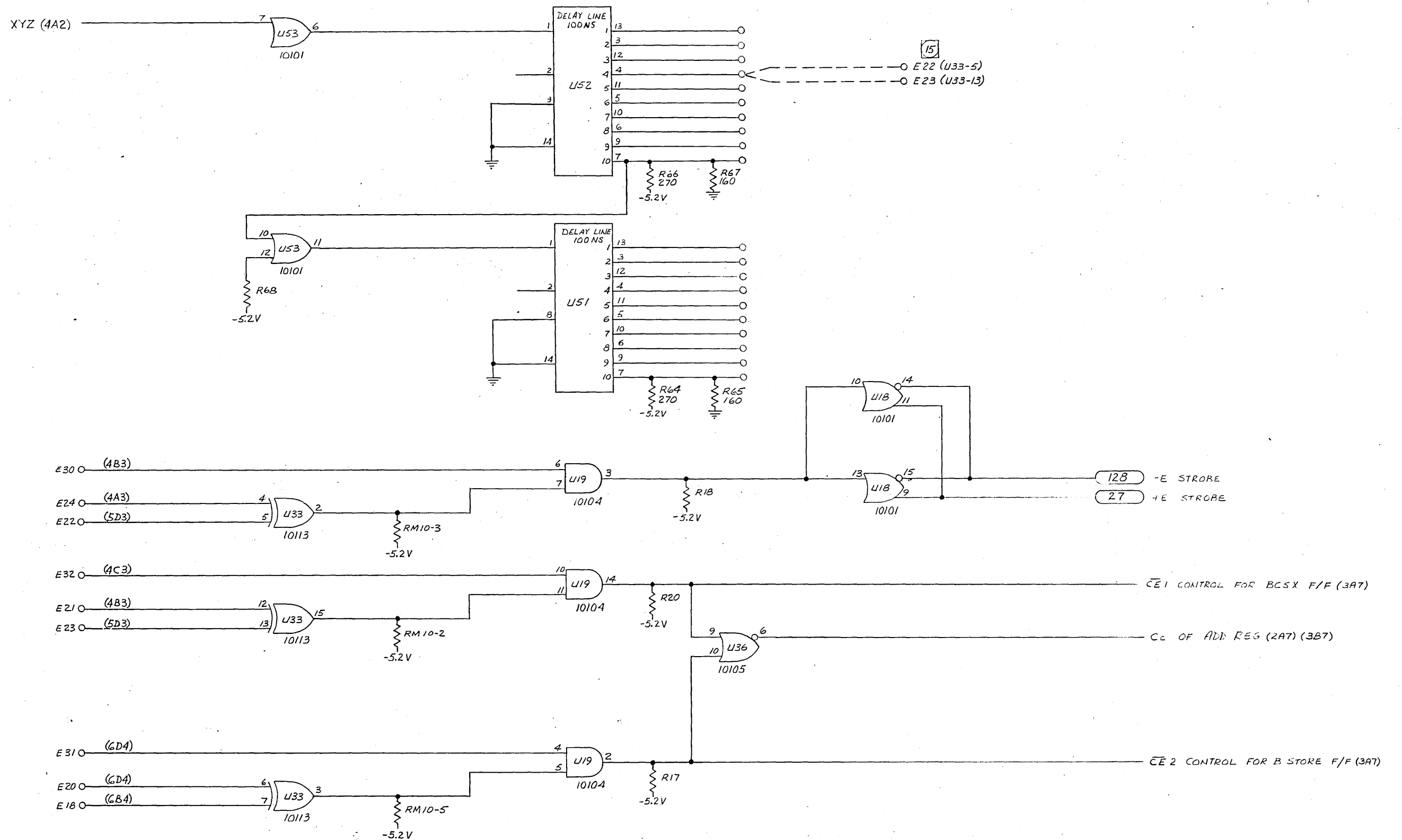
NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 4 OF 10

942932 A B A

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SH 1		

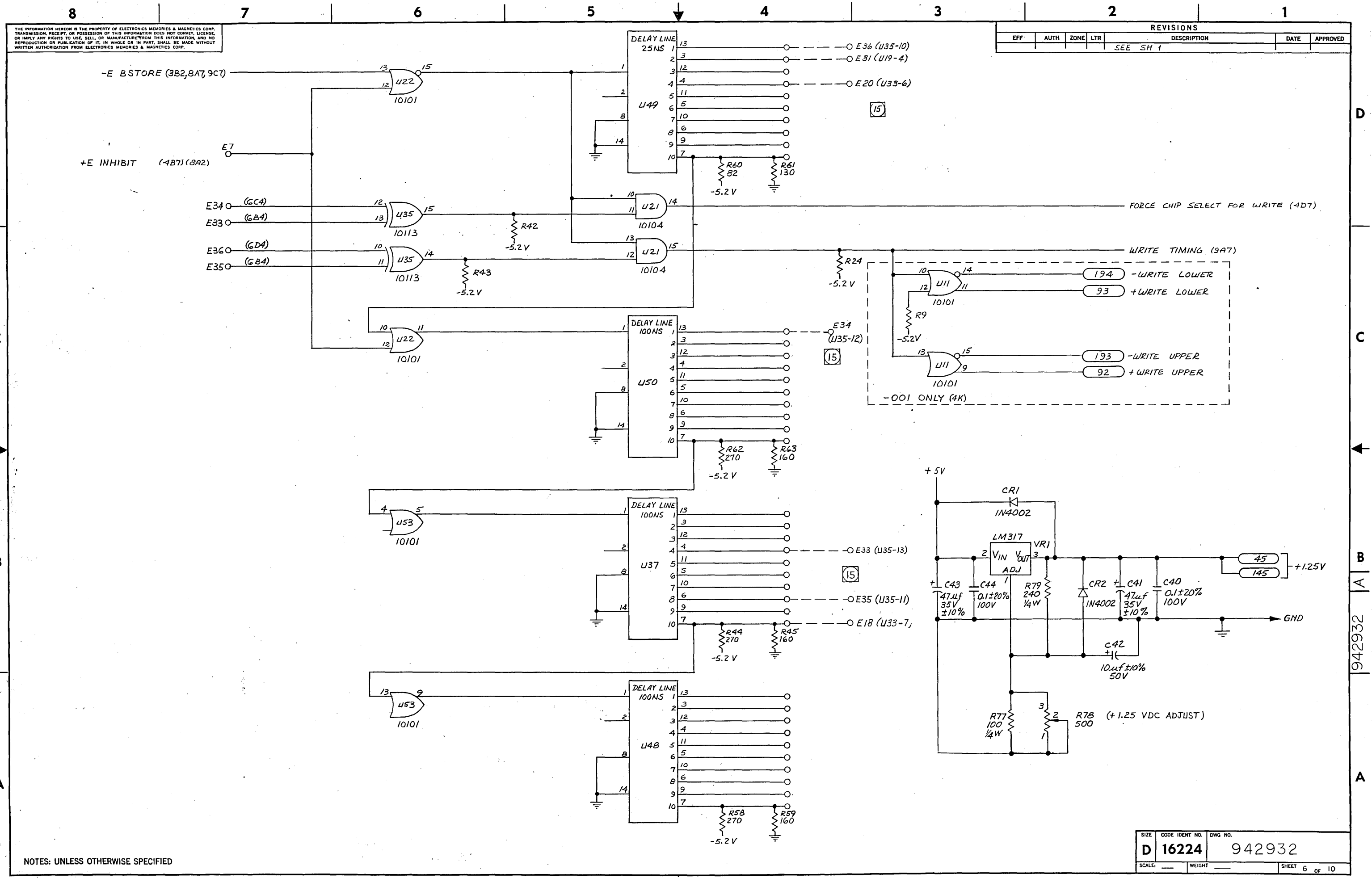


NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 5 OF 10

942932

REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 6 OF 10

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		

D

C

B

A

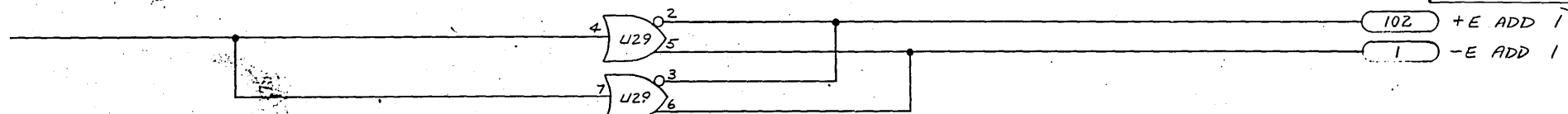
D

C

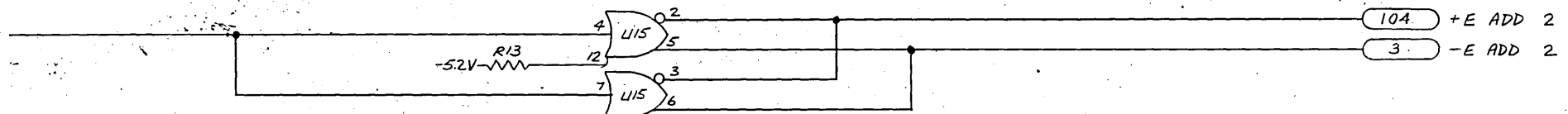
B

A

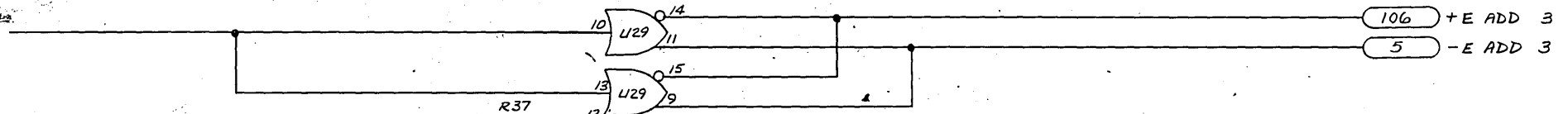
-E BAD 01 (2D2)



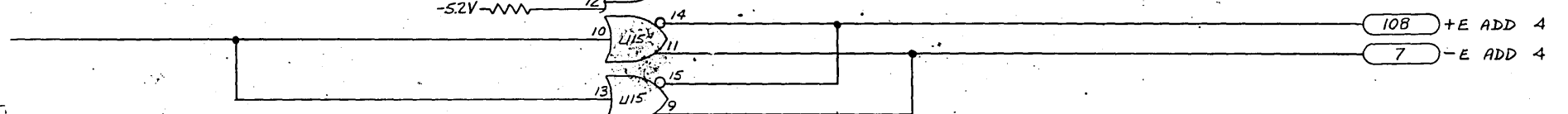
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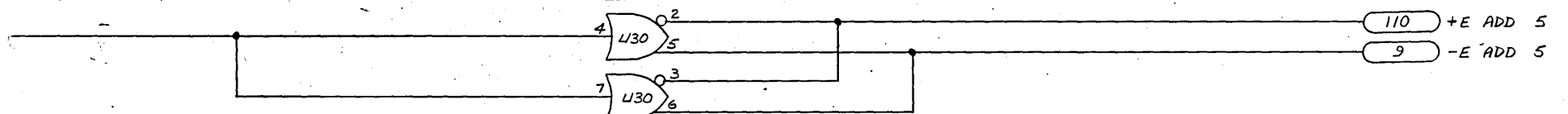
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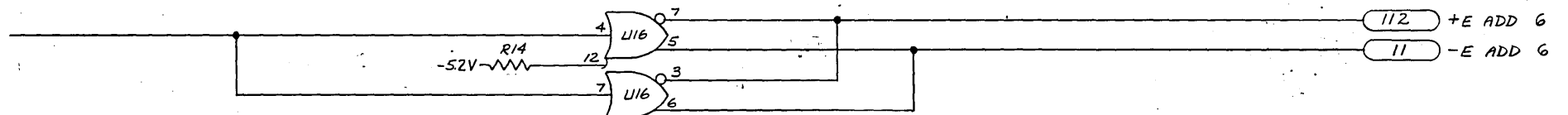
-E BAD 04 (2C2)



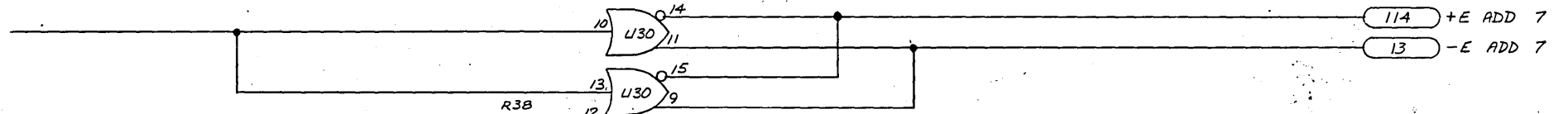
-E BAD 05 (2C2)



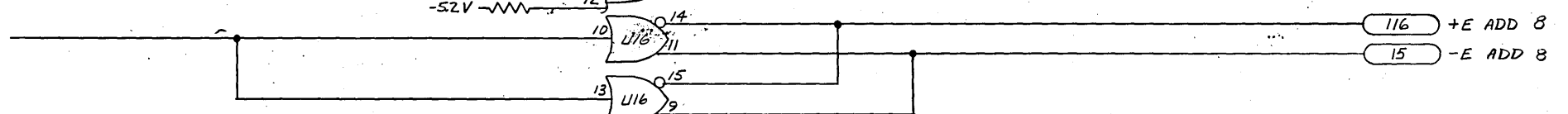
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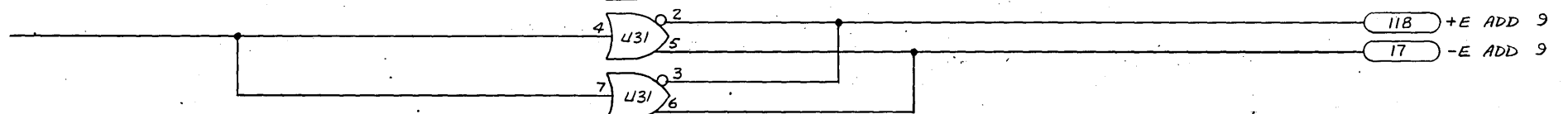
-E BAD 07 (2C2)



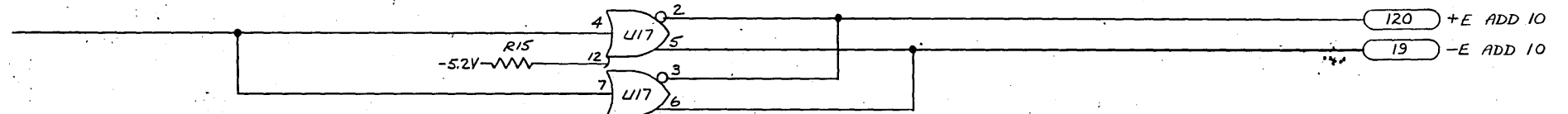
-E BAD 08 (2B2)



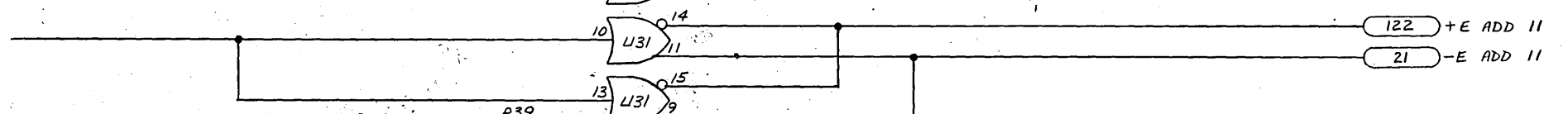
-E BAD 09 (2B2)



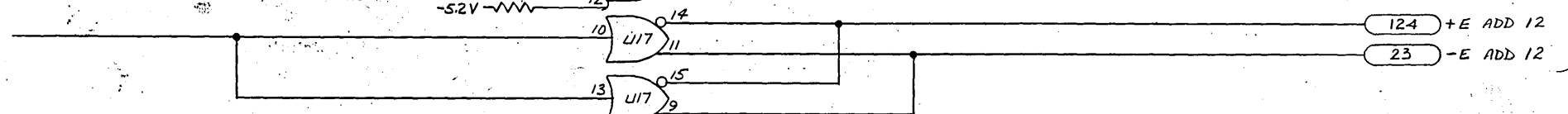
-E BAD 10 (2B2)



-E BAD 11 (2B2)



-E BAD 12 (2B2)



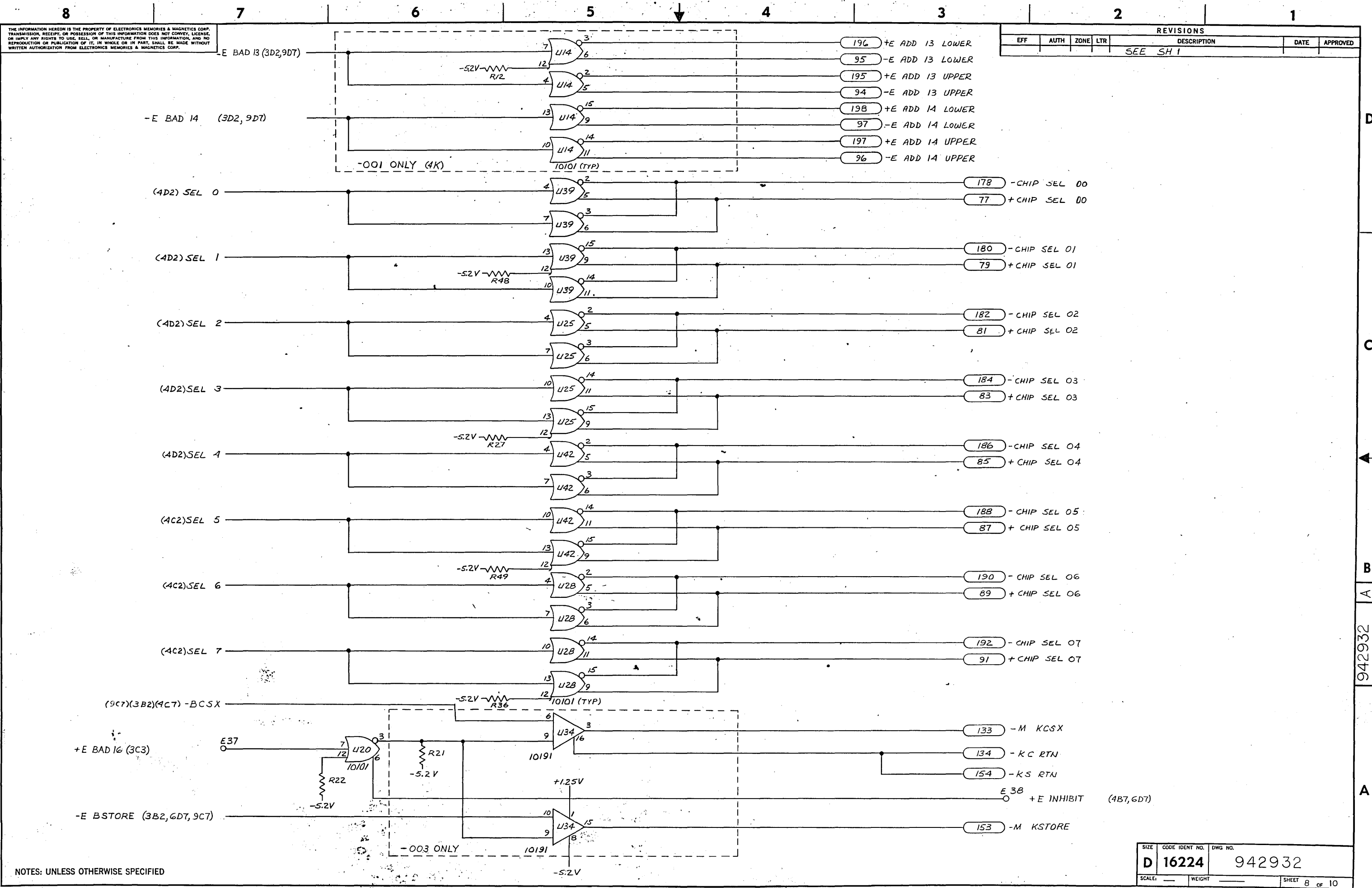
4K ADDRESS INPUT TO ALL STORAGE CARDS ON THIS BSM. J1—J9, J11—J19

10101 (TYP)

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 7 OF 10

942932



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REVISIONS				
EFF	AUTH	ZONE	LTR	DESCRIPTION
				SEE SH 1
DATE				APPROVED

D
C
B
A

D
C
B
A

942932

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE	WEIGHT	SHEET 8 of 10

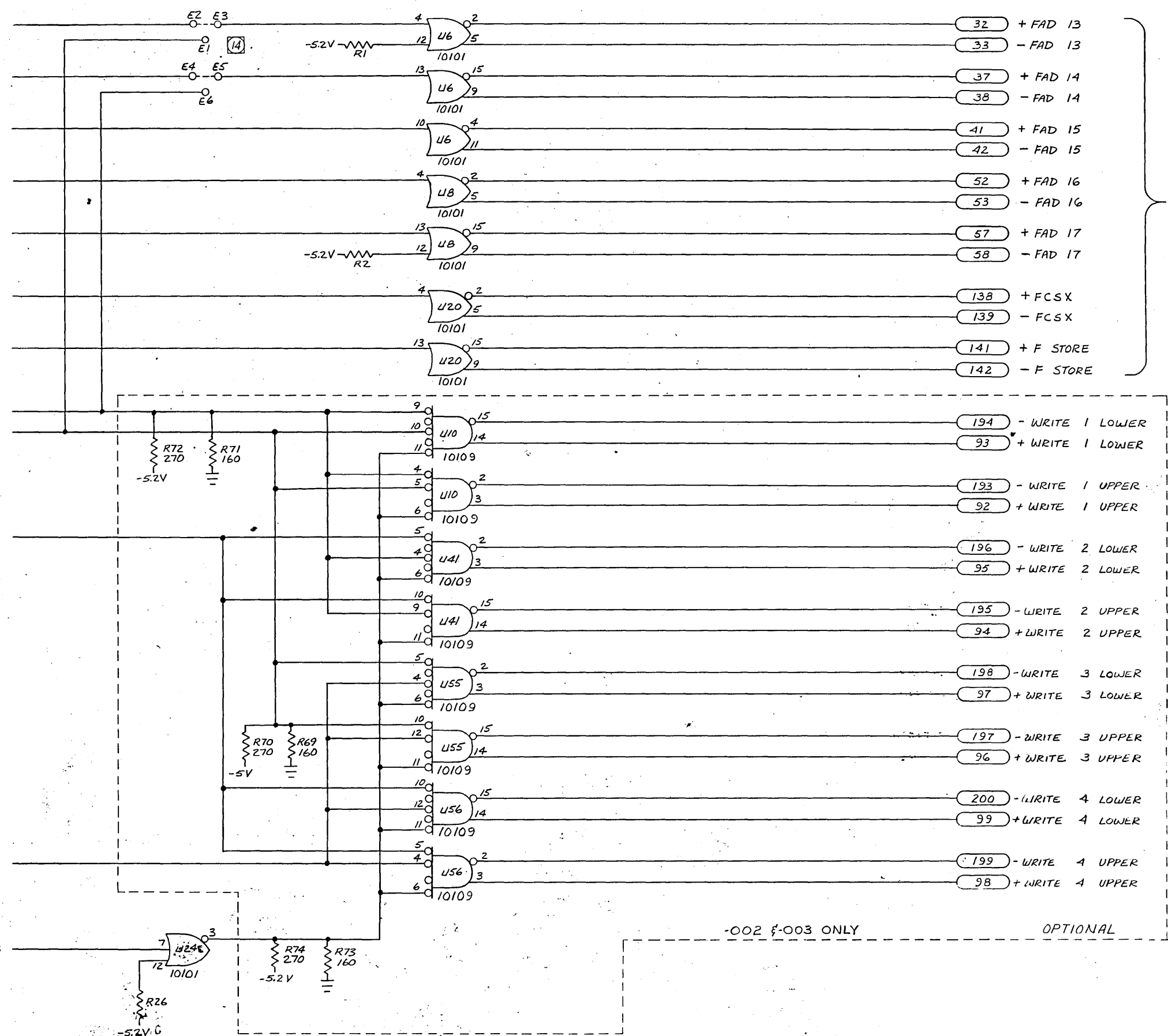
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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH 1		

D
C
B
A

D
C
B
A

- E BAD 13 (3D2, 8D7)
- E BAD 14 (3D2, 8D7)
- E BAD 15 (3D2, 4D7)
- +E BAD 16 (3C2, 4D7, 8A7)
- +E BAD 17 (3C2, 4D7)
- (3B2)(4C7)(8A7) - B C S X
- E BSTORE (3B2, 6D7, 8A7)
- E BBAD 12 (2B2)
- E BBAD 11 (2B2)
- +E BAD 11 (3C2)
- +E BAD 12 (3C2)



TO C.E. ERROR DETECTION PANEL

NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942932
SCALE:	WEIGHT:	SHEET 9 of 10

942932

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8
7
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2
1

NOTES: UNLESS OTHERWISE SPECIFIED

-E ADD 1	1	101	GND	
-5.2V	2	102	+E ADD 1	
-E ADD 2	3	103	-M MS ADDR 01	
(12)	4	104	+E ADD 2	
-E ADD 3	5	105	-M MS ADDR 11	
(12)	6	106	+E ADD 3	
-E ADD 4	7	107	-M MS ADDR 06	
(12)	8	108	+E ADD 4	
-E ADD 5	9	109	-M MS ADDR 07	
(12)	10	110	+E ADD 5	
-E ADD 6	11	111	-M MS ADDR 03	
	12	112	+E ADD 6	
-E ADD 7	13	113		
(12)	14	114	+E ADD 7	
-E ADD 8	15	115	-M MS ADDR 04	
(12)	16	116	+E ADD 8	
-E ADD 9	17	117	-M MS ADDR 12	
(12)	18	118	+E ADD 9	
-E ADD 10	19	119	-M MS ADDR 02	
(12)	20	120	+E ADD 10	
-E ADD 11	21	121	-M MS ADDR 10	
(12)	22	122	+E ADD 11	
-E ADD 12	23	123	-M MS ADDR 09	
(12)	24	124	+E ADD 12	
+E BSM SEL	25	125	-M MS ADDR 05	
(12)	26	126	-E BSM SEL	
+E STROBE	27	127	-M MS ADDR 08	
(12)	28	128	-E STROBE	
GND	29	129		
-5.2V	30	130	GND	
GND	31	131	-5.2V	
-FAD 13	32	132	GND	
+FAD 13	33	133	-M KCSX	(13)
GND	34	134	-KC RTN	
-5.2V	35	135	GND	
GND	36	136	-5.2V	
-FAD 14	37	137	GND	
+FAD 14	38	138	-FCSX	
	39	139	+FCSX	
GND	40	140	GND	
-FAD 15	41	141	-F STORE	
+FAD 15	42	142	+F STORE	
GND	43	143	GND	
	44	144		
+1.25V	45	145	+1.25V	
	46	146		
GND	47	147	GND	
-5.2V	48	148	-5.2V	
GND	49	149	GND	
+5V	50	150	+5V	
	51	151	GND	
-FAD 16	52	152		
+FAD 16	53	153	-M KSTORE	(13)
GND	54	154	-KSRTN	
-5.2V	55	155	GND	
GND	56	156	-5.2V	
-FAD 17	57	157	GND	
+FAD 17	58	158		
GND	59	159	-M STORE	(13)
-5.2V	60	160	GND (-STORE RTN)	(12)
(12) (-CSX RTN) GND	61	161	-5.2V	
(13) -M CSX	62	162	GND	
	63	163		
	64	164		
	65	165		
	66	166		
	67	167		
	68	168		
	69	169		
	70	170		
	71	171		
	72	172		
	73	173		
	74	174		
	75	175		
	76	176		
+CHIP SEL 00	77	177		
	78	178	-CHIP SEL 00	
+CHIP SEL 01	79	179	+M MS ADDR 16	
	80	180	-CHIP SEL 01	
+CHIP SEL 02	81	181	+M MS ADDR 17	
(12)	82	182	-CHIP SEL 02	
+CHIP SEL 03	83	183		
	84	184	-CHIP SEL 03	
+CHIP SEL 04	85	185	-M MS ADDR 13	
(12)	86	186	-CHIP SEL 04	
+CHIP SEL 05	87	187	+M MS ADDR 14	
(12)	88	188	-CHIP SEL 05	
+CHIP SEL 06	89	189	-M MS ADDR 15	
(12)	90	190	-CHIP SEL 06	
+CHIP SEL 07	91	191		
(+WRITE 1 UPPER) +WRITE UPPER	92	192	-CHIP SEL 07	
(+WRITE 1 LOWER) +WRITE LOWER	93	193	-WRITE UPPER (-WRITE 1 UPPER)	
(+WRITE 2 UPPER) -E ADD 13 UPPER	94	194	-WRITE LOWER (-WRITE 1 LOWER)	
(+WRITE 2 LOWER) -E ADD 13 LOWER	95	195	+E ADD 13 UPPER (-WRITE 2 UPPER)	
(+WRITE 3 UPPER) -E ADD 14 UPPER	96	196	+E ADD 13 LOWER (-WRITE 2 LOWER)	
(+WRITE 3 LOWER) -E ADD 14 LOWER	97	197	+E ADD 14 UPPER (-WRITE 3 UPPER)	
(+WRITE 4 UPPER)	98	198	+E ADD 14 LOWER (-WRITE 3 LOWER)	
(+WRITE 4 LOWER)	99	199	(-WRITE 4 UPPER)	
GND	100	200	(-WRITE 4 LOWER)	

REV	DATE	DESCRIPTION	APPROVED
1			

SCALE: _____
 SIZE: D 16224
 CODE IDENT NO: 942932
 DWG NO: 942932
 SHEET 10 OF 10

942932

8

7

6

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2

1

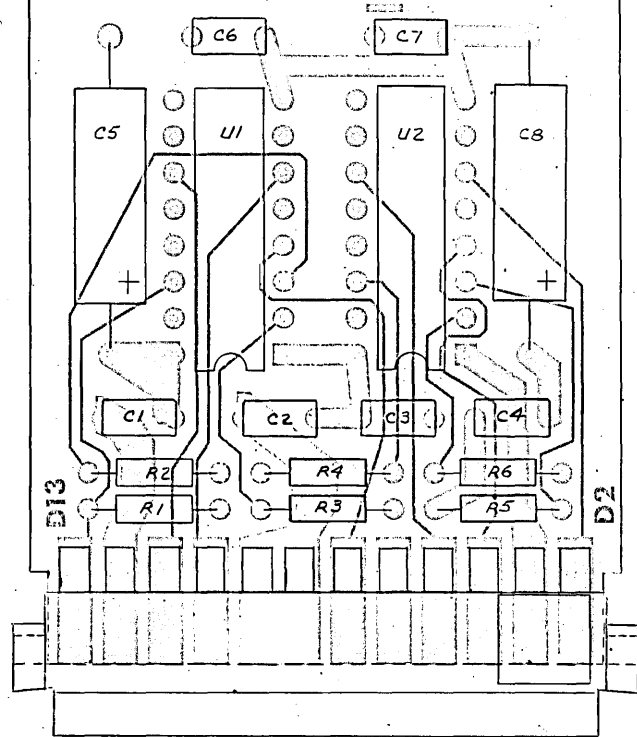
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PART IDENTIFICATION

PART NUMBER	PART REV.
942935-001	A
942935-002	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA	148-11	XI	ENG. MODEL CONTROL	10-10-77	REN
		A	PRODUCTION RELEASE	12/15/77	JL

UNIVERSAL BUFFER
ASSY NO 942935-00
REV



- 10. CONNECTOR TO BE CENTERED ON CONTACTS WITHIN .010.
- 9. IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
- 8. "□" SQUARE PAD INDICATES PIN NO.1 OF INTEGRATED CIRCUITS.
- 7. "+" INDICATES POSITIVE END OF CAPACITOR.
- 6. SOLDER COMPONENTS TO ITEM NO.1 USING ITEM 3
- 5. COMPONENT HEIGHT NOT TO EXCEED .40.
- 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
- 3. COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060, FARSIDE
- 2. ASSEMBLE PER EM MFG STANDARDS.
- 1. FOR SCHEMATIC DIAGRAM, SEE PARTS LIST.

NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
-003-002-001			SEE SEPARATE PARTS LIST PL 942935-003			3
			SEE SEPARATE PARTS LIST PL 942935-002			2
			SEE SEPARATE PARTS LIST PL 942935-001			1

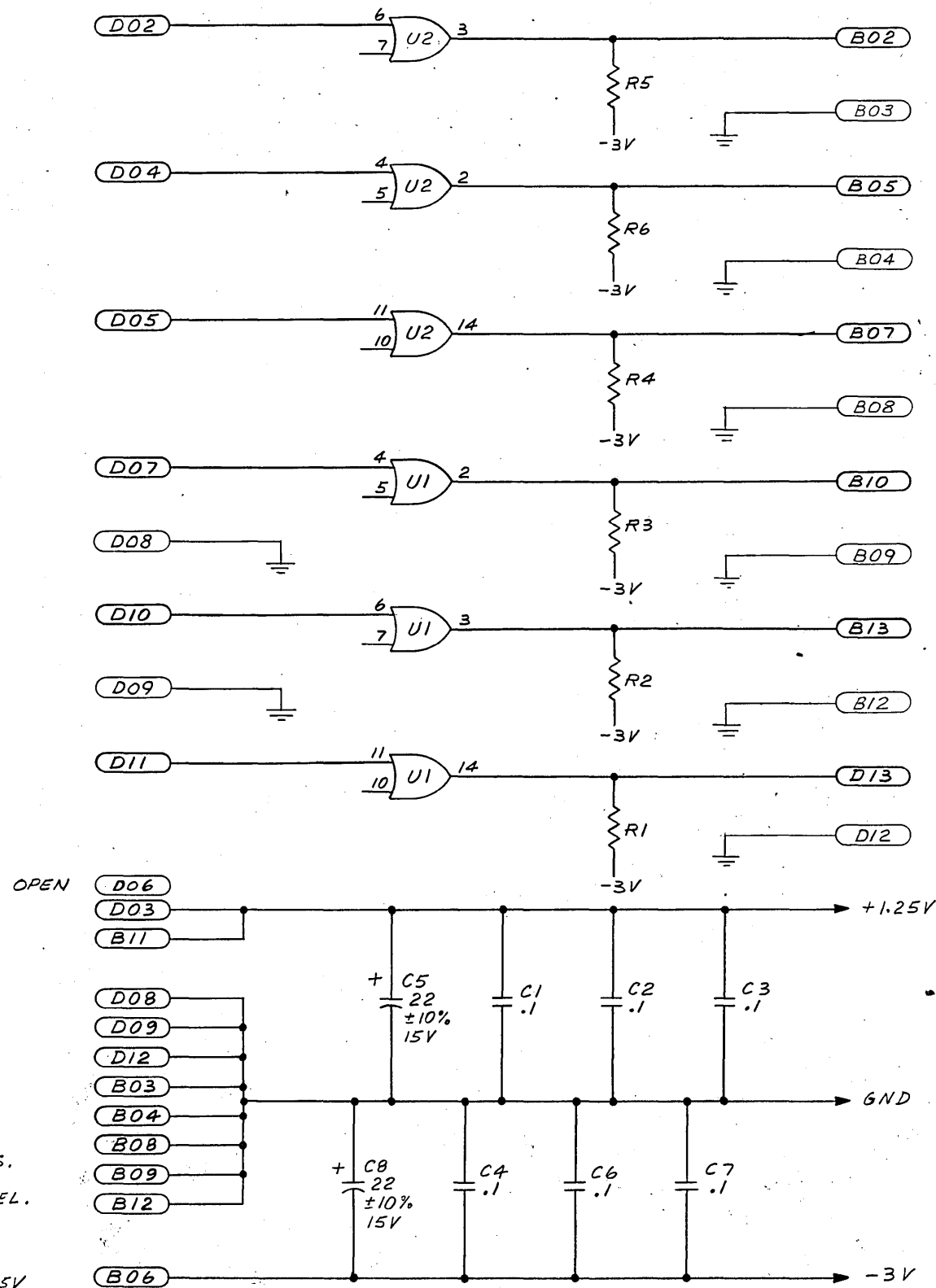
DASH NO. & QTY PER ASSY		PARTS LIST		CONTRACT NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQ	DO NOT SCALE DRAWING	SCREW THREADS PER HANDBOOK H-28		COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM	
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R	ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1		STANDARD HOLE TOLERANCE PER AND 10387	
	TOLERANCES ON: XX = ± .03 XXX = ± .010 ANGLES = ± 0° 30'	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED	
DASH NO. 001	NEXT ASSY 148	USED ON	APPLICATION	OTHER APPROVALS	
EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION			DRAWN AGUILAR, H. 7-19-77 CHECK [Signature] 7-20-77 ENGR [Signature] 10/15/77 PROJ. ENGR [Signature] 12/15/77 PROD. DESIGN		
ASSEMBLY— UNIVERSAL BUFFER			SIZE D	CODE IDENT NO. 16224	DWG NO. 942935
SCALE: 4/1			WEIGHT	SHEET 1 OF 1	
DISTR. NO. 1410					

942935

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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/11		X1	ENG. MODEL CONTROL DWG.		
DWA 148/11		X2	ADD NEW SHEET 2	10/10/77	REP
		A	PRODUCTION RELEASE	1/6/78	YJ



- 7. INDICATES AN I/O PIN.
- 6. THIS CARD IS MST-2. Z₀ = 90 OHMS.
- 5. ALL SIGNALS ARE IBM MST LEVEL.
- 4. IC TYPES TO BE DETERMINED BY ASSEMBLY 942935.
- 3. ALL IC PINS #1 & 16 (VCC) IS +1.25V PIN # 8 (VEE) IS -3V.
- 2. ALL CAPACITOR VALUES ARE IN MICROFARADS ±20%, 100V.
- 1. ALL RESISTOR VALUES ARE IN OHMS 510, 1/8W, ±5%.

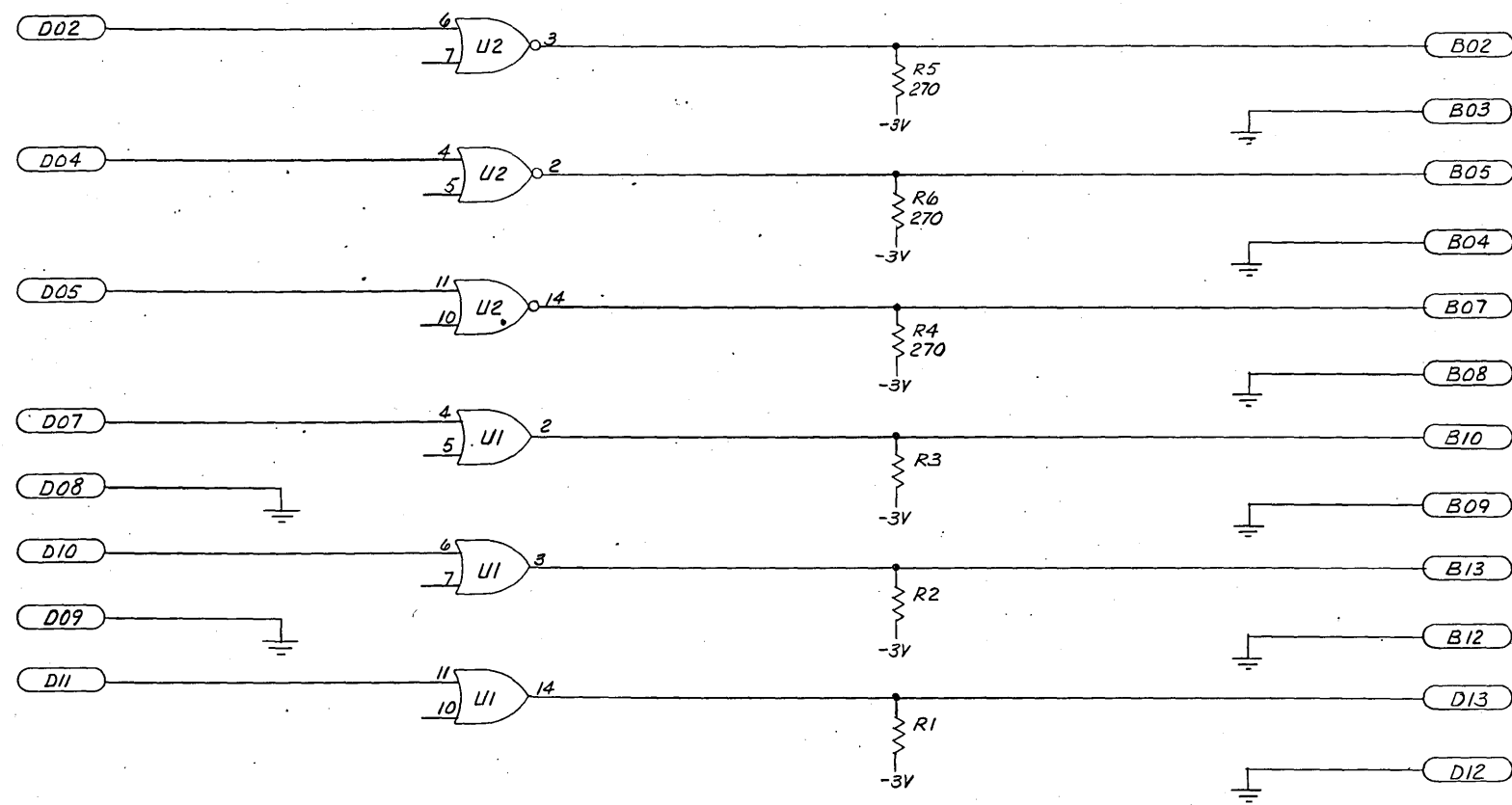
NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL		SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		CONTRACT NO.		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION		
APPLICATION		SCREW THREADS PER HANDBOOK H-28 COUNTERBORE AND SPOTFACE, FILLET RADII TO BE .015 MAXIMUM REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .015R ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1 STANDARD HOLE TOLERANCE PER AND 10387 TOLERANCES ON: XX = ± .03 XXX = ± .010 ANGLES = ± 0° 30'		DRAWN <i>S. P. Kelly</i> 6-22-77 CHECK <i>[Signature]</i> ENGR <i>[Signature]</i> PROJ. ENGR <i>[Signature]</i> 11/1/77 PROD. DESIGN		SCHEMATIC - UNIVERSAL BUFFER		
-001 942935 148		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		OTHER APPROVALS		SIZE CODE IDENT NO. DWG NO. D 16224 942937		
SCALE: -		WEIGHT		SHEET 1 OF 2		DISTR NO. 1410		

942937 A B

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHEET 1		



-002 VERSION OF 942935 ASSY.

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942937
SCALE	WEIGHT	SHEET 2 of 2

942937

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PART IDENTIFICATION	
PART NUMBER	PART REV.

CABLE CHART

W NO.	PART NO.	FROM	TO
W1	942655-001	A.C. BOX	CUSTOMER A.C. IN
W2	942670-001	TB1-13,17,22	PS6, +15V
W3	942670-001	TB1-14,19,22	PS4, +5.0V
W4	942670-001	TB1-16,19,23	PS5, -5.2V
W5	942670-002	TB1-13,18,22	PS9, +15V
W6	942670-002	TB1-14,19,23	PS7, +5.0V
W7	942670-002	TB1-16,20,23	PS8, -5.2V
W8	942670-001	TB1-15,20,24	FAN, S1
W9	942670-002	TB1-15,20,24	FAN, S2
W10	SENSE LINE	J2-V	PS6, +15V
W11		J2-R	PS4, +5.0V
W12		J2-b	PS5, COMM.
W13		J2-15	PS9, +15V
W14		J2-16	PS7, +5.0V
W15		J2-4	PS8, COMM.
W16		J2-36	PS5, +5.0V
W17	SENSE LINE	J2-35	PS8, +5.0V
W18	941275-007	PS6, +15V	BSM4, +15V
W19	941275-005	PS4, +5.0V	BSM4, +5.0V
W20	941275-006	PS5, COMM.	BSM4, -5.2V
W21	941275-004	PS6, +15V	BSM1, +15V
W22	941275-002	PS4, +5.0V	BSM1, +5.0V
W23	941275-003	PS5, COMM.	BSM1, -5.2V
W24	941275-005	PS9, +15V	BSM3, +15V
W25	941275-005	PS7, +5.0V	BSM3, +5.0V
W26	941275-004	PS8, COMM.	BSM3, -5.2V
W27	941275-003	PS9, +15V	BSM2, +15V
W28	941275-003	PS7, +5.0V	BSM2, +5.0V
W29	941275-001	PS8, COMM.	BSM2, -5.2V
W30	942929-001	TB2-12	HEAT SENSE A
W31	942929-001	TB2-11	HEAT SENSE B
W32	PWR CHECK LINE	J3, 2	PI-2
W33	PWR CHECK LINE	J3, 17	PI-3
W34	942934-001	PS2, +OUT	PI-4
W35	942934-001	PS2, -OUT	PI-1
W36	942928-001	P2-1	BIT 2 S07
W37		P2-3	BIT 2 M09
W38		P2-5	BIT 2 M08
W39		P2-7	BIT 2 M07
W40	942928-001	P2-9	BIT 2 U04

W NO.	PART NO.	FROM	TO
W41	942918-001	P49	J49
W42		PS1	J51
W43		PS3	J53
W44	942918-001	PS5	J55
W45	942908-001	P49	J49
W46		PS1	J51
W47		PS3	J53
W48	942908-001	PS5	J55
W49	941331-002	J30	J49
W50		J32	J51
W51		J34	J53
W52	941331-002	J36	J55
W53	942852-001	J36	J27
W54		J34	J25
W55		J32	J23
W56	942852-001	J30	J21
W57	942943-001	J1-A	P6-1
W58		J1-B	P6-2
W59		J1-C	P6-3
W60		J1-D	P6-4
W61		J1-E	P6-5
W62		J1-F	P6-6
W63	942943-001	J1-H	P6-GND
W64	942652-001	PS2	CPU
W65	942653-001	PS2	CPU
W66	942654-001	PS2	CPU

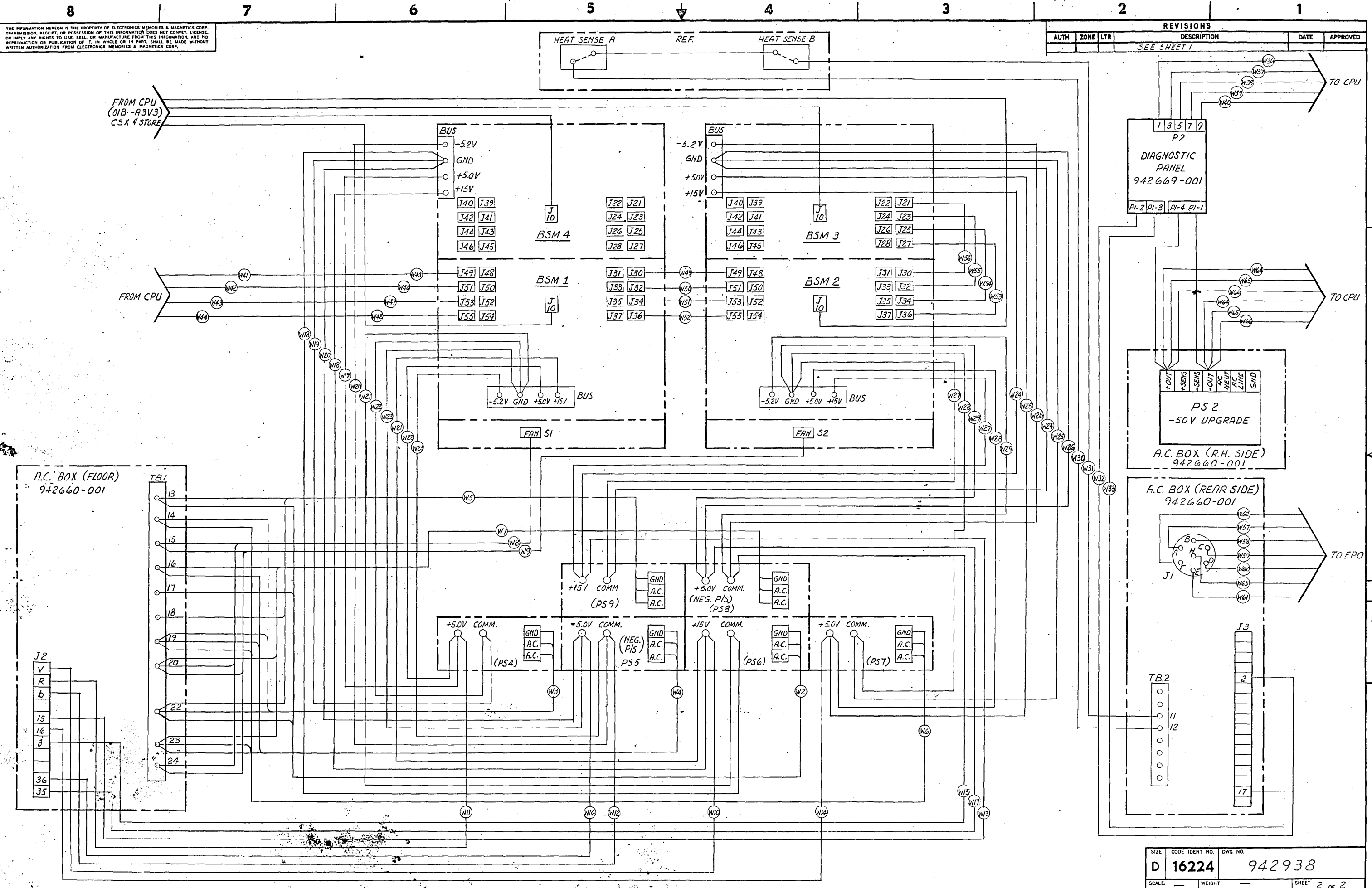
REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA		X1	ENG. MODEL CONTROL	11/2/77	[Signature]
7370/48		A	PRODUCTION RELEASE	12/19/77	[Signature]

② W45 THRU W48 ARE FOR 2 MEG.
 ① W41 THRU W44 ARE FOR 1 MEG.

NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL		SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQT		DO NOT SCALE DRAWING		PARTS LIST		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION		
		SCREW THREADS PER HANDBOOK H-28		CONTRACT NO.		DRAWN <u>U. SEYDEL</u> 9-15-77 CHECK <u>W. Marcus</u> 9-30-77 ENGR		
		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM				PROJ. ENGR [Signature] 11-1-77 PROD. DESIGN [Signature] 11-4-77		
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R				SIZE D CODE IDENT NO. 16224 DWG NO. 942938		
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B41				SCALE: — WEIGHT — SHEET 1 OF 2 DISTR NO. 1412		
		STANDARD HOLE TOLERANCE PER AND 10387				APPLICATION		
		TOLERANCES ON: XX = ± .03 XXX = ± .010 ANGLES = ± 0°30'				OTHER APPROVALS		
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5				UNLESS OTHERWISE SPECIFIED		
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH				"C" SIZE ONLY		
		UNLESS OTHERWISE SPECIFIED						

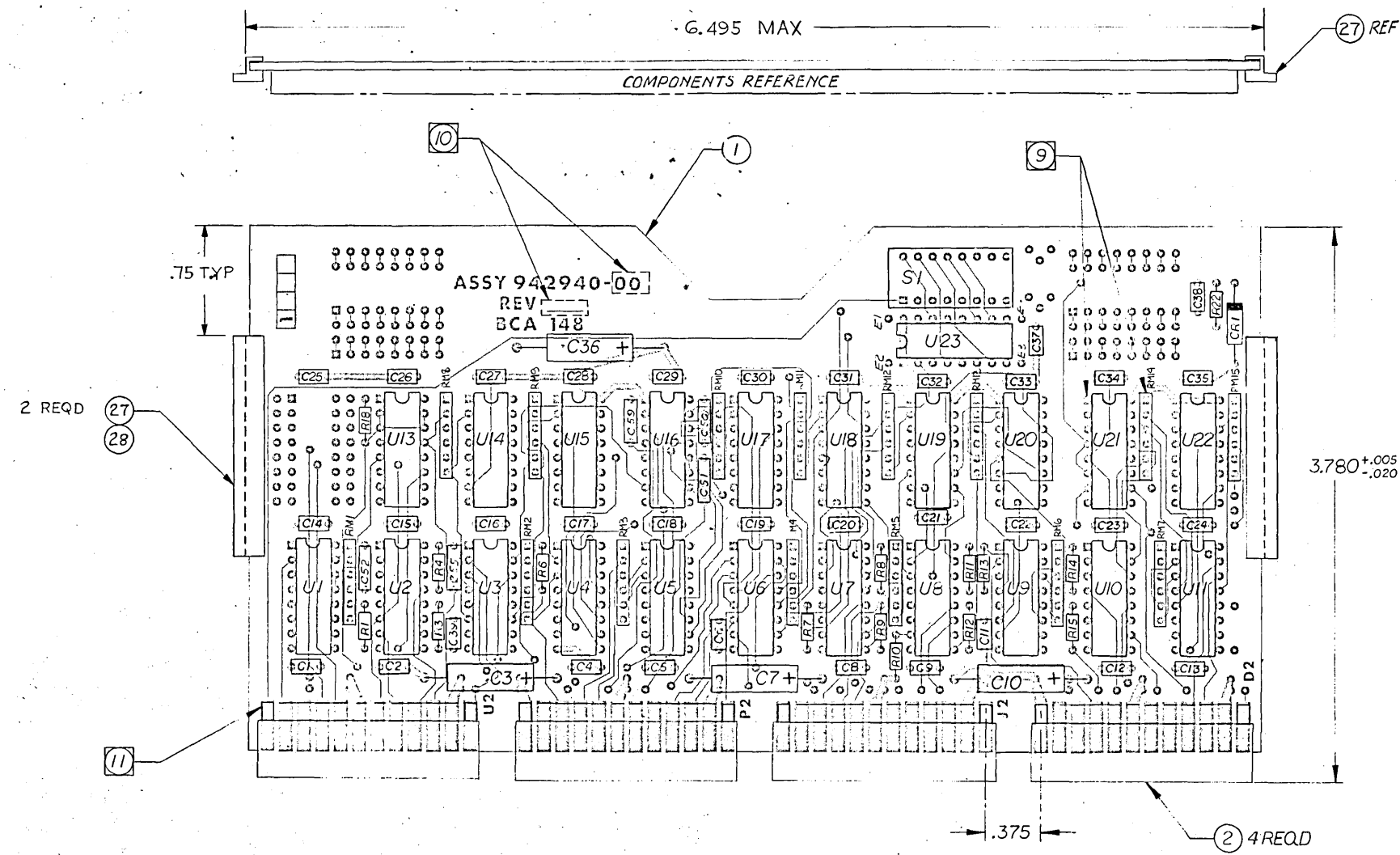
942938



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PART IDENTIFICATION	
PART NUMBER	PART REV.
942940-001	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/19		X1	ENGINEERING MODEL CONTROL	8/21/77	[Signature]
DWA 148/19		X2	DELETED R16 & R17	10-5-77	[Signature]
DWA 148/19		X3	DELETED R2 R5 R19 R20 & R21; ADDED C50 C51 C52 C55 & C59	11-7/77	[Signature]
DWA 148/19		X4	ADDED ITEM 27 & 28	12-14-77	[Signature]
		A	PRODUCTION RELEASE	12/19/77	[Signature]



- 11 CONNECTOR CONTACT BLADES ARE TO BE CENTERED ON THE ETCH CONNECTOR PADS WITHIN ±.010.
- 10 IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
- 9 "□" SQUARE PAD INDICATES PIN NO. 1 OF INTEGRATED CIRCUITS & RESISTOR MODULES.
- 8 "—|—" BAND INDICATES CATHODE END OF DIODE.
- 7 "+" INDICATES POSITIVE END OF CAPACITOR.
- 6. SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM 3.
- 5. COMPONENT HEIGHT NOT TO EXCEED .40.
- 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
- 3. COMPONENT LEAD & SOLDER BUILD-UP NOT TO EXCEED .060, FARSIDE.
- 2. ASSEMBLE PER EM MFG. STANDARDS.
- 1. FOR SCHEMATIC DIAGRAM, SEE PARTS LIST.

NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE		SEE SEPARATE PARTS LIST PL942940-001	
SEE PART IDENT BLOCK FOR PART MARKING REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION/MATERIAL	
DO NOT SCALE DRAWING		PARTS LIST		SPEC/SOURCE	
SCREW THREADS PER HANDBOOK H-28		CONTRACT NO.		CODE IDENT NO.	
COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM		DRAWN <i>M. Litich</i> 8-25-77		FIND NO.	
REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R		CHECK <i>L. Marcus</i> 8-31-77		PWBA - ECA - 148	
ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		ENGR. <i>[Signature]</i> 8-31-77		SIZE	
STANDARD HOLE TOLERANCE PER AND ISO87		PROJ. ENGR. <i>R.D. [Signature]</i> 8/21/77		CODE IDENT NO.	
TOLERANCES ON: XX = ± .03 XXX = ± .010		PROD. DESIGN		DWG NO.	
INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		OTHER APPROVALS		D 16224 942940	
DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED				SCALE: 2:1 WEIGHT	
APPLICATION				SHEET 1 OF 1	

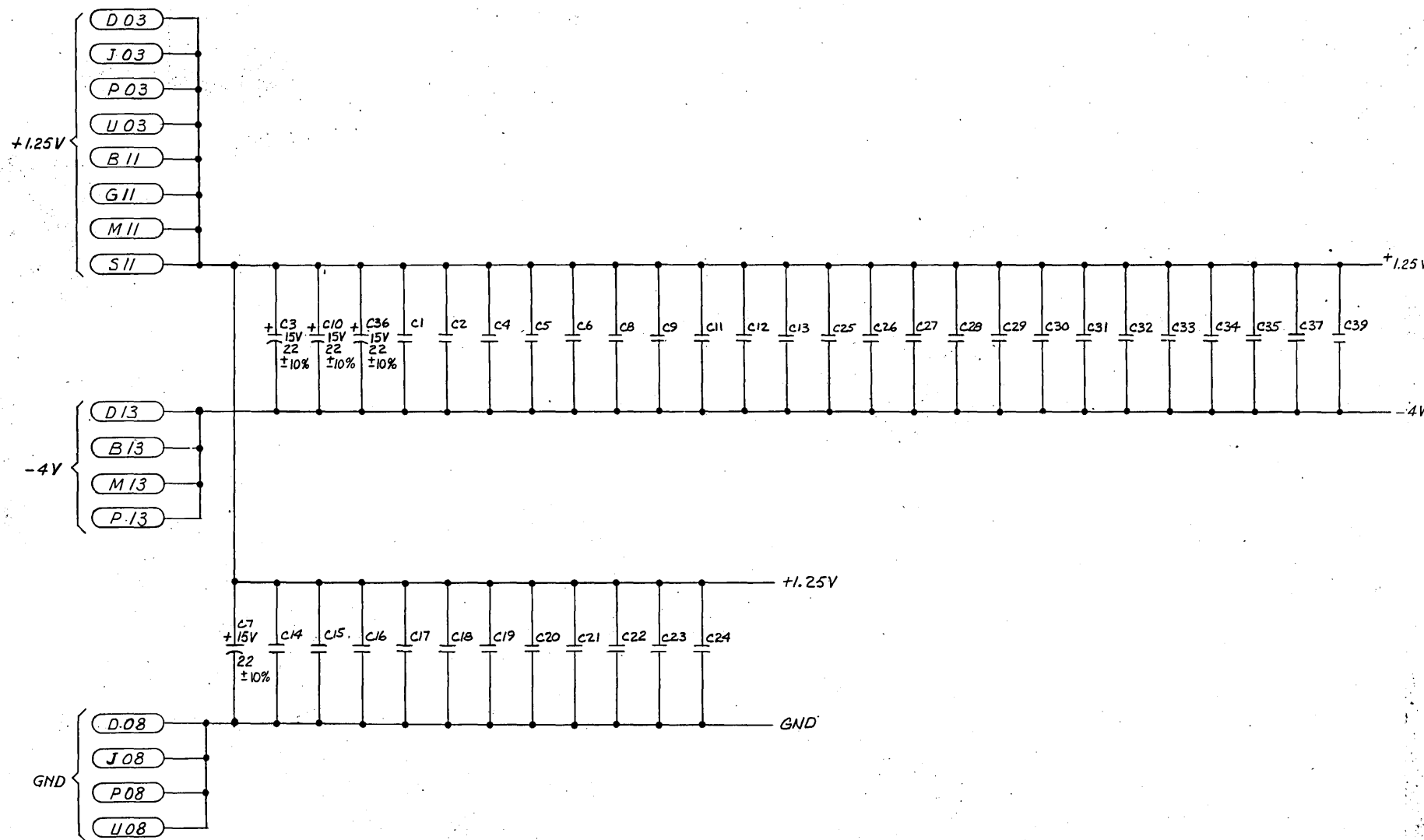
C'SIZE ONLY

942940

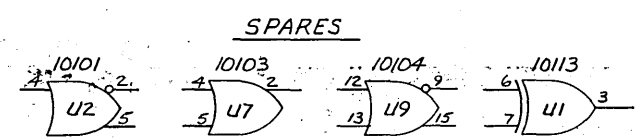
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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	A.
DWA 148/9		X1	ENG. MODEL CONTROL DWG.	8/31/77	JS
DWA 148/9	2B7	X2	DELETED R16 & R17	10-5-77	JS
DWA 148/9		X3	DELETED R2, R5, R19, R20 & R21; ADDED C50, C51, C52, C55 & C59	11-11-77	JS
		A	REVISED SIGNAL NAMES PRODUCTION RELEASE	1/5/78	JS



LAST REF DESIG USED	REF. DESIG. NOT USED
C59	C40-C50, C53, C54, C56 & C58
R15	R16, R17, R2, R5, R19, R20 & R21
U23	U12
S1	



- ALL SIGNALS ARE MST LEVEL.
- INDICATES AN I/O PIN.
- ALL IC'S PINS #1 & #16 (VCC) ARE +1.25V; PIN #8 (VEE) IS -4V.
- ALL RESISTORS MODULES ARE 510Ω ± 2%.
- ALL RESISTORS ARE 1/8W ± 5%.
- ALL CAPACITOR VALUES ARE IN MICROFARADS .1, 100V, ± 20%.

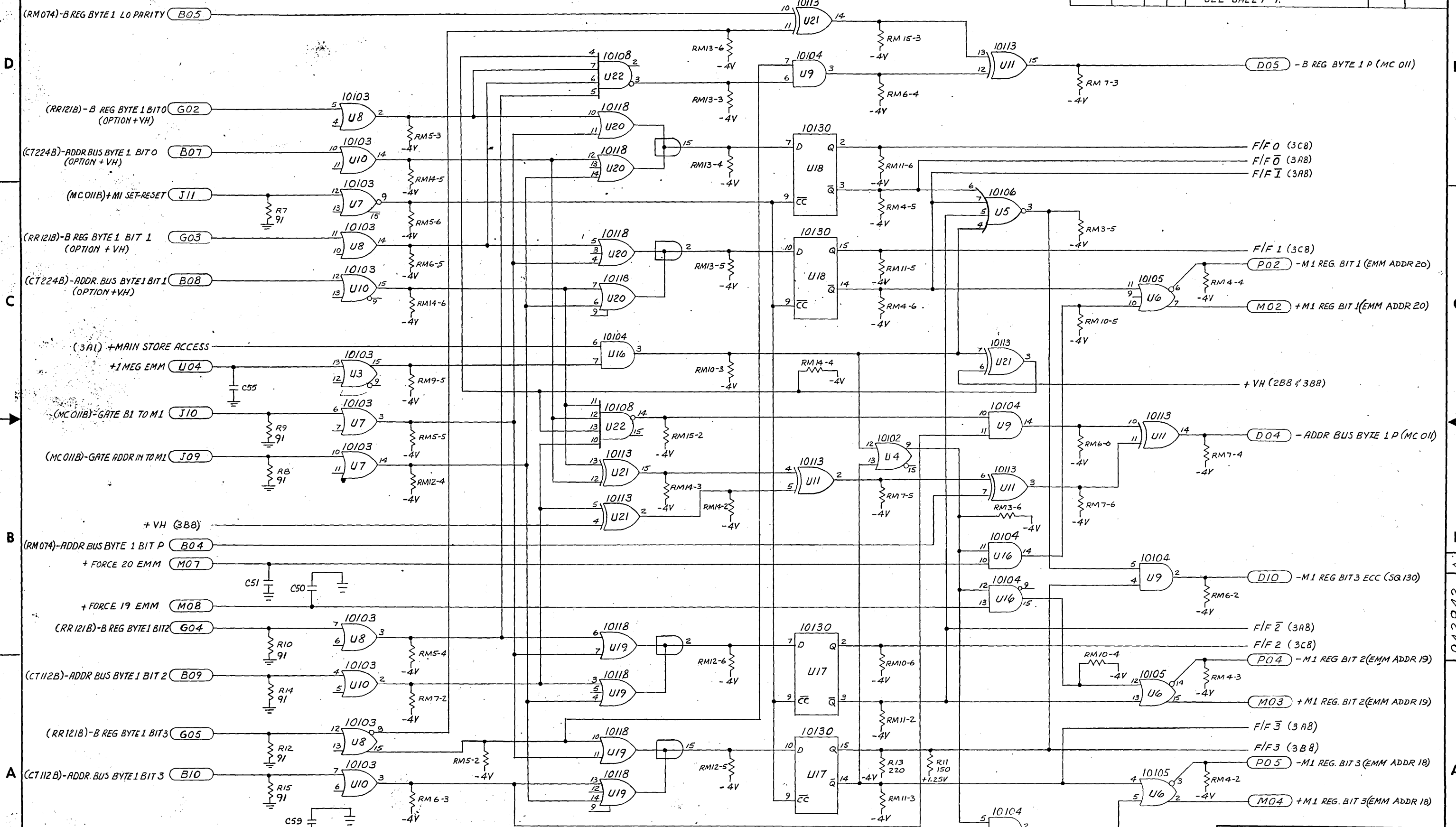
NOTES: UNLESS OTHERWISE SPECIFIED

NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
DASH NO. & QTY PER ASSY	PARTS LIST				
SEE PART IDENT BLOCK FOR PART MARKING REQ	CONTRACT NO.				
	DO NOT SCALE DRAWING				
	SCREW THREADS PER HANDBOOK H-28				
	COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM				
	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R				
	ROUGHNESS OF MACHINED SURFACES 125 PER USAS B41				
	STANDARD HOLE TOLERANCE PER AND 30387				
	TOLERANCES ON: .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'				
	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y145				
	DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH				
	UNLESS OTHERWISE SPECIFIED				
DASH NO.	942940	148			
	NEXT ASSY	USED ON			
APPLICATION			SIZE	CODE IDENT NO.	DWG NO.
			D	16224	942942
APPROVALS			SCALE:	WEIGHT	SHEET 1 OF 4
					DISTR NO. 14-10

942942

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SHEET 1.		



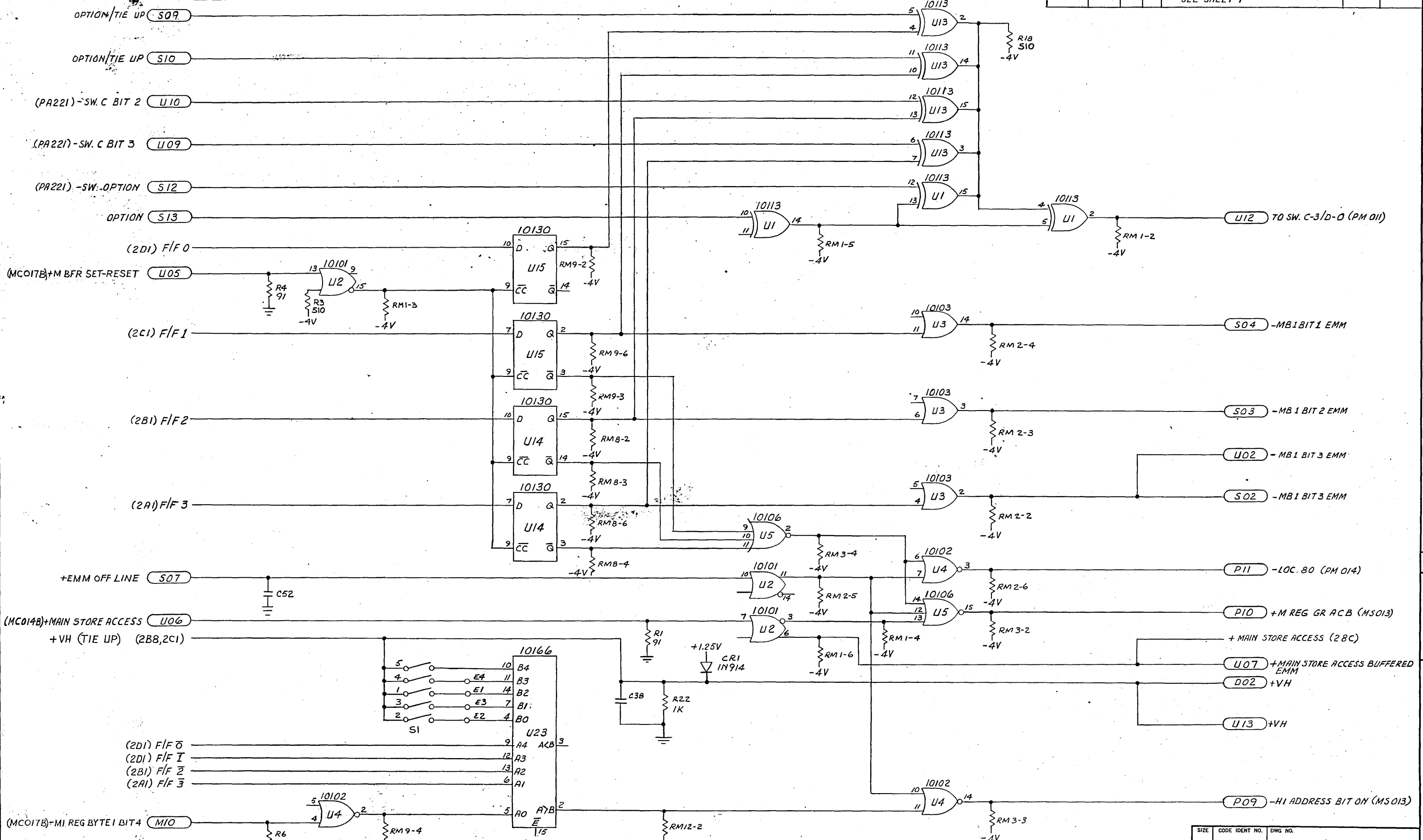
NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942942
SCALE:	WEIGHT:	SHEET 2 OF 4

942942

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REVISIONS						
EFF	AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				SEE SHEET 1		



NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942942
SCALE:	WEIGHT	SHEET 3 of 4

942942

REVISIONS				
EFF	AUTH	ZONE	LTR	DESCRIPTION
				SEE SHEET 1
DATE				APPROVED

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+VH (TIE UP)	D02	B02	
+1.25V	D03	B03	
(MCO11)-ADDR BUS BYTE 1 P	D04	B04	-ADDR BUS BYTE 1 BIT P (RM 074)
(MCO11)-B REG BYTE 1 P	D05	B05	-B REG BYTE 1 LO PARTY (RM 074)
	D06	B06	
	D07	B07	-ADDR BUS BYTE 1 BIT 0 (CT224B)
GND	D08	B08	-ADDR BUS BYTE 1 BIT 1 (CT224B)
	D09	B09	-ADDR BUS BYTE 1 BIT 2 (CT112B)
(SQ 130)-M1 REG BIT 3 ECC	D10	B10	-ADDR BUS BYTE 1 BIT 3 (CT112B)
	D11	B11	+1.25V
	D12	B12	
-4V	D13	B13	-4V

	J02	G02	-B REG BYTE 1 BIT 0 (RR 121B)
+1.25V	J03	G03	-B REG BYTE 1 BIT 1 (RR 121B)
	J04	G04	-B REG BYTE 1 BIT 2 (RR 121B)
	J05	G05	-B REG BYTE 1 BIT 3 (RR 121B)
	J06	G06	
	J07	G07	○
GND	J08	G08	○
(MCO11B)-GATE ADDR IN TO M1	J09	G09	○
(MCO11B)-GATE B1 TO M1	J10	G10	○
(MCO11B) + M1 SET-RESET	J11	G11	+1.25V
	J12	G12	
	J13	G13	

-M1 REG BIT 1 (EMM ADDR 20)	P02	M02	+M1 REG BIT 1 (EMM ADDR 20)
	P03	M03	+M1 REG BIT 2 (EMM ADDR 19)
+1.25V	P04	M04	+M1 REG BIT 3 (EMM ADDR 18)
-M1 REG BIT 2 (EMM ADDR 19)	P05	M05	
-M1 REG BIT 3 (EMM ADDR 18)	P06	M06	
	P07	M07	+FORCE 20 EMM
GND	P08	M08	+FORCE 19 EMM
(MS013) -HI ADDRESS BIT ON	P09	M09	+FORCE 18 EMM
(MS013) +M REG GR ACB	P10	M10	-M1 REG BYTE 1 BIT 4 (MCO17B)
(PM 014) -LOC 80	P11	M11	+1.25V
	P12	M12	
-4V	P13	M13	-4V

-MB1 BIT 3 EMM	U02	S02	-MB1 BIT 3 EMM/LIGHT DR.
+1.25V	U03	S03	-MB1 BIT 2 EMM/LIGHT DR.
+1 MEG EMM	U04	S04	-MB1 BIT 1 EMM/LIGHT DR.
(MCO17B) +M BIT SET RST	U05	S05	
(MCO14B) +MAIN STORE ACCESS	U06	S06	
+MAIN STORE ACCESS BUFFERED EMM	U07	S07	+EMM OFF LINE
GND	U08	S08	
(PA221) -SW C BIT 3	U09	S09	OPTION/TIE UP
(PA221) -SW C BIT 2	U10	S10	OPTION/TIE UP
	U11	S11	+1.25V
(PM 011) TO SW. C-3/D-0	U12	S12	-SW OPTION (PA221)
+VH (TIE UP)	U13	S13	OPTION

NOTES: UNLESS OTHERWISE SPECIFIED

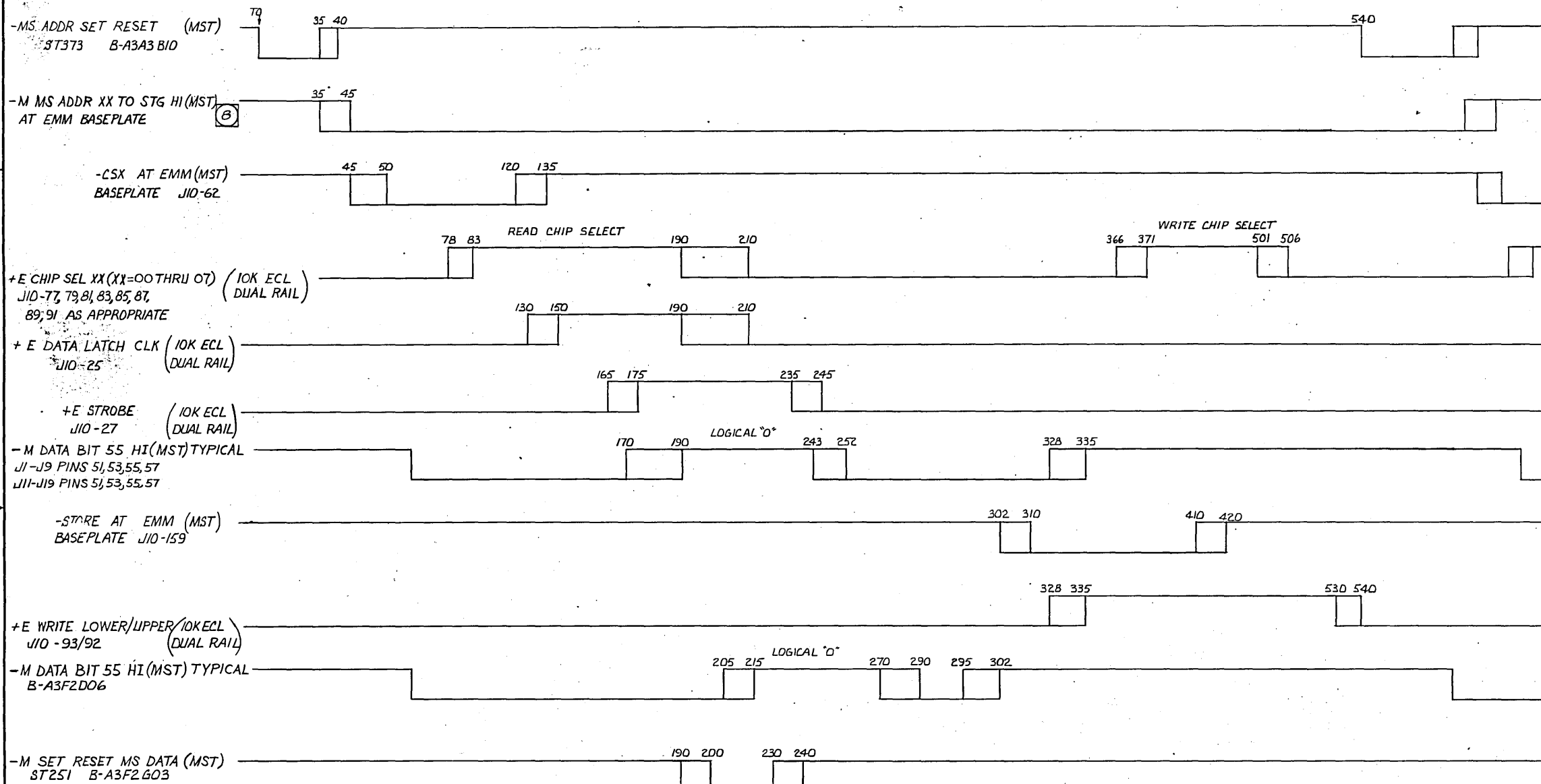
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942942
SCALE	WEIGHT	SHEET 4 OF 4

942942

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PART IDENTIFICATION	
PART NUMBER	PART REV.

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/62		X1	ENGINEERING MODEL CONTROL	12/23/77	JH
DWA 148/62		A	PRODUCTION RELEASE	4/3/78	JH



8 ADDRESS LINES 1-15 ARE NEGATIVE TRUE. ADDRESS 16 & 17 ARE POSITIVE TRUE. IBM ALDS SHOW ADDRESS LINES 16 & 17 REVERSED FROM ACTUAL WIRING.

7. ASSUMPTIONS:
- (A) -CSX AND -STORE TRILEADS ARE 112 IN LENGTH FOR ANY BSM (BSM EQUALS ONE MEGABYTE).
 - (B) UTILIZE ADD/DATA CABLE 942908, WHOSE LONGEST TRILEAD IS 122 IN LENGTH.
 - (C) -MS ADDR SET RESET SIGNAL AND -SET RESET MS DATA SIGNAL TIMING MEETS THIS DESCRIPTION.
 - (D) -MS ADDR SET RESET SIGNAL AND APPROPRIATE -CSX SIGNAL TIMING MEETS THIS DESCRIPTION.
 - (E) -MS ADDR SET RESET SIGNAL AND APPROPRIATE -STORE SIGNAL TIMING MEETS THIS DESCRIPTION.

6. THIS TIMING PERMITS IDENTICAL TIMING SETTINGS ON THE 148 INTERFACE CARD FOR EMM ADDITION OF ONE OR TWO MEGABYTES OF MEMORY.
5. LEADING EDGE OF -STORE SIGNAL MUST OCCUR AS SHOWN.
1. THERE MUST BE A MINIMUM OF 125NS FROM TRAILING EDGE OF RIGHT CHIP SELECT SIGNAL TO LEADING EDGE OF NEXT READ CHIP SELECT SIGNAL.
 3. NO NOISE GLITCHES OR OTHER HIGH SIGNALS ARE PERMITTED ON DATA BIT LINES FOR LOGICAL "1"s DURING -SET RESET MS DATA SIGNAL AND FOR 20NS AFTER THIS SIGNAL.
 2. LOGICAL "0" DATA BITS: LEADING EDGE (A LOW TO HIGH TRANSITION) MUST OCCUR A MINIMUM OF 10NS PRIOR TO TRAILING EDGE OF -SET RESET MS DATA SIGNAL. (A LOW TO HIGH TRANSITION) RECOMMENDED SETTING OF THIS TIMING IS: MINIMUM OF 20NS PRIOR TO TRAILING EDGE -SET RESET MS DATA SIGNAL.
 1. -CSX SIGNAL DURATION IS 80NS ± 20NS; LEADING EDGE MUST OCCUR AS SHOWN (LEADING EDGE OF NEGATIVE TRUE SIGNAL IS HIGH TO LOW TRANSITION).

NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		PARTS LIST		CONTRACT NO.	EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		DRAWN AGUILAR H 12-14-77 CHECK ENGR J. J. J. 12/23/77 PROJ. ENGR J. J. J. 12/23/77 PROD. DESIGN	
DASH NO. NEXT ASSY USED ON		SCREW THREADS PER HANDBOOK H28 COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010 ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1 STANDARD HOLE TOLERANCE PER AND 10387 TOLERANCES ON .XX ± .03 .XXX ± .010 ANGLES ± 0° 30'		148 APPLICATION	SIZE CODE IDENT NO. DWG NO. D 16224 942944
DASH NO. NEXT ASSY USED ON		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.3 DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		OTHER APPROVALS	SCALE: NONE WEIGHT SHEET 1 OF 1 DISTR. NO. 1410

942944

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PART IDENTIFICATION		
MARK PART NUMBER & PART REV. PER <i>CHASSIS LAYOUT</i>	TABULATED DATA	
PART NUMBER	PART REV.	SEPARATE PARTS LIST NO.
942945-001	J	PL942945-001

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
25172 4072		XA	INITIAL PROTO RELEASE	7-18-77	RB
7708233		XB	ADV PART REV - 001 TO XB		
7708231A		XC	REVISED (SH2) ADV PART REV		
7708232		XD	REVISED (SH2) ADV PART REV - 001		
7708233		XE	REVISED (SH2) ADV PART REV - 001		
7708230F		XF	REVISED (SH3) ADV PART REV - 001		
77082304		XG	ADV PART REV - 001, REVISE (SH3)	10-19-77	RB
77101803		XH	REV EMT, 18. ADDED JUMPS. DELETED CTT-C280. ADV PART REV TO XH	10-19-77	RB
77101803		J	PRODUCTION RELEASE	10-17-77	RB
77101803		K	REVISED (SHTS) 2,3,4 ADV PART REV - 001	2-1-78	RB
78011702		L	PART SUBSTIT. PNK CO. (DISTRIB. CO. WAS 1016)	2-1-78	RB

5. WARPAGE ACROSS CONTACT FINGER EDGE SHALL NOT EXCEED .05 IN.
4. ASSEMBLE & INSPECT PER SPEC 984100
3. MAX LEAD PROTRUSION SOLDER SIDE .060
2. MAX COMPONENT HEIGHT .350
1. POLARITY CONVENTION:
 - ☐ HEAVY LINE INDICATES CATHODE END OF DIODE.
 - ⊕ INDICATES POSITIVE END OF CAPACITOR
 - INDICATES PIN 1 OF MULTILEAD DEVICE

NOTES: UNLESS OTHERWISE SPECIFIED

REV	L	L	L
SHEET	1	2	3

DASH NO. & QTY PER ASSY		NOTE PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION-MATERIAL		SPEC/SOURCE		CODE IDENT NO.		FIND NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQ				PARTS LIST							
		DO NOT SCALE DRAWING		CONTRACT NO.		EMM MEMORY PRODUCTS GROUP ELECTRONIC MEMORIES & MAGNETICS CORPORATION					
		SCREW THREADS PER HANDBOOK H38		DRAWN <i>[Signature]</i> 7-19-77		CIRCUIT CARD ASSY, STORAGE 128K X 4 (370/148)					
		COUNTERBORE AND SPOTFACE FILLET RADII TO BE .010 MAXIMUM		CHECK <i>[Signature]</i> 7-18-77		SIZE CODE IDENT NO. DWG NO.		D 16224 942945			
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010		ENGR <i>[Signature]</i>		SCALE: NONE WEIGHT				SHEET 1 OF 3	
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1		PROD. DESIGN <i>[Signature]</i> 7-18-77		OTHER APPROVALS <i>[Signature]</i> 7-19-77				DISTR NO. 1410	
		STANDARD HOLE TOLERANCE PER AND 10387									
		TOLERANCES ON: .XX = ± .03 .XXX = ± .018									
		ANGLES = ± 0° 30'									
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5									
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED									
DASH NO.		NEXT ASSY		USED ON							

942945

8

7

6

5

4

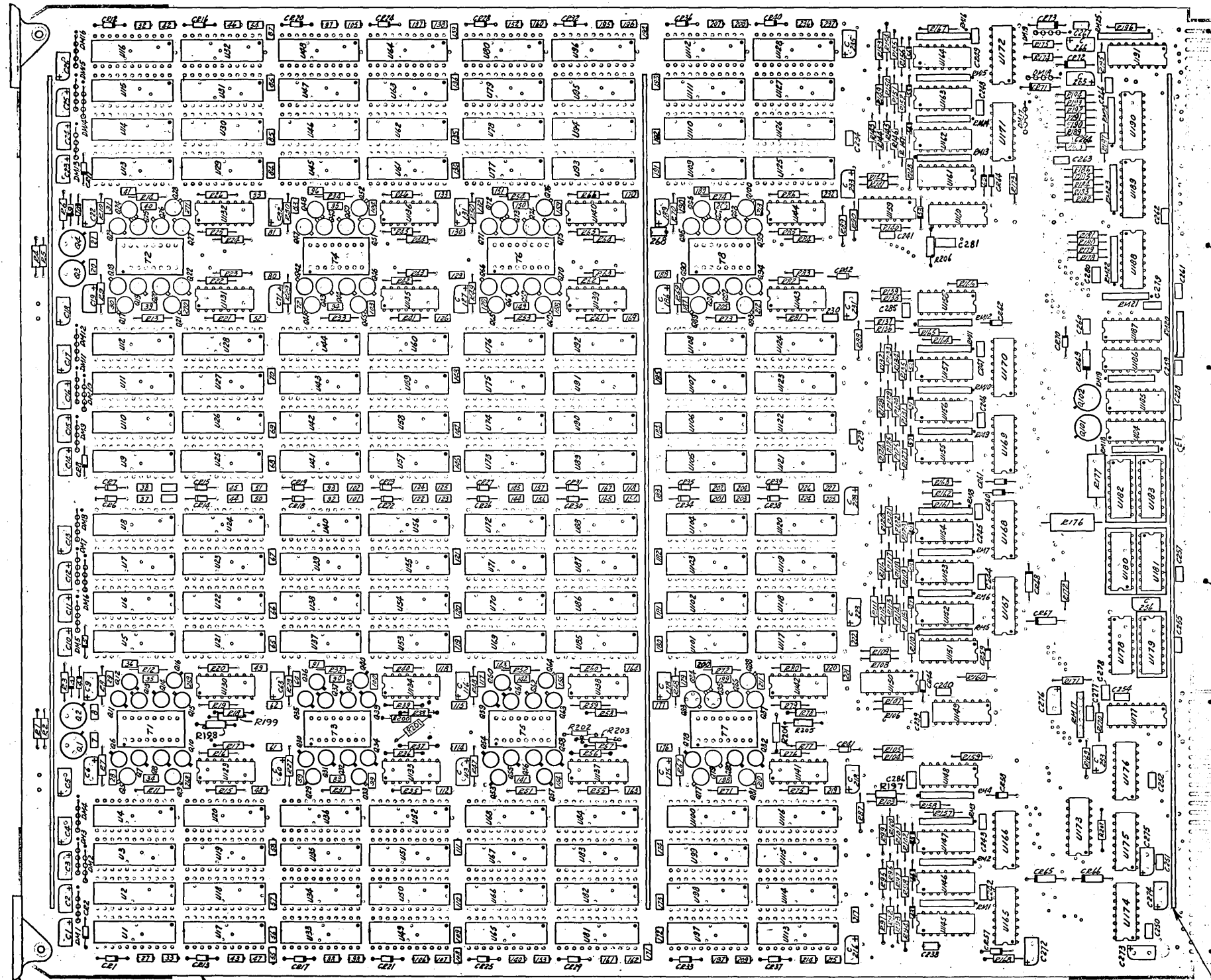
3

2

1

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH1		



PIN 100 NEAR SIDE
PIN 200 FAR SIDE

PIN 77 NEAR SIDE
PIN 177 FAR SIDE

PIN 64 NEAR SIDE
PIN 164 FAR SIDE

PIN 41 NEAR SIDE
PIN 141 FAR SIDE

PIN 28 NEAR SIDE
PIN 128 FAR SIDE

PIN 1 NEAR SIDE
PIN 101 FAR SIDE

51 3 REQ

53 2 REQ

1

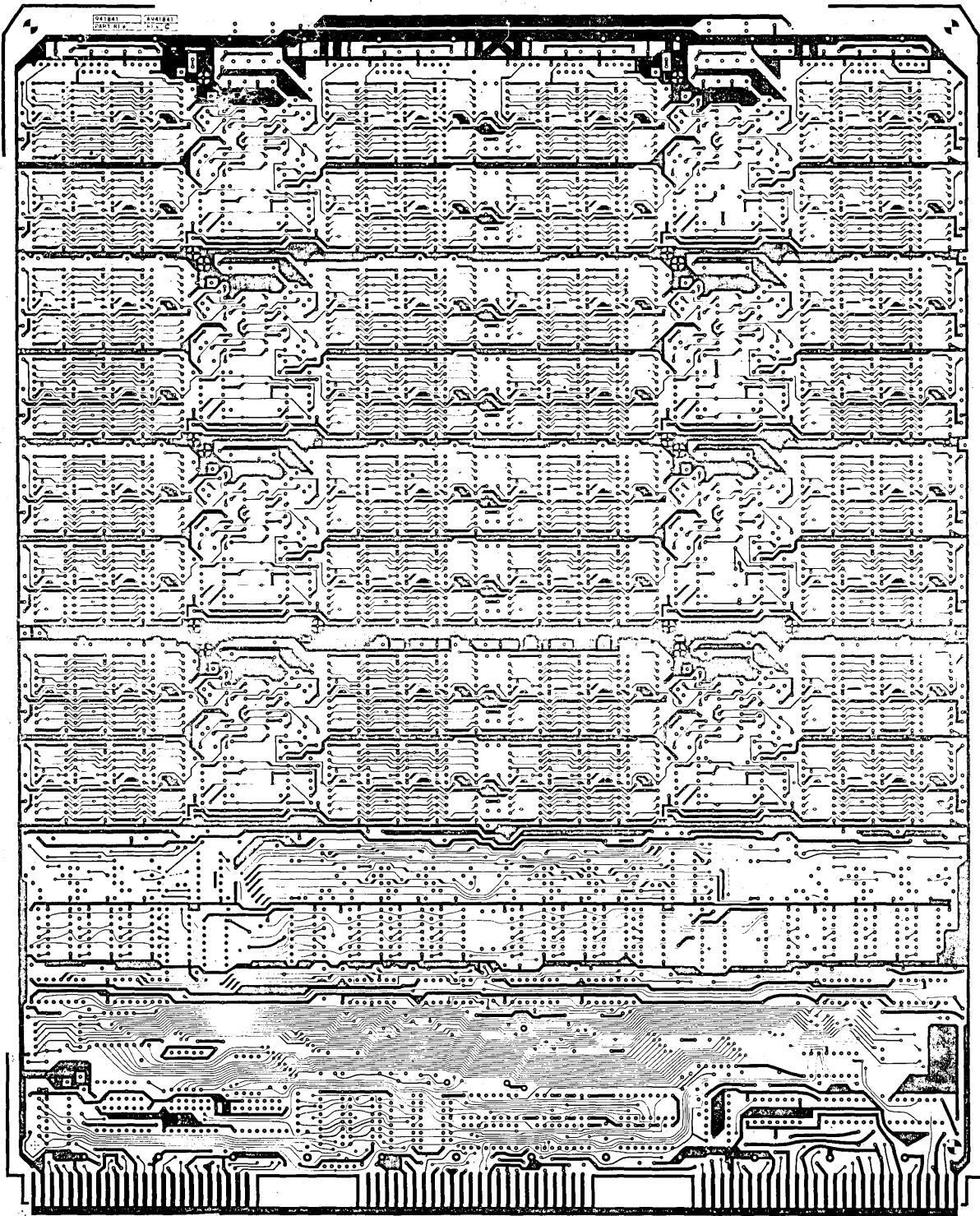
SEE SH1
NOTES: UNLESS OTHERWISE SPECIFIED

SIZE	CODE IDENT NO.	DWG NO.
D	16224	942945
SCALE: NONE	WEIGHT	SHEET 2 OF 3

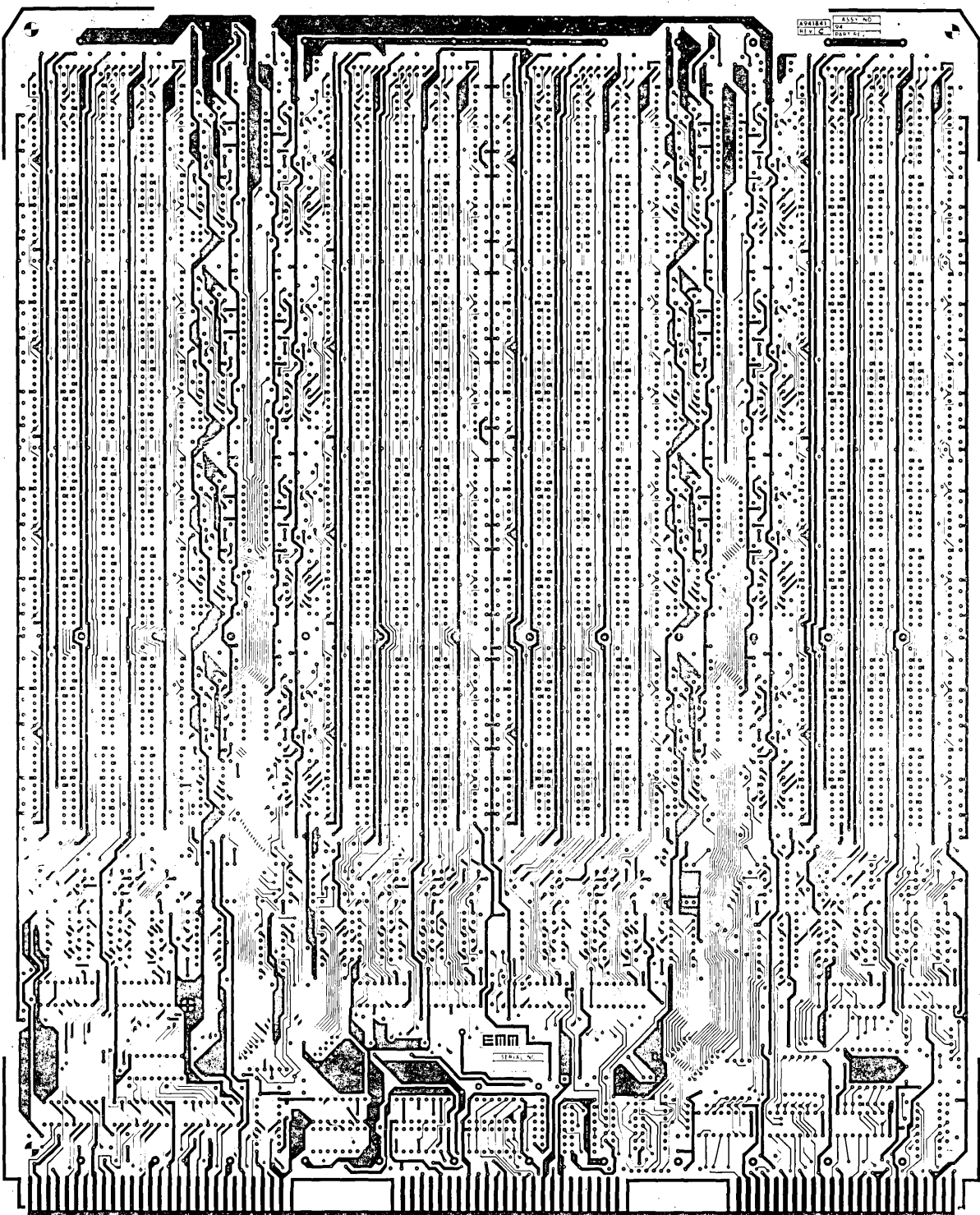
8 7 6 5 4 3 2 1

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REVISONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SH/		



SOLDER SIDE ETCH CUT



COMP SIDE ETCH CUT

NOTES: UNLESS OTHERWISE SPECIFIED

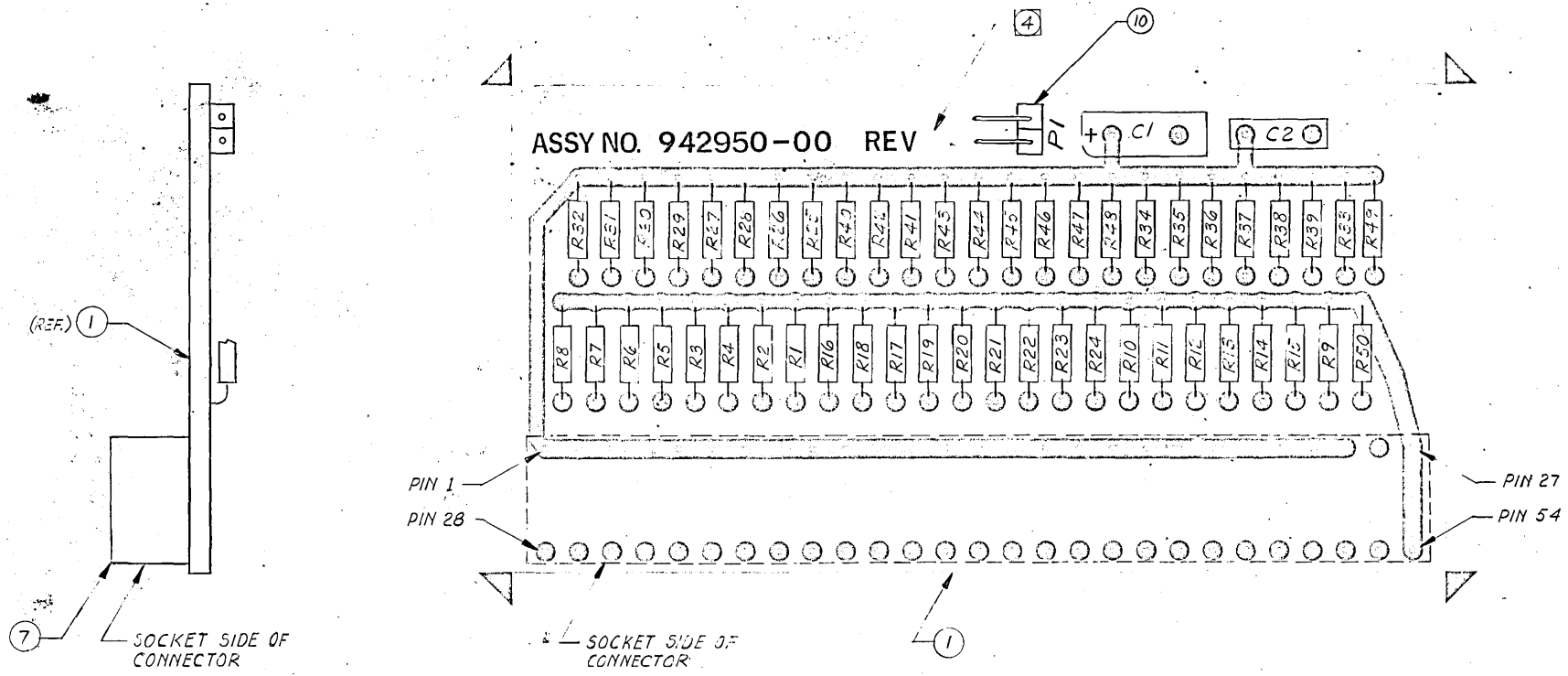
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942945
SCALE	WEIGHT	SHEET
///		3 OF 3

942945 L

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942950-001	A
942950-002	A
942950-003	A
942950-004	A
942950-005	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/20		X1	ENG MODEL CONTROL	7/6/77	RES
		X2	ADDED POWER CONNECTOR (ITEM 10). REORGANIZED -004 & -005 RESISTORS	7/21/77	RES
DWA 148/20		X3	ITEM 7 WAS P/N 2-86063-3 & SOURCE WAS AMP	12-16-77	JM
		A	PRODUCTION RELEASE	12/19/77	JM
ECO 82075		A1	ADDED NOTE ⑧.	7-3-78	JM
ECO 82428		B	INCOMP ECO 82075	7-3-78	JM



BACKPLANE CONNECTORS REF	VERSION	RESISTOR VALUE		
		150 Ω	1.5K Ω	90 Ω
J32, 34 J42, 44	-001	R25-R49	R1-R24, R50	
J30	-002	R25-R39, R45-R49	R8-R15, R21-R24, R50	R25-R31, R40-R44
J36	-003	R25-R32, R34, R35, R38, R40-R48	R1-R4, R10, R11, R14, R16-R24	R33, R36, R37, R39, R49
J40	-004	R25-R32 R40-R44	R1-R8 R16-R20	R33-R39 R45-R49
J46	-005	R25, R27 R32-R49	R1, R3, R8-R24, R50	R29, R30, R31, R26, R28

REF	REF	REF	REF	REF	QTY	DESCRIPTION/MATERIAL	BERG OR EQUIV.	FIND NO.
					1	65521-136 HEADER, RIGHT ANGLE	BERG OR EQUIV.	10
					1	TS 942950 TEST SPEC		9
					1	SN63WRMA-P5 SOLDER	QQ-8-571	8
					1	65000-040 CONNECTOR	BERG ⑧	7
					5	RCC5GF910J RESISTOR 90 Ω, 1/8W, 5%	SEE REF DES. CHART	6
					20	RCC5GF152J RESISTOR 1.5K Ω, 1/8W, 5%	SEE REF DES. CHART	5
					20	RCC5GF181J RESISTOR 180 Ω, 1/8W, 5%	SEE REF DES. CHART	4
					1	999525-007 CAP 6.8 μf, TANTALUM, 25V ±15%	C1	3
					1	999898-004 CAPACITOR .01 μf, 50V ±10%	C2	2
					1	942951-001 PWB - TERMINATOR		1
						NOTE PART OR IDENTIFYING NO.		
						NOMENCLATURE OR DESCRIPTION/MATERIAL		
						SPEC/SOURCE		
						CODE IDENT NO.		
						FIND NO.		

- ⑧ ITEM 7 ALTERNATE SOURCE: AMP, P/N 2-86063-3
 - 7. SOLDER COMPONENTS TO BOARD USING ITEM NO. 8
 - 6. COMPONENT HEIGHT SHALL NOT EXCEED .350.
 - 5. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
 - ④ MARK BOARD WITH THE FOLLOWING INFORMATION:
VERSION ___ PART REV ___ S/N ___ PER EMPS 6-1.
 - 3. COMPONENT LEAD AND BUILD-UP (FARSIDE) SHALL NOT EXCEED .060.
 - 2. ASSEMBLE PER EM MANUFACTURING STANDARDS.
 - 1. FOR SCHEMATIC DIAGRAM SEE SHEET 2.
- NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		PARTS LIST		CONTRACT NO.	
SEE PART IDENT BLOCK FOR PART MARKING REQT	DO NOT SCALE DRAWING	SCREW THREADS PER HANDBOOK H-38		DRAWN U. SEYDEL 7-1-77	
	COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM	REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010		CHECK L. W. WILSON 7-5-77	
	ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1	STANDARD HOLE TOLERANCE PER AND 10387		ENGR D. J. JACOBI 7/5/77	
	TOLERANCES ON: XX = ±.03, XXX = ±.010 ANGLES = ± 0° 30'	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5		PROJ. ENGR P. J. JACOBI 7/5/77	
	DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH	UNLESS OTHERWISE SPECIFIED		PROD. DESIGN	
	APPLICATION	OTHER APPROVALS		SIZE CODE IDENT NO. DWG NO.	
				D 16224 942950	
				SCALE: 4/11 WEIGHT: -- SHEET 1 OF 2	
				DISTR. NO. 1410	

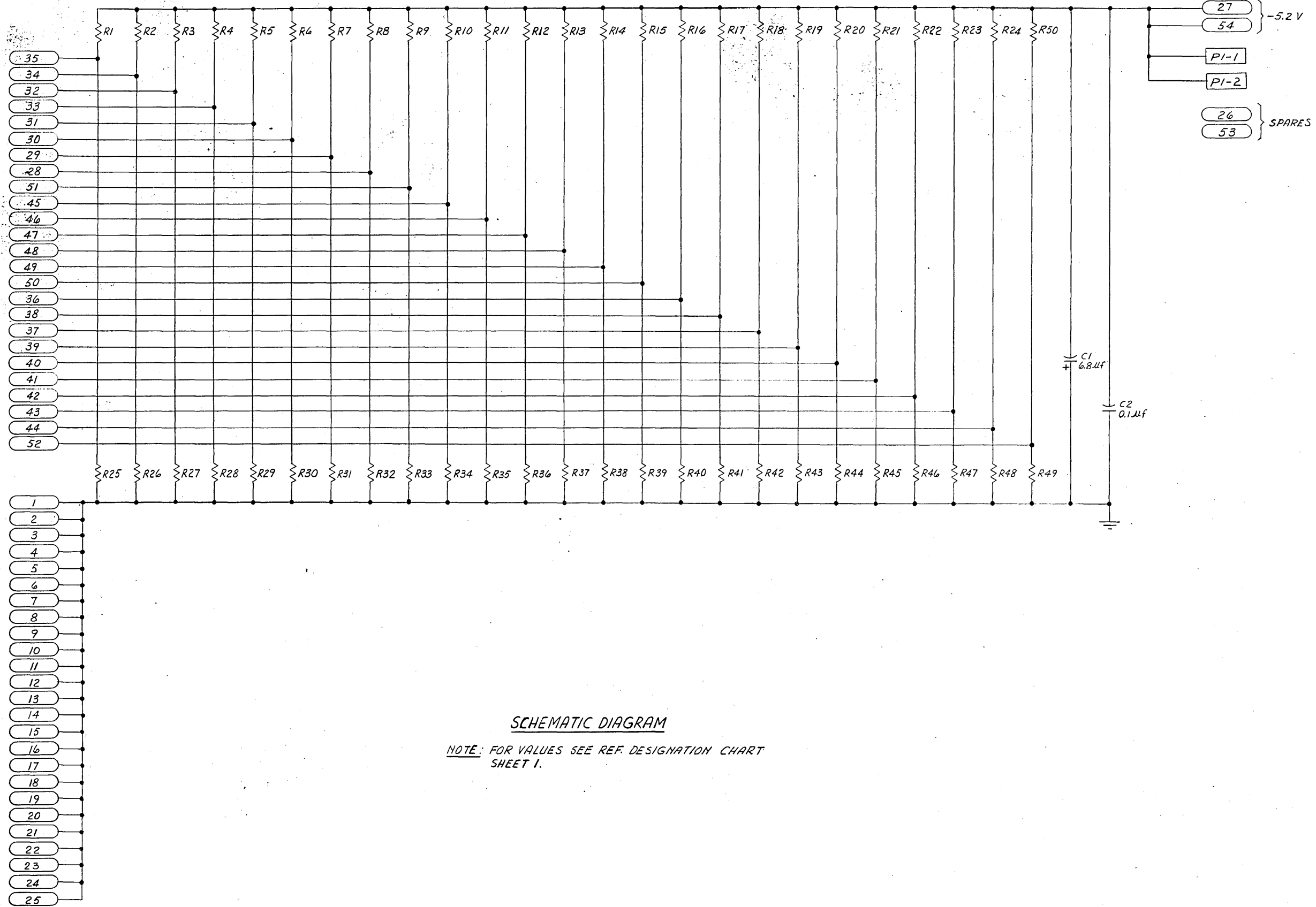
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A

8 7 6 5 4 3 2 1

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REVISIONS					DATE	APPROVED
EFF	AUTH	ZONE	LTR	DESCRIPTION		
				SEE SHEET 1		



NOTES: UNLESS OTHERWISE SPECIFIED

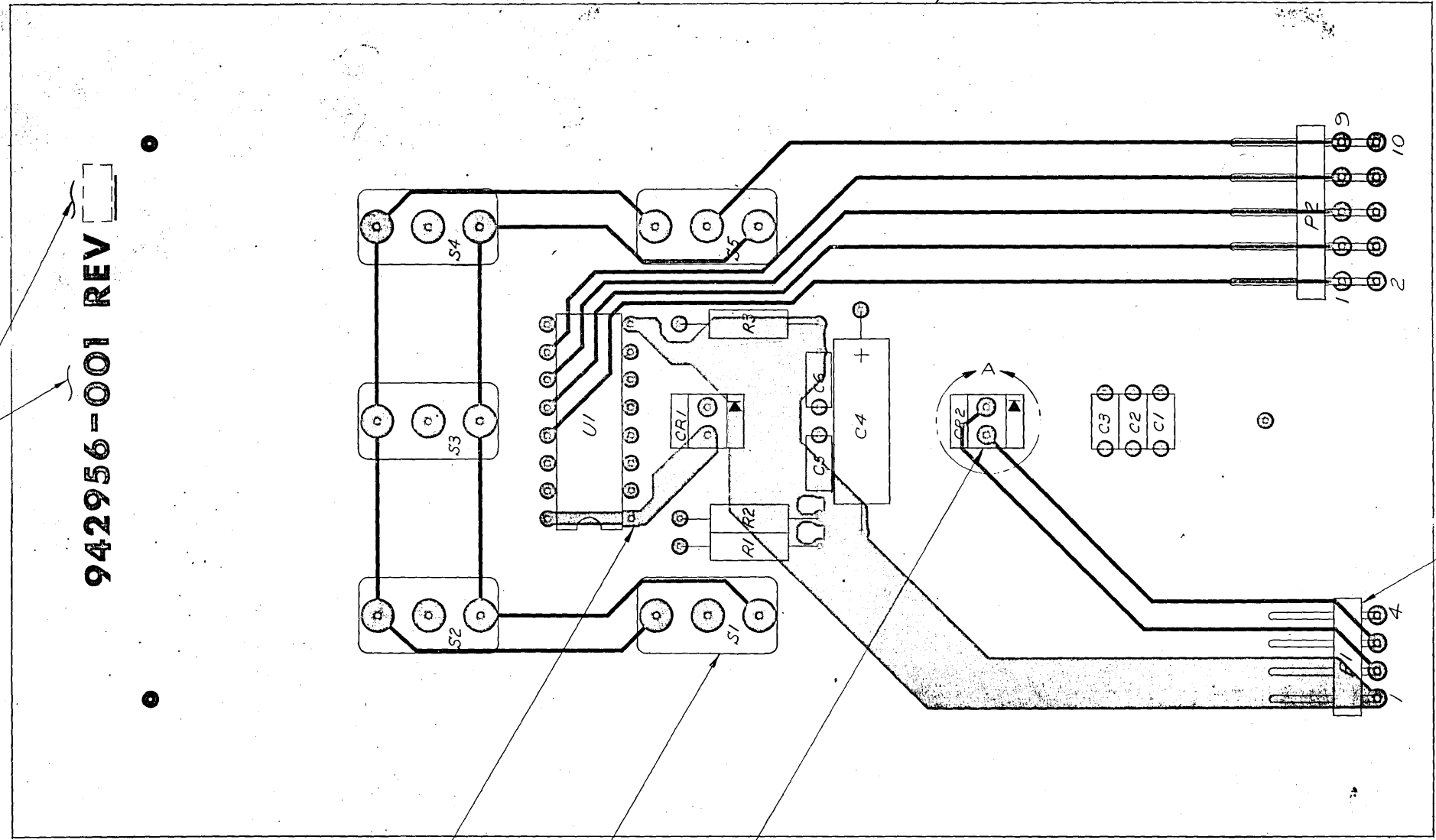
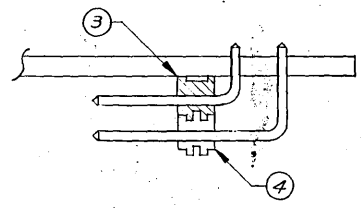
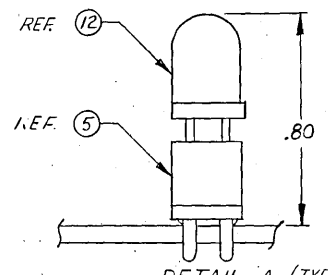
SIZE	CODE IDENT NO.	DWG NO.
D	16224	942950
SCALE:	WEIGHT	SHEET 2 OF 2

942950

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PART IDENTIFICATION	
PART NUMBER	PART REV.
942955-001	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
148/29		XI	ENGINEERING MODEL CONTROL	9/1/77	1.815
		A	PRODUCTION RELEASE	12/19/77	Y2



942956-001 REV

FARSIDE

COMPONENT SIDE SHOWN

- 9 ALL SWITCHES INSTALLED WITH KEYWAYS TO THE LEFT.
 - 8 IF NOT ETCHED ON BOARD MARK ASSY NO. AND REVISION LETTER PER EMPS 6-1, METHOD IV, BLACK CHARACTERS.
 - 7 SQUARE PAD INDICATES PIN NO.1 OF INTEGRATED CIRCUIT.
 - 6 *+ INDICATES POSITIVE END OF CAPACITOR.
 - 5 SOLDER COMPONENTS TO ITEM NO. 1 USING ITEM NO. 15.
 - 4 REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
 - 3 COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060, FARSIDE.
 - 2 ASSEMBLE PER EM MFG STANDARDS.
 - 1 FOR SCHEMATIC DIAGRAM, SEE PARTS LIST.
- NOTES: UNLESS OTHERWISE SPECIFIED

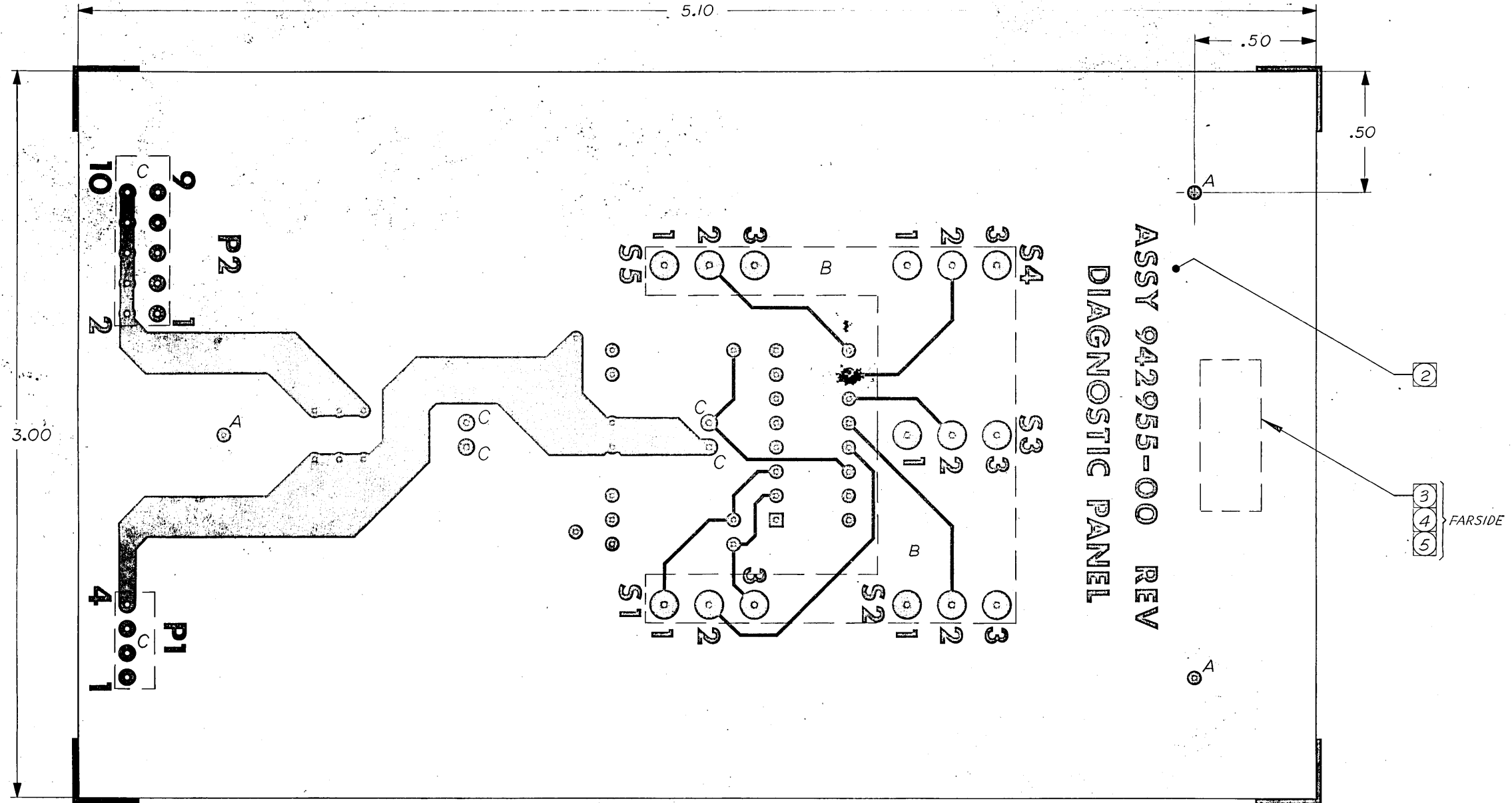
DASH NO. & QTY PER ASSY		NOTE		SEE SEPARATE PARTS LIST #1942955-001		SPEC/SOURCE		CODE IDENT NO.		FIND NO.			
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING		NOMENCLATURE OR DESCRIPTION/MATERIAL		PARTS LIST		CONTRACT NO.		E.M.M. COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION			
APPLICATION		SCREW THREADS PER HANDBOOK H-28 COUNTERBORE AND SPOTFACE FILLET RADI TO BE .010 MAXIMUM REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R ROUGHNESS OF MACHINED SURFACES 325 PER USAS B46.1 STANDARD HOLE TOLERANCE PER AND 30387 TOLERANCES ON .XX = ± .03 .XXX = ± .010 ANGLES = ± 0° 30'		DRAWN AGUILAR 8/26/77		CHECK L. Marcus 9-1-77		ENGR. Richard L. 9-1-77		PROJ. ENGR. 9/1/77		PROD. DESIGN	
DASH NO. 942955 145		INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y14.5 DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		OTHER APPROVALS		SIZE D 16224		CODE IDENT NO. 94295		DWG NO.			
		SCALE: 4:1				WEIGHT		SHE		DISTR NO.			

942955

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/29		XI	ENGINEERING MODEL CONTROL	8/17/77	[Signature]
		A	PRODUCTION RELEASE	12/15/77	[Signature]

PART IDENTIFICATION	
PART NUMBER	PART REV.
942956-001	A



HOLE CHART ⑥	
CODE	HOLE DIA
⑦ A	.165 ^{+0.003} _{-.002}
B	.063 ^{+0.003} _{-.002}
C	.047 ^{+0.003} _{-.002}
UNCODED	.035 ^{+0.003} _{-.002}

- ⑦ HOLES CODED "A" NOT TO BE PLATED THRU.
 - ⑥ HOLE DIA. APPLY AFTER PLATING THRU.
 - ⑤ IF NOT ETCHED ON BOARD MARK PART NO. & REV LTR PER EMPS 6-1 METHOD IV, COLOR BLACK.
 - ④ APPLY VENDOR'S RECOGNIZED MARKING AS LISTED UNDER THE UL COMPONENT RECOGNITION PROGRAM PER 999802.
 - ③ APPLY VENDOR CODE NUMBER PER 999802.
 - ② AREA CONTAINING ASSY NO. & REV LTR TO BE FREE OF SOLDER MASK.
1. FABRICATE AND FINISH PER 999802-346.

NOTES: UNLESS OTHERWISE SPECIFIED

REF	A942956 REV 'A'	PRINTED WIRING MASTER PATTERN	2
A/R		MAKE FROM TRANSLUCENT GREEN SHEET TYPE FL-GFN-062-C-1/1-A-2-B CONFORMING TO MIL-P-13949.	1
-001	NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL
DASH NO. & QTY PER ASSY		PARTS LIST	
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING	
		SCREW THREADS PER HANDBOOK H 28	
		COUNTERBORE AND SPOTFACE FILLET RADI TO BE .015 MAXIMUM	
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .01R	
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1	
		STANDARD HOLE TOLERANCE PER AND 30387	
		TOLERANCES ON .XX = ± .03 .XXX = ± .010 ANGLES = ± 90°	
		INTERPRET DIMENSIONS AND TOLERANCES PER USAS 114.5	
		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED	
-001	942955	148	
DASH NO.	NEXT ASSY	USED ON	APPLICATION
CONTRACT NO.		DRAWN <i>L. Chappell</i> 18 AUG 1977	
		CHECK <i>J. S. ...</i> 8-18-77	
		ENGR <i>[Signature]</i> 8/18/77	
		PROJ. 2067	
		PROD. DESIGN	
		OTHER APPROVALS	
ELECTRONIC MEMORIES & MAGNETICS CORPORATION		PRINTED WIRING BOARD DIAGNOSTIC PANEL	
SIZE	CODE IDENT NO.	DWG NO.	
D	16224	942956	
SCALE	4:1	WEIGHT	SHEET
			DISTR NO. 1

942956 A B A B A B A B

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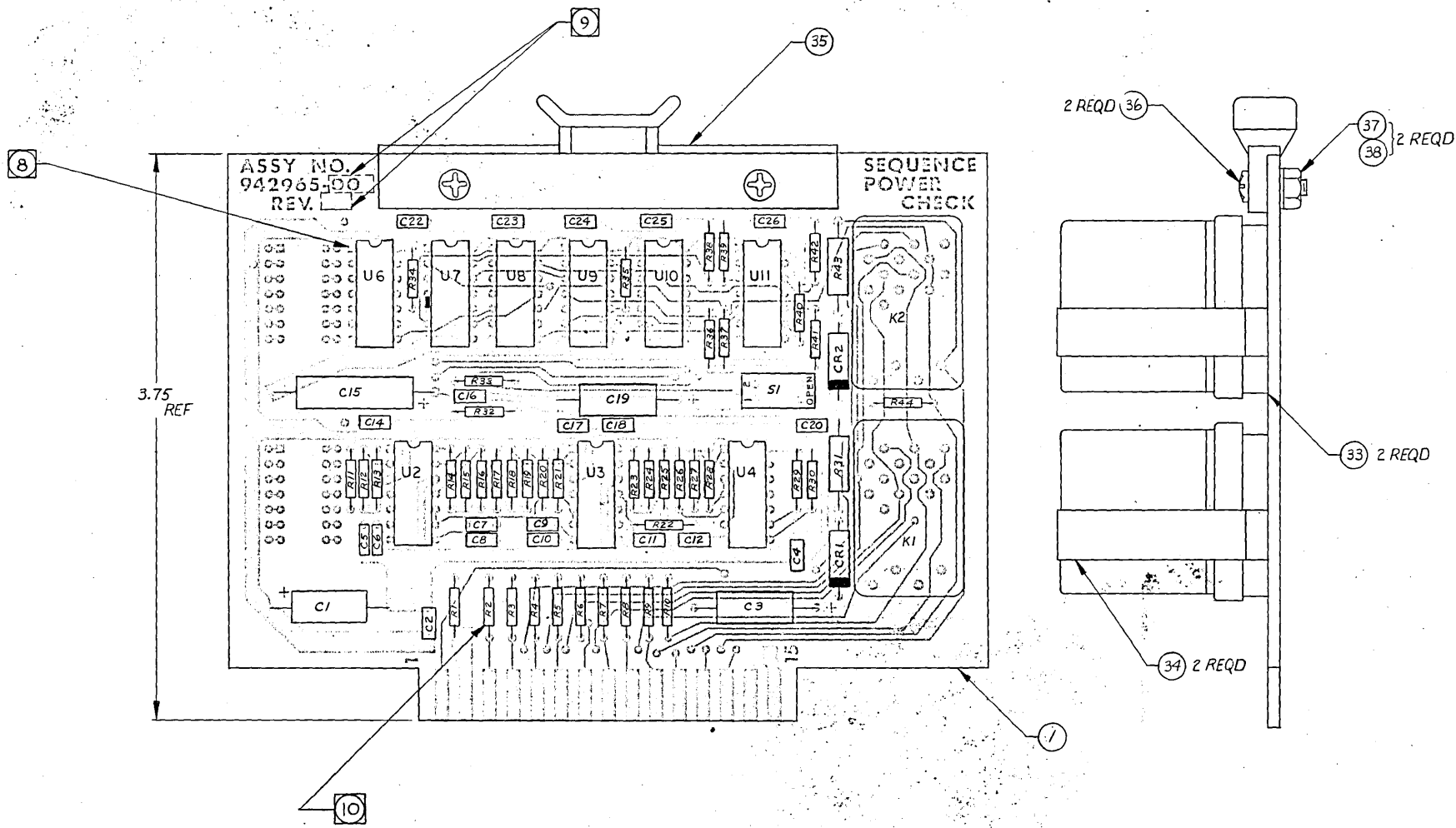
PART IDENTIFICATION	
PART NUMBER	PART REV.
942965-001	A

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/27		X1	ENGINEERING MODEL CONTROL	12-15-77	LD
DWA 148/27		X2	ADDED: ETCH CUT & JUMPER LISTS & NOTES 10 & 11. P/N-001 WAS REV X2	1-27-78	JM
DWA 148/27		A	PRODUCTION RELEASE		LD

ETCH CUT LIST
BETWEEN U7-3 & U7-4
SOLDER SIDE

JUMPER LIST
SOLDER SIDE

FROM	TO
U7-4	U7-5



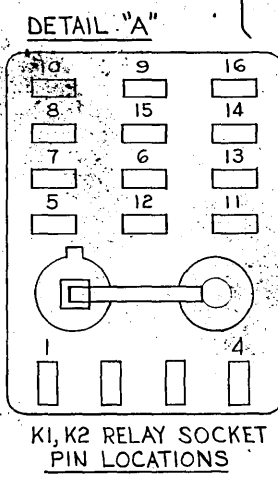
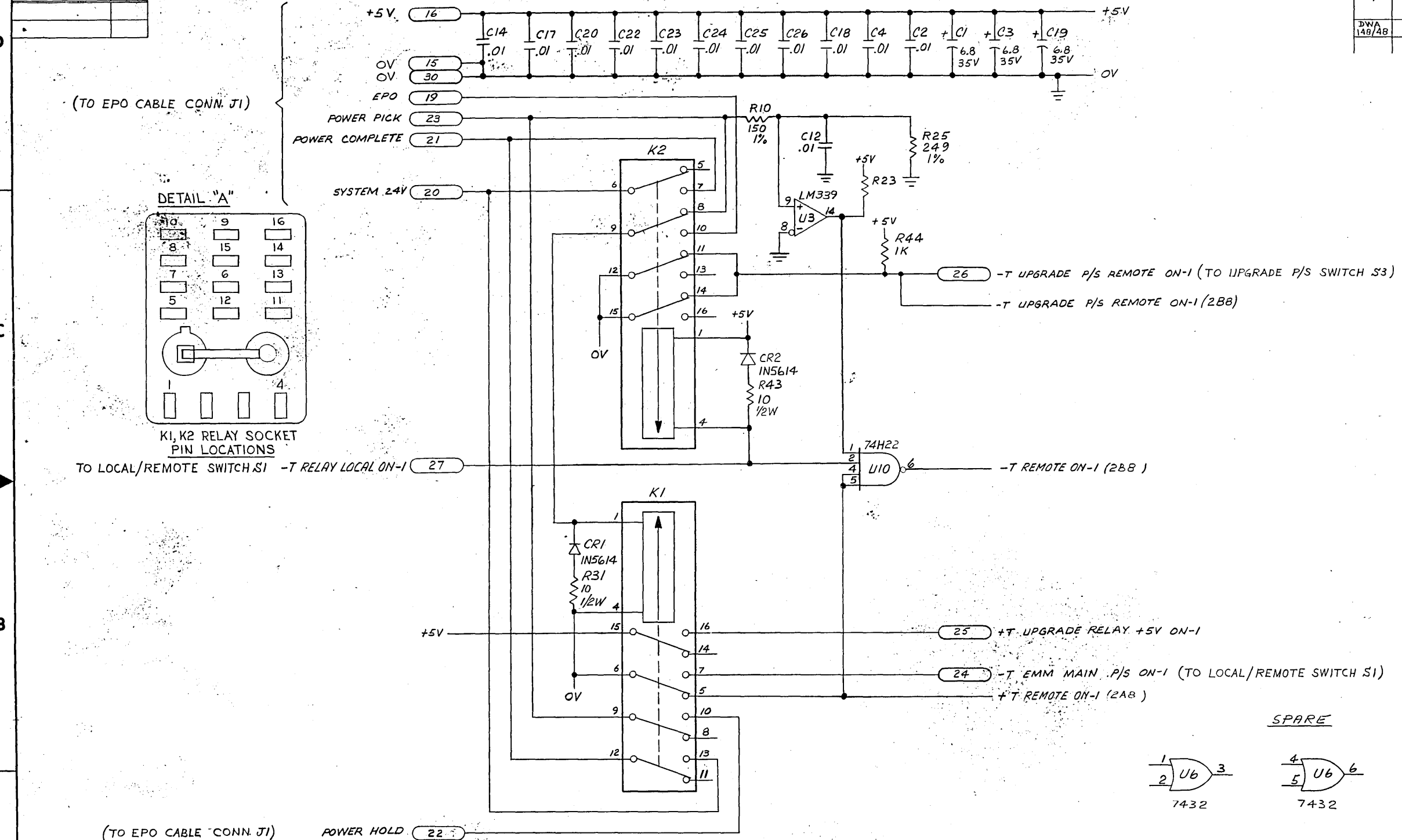
- 11 BOARDS BUILT FROM PWB 942966-001 REV XI ONLY.
 - 10 ITEMS 18 THRU 21, & 23 TO BE MOUNTED WITH RESISTOR VALUES FACING UPWARD.
 - 9 IF NOT ETCHED ON BOARD MARK ASSEMBLY NO. & REV. LETTER PER EMPS 6-1, METHOD III, BLACK CHARACTERS.
 - 8 SQUARE PAD INDICATES PIN NO.1 OF INTEGRATED CIRCUITS.
 - 7 BAND INDICATES CATHOD END OF DIODE.
 - 6 "+" INDICATES POSITIVE END OF CAPACITOR.
 - 5: SOLDER COMPONENTS TO ITEM NO.1 USING ITEM NO. 39.
 - 4. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON PART.
 - 3. COMPONENT LEAD & SOLDER BUILDUP NOT TO EXCEED .060 FAR SIDE.
 - 2. ASSEMBLE PER EM MFG STANDARDS.
 - 1. FOR SCHEMATIC DIAGRAM SEE PARTS LIST.
- NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		-001		NOTE PART OR IDENTIFYING NO.		SEE SEPARATE PARTS LIST PL942965-001		SPEC/SOURCE		CODE IDENT NO.		FIND NO.			
SEE PART IDENT BLOCK FOR PART MARKING REQD				DO NOT SCALE DRAWING				CONTRACT NO.				EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION			
DASH NO. 942660				NEXT ASSY 148				DRAWN AGLILAR, H. 12/13/77				PWBA- SEQUENCER / POWER CHECK			
APPLICATION				STANDARD HOLE TOLERANCE PER AND 30382				CHECK <i>Z Marcus</i> 12-14-77				SIZE D			
				TOLERANCES ON: XX ± .03 XXX ± .010				ENGR				CODE IDENT NO. 16224			
				DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED				PROJ ENGR <i>J Spruce</i> 12-15-77				DWG NO. 942965			
				OTHER APPROVALS				PROD. DESIGN				SCALE: 2:1			
												SHEET 1 of 1			
												DISTR NO. 1410			

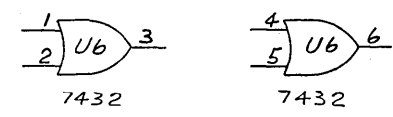
942965

REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
DWA 148/48		X1	ENG. MODEL CONTROL	12-15-77	YK
DWA 148/48		X2	EXTENSIVELY REVISED SIGNAL NAMES. SH 1: U10 WAS P/N 7422J & ADDED DETAIL "A"	1-27-78	MM
DWA 148/48		A	PRODUCTION RELEASE	1-31-78	JA

IDENTIFICATION	
PART NUMBER	PART REV.



LAST REF. DES. USED	NOT USED
C26	C13 C21
CR2	
K2	
R44	
S1	
U11	U1, U5



- ALL IC'S PIN 7 IS V_{EE} (GND); PIN 14 IS V_{CC} (+5V).
- ALL SIGNAL LEVELS ARE TTL LEVEL.
- INDICATES AN I/O PIN.
- ALL CAPACITOR VALUES ARE IN MICROFARADS ± 10%, 50V.
- ALL RESISTOR VALUES ARE IN OHMS 4.7K, ± 5%, 1/8 W.

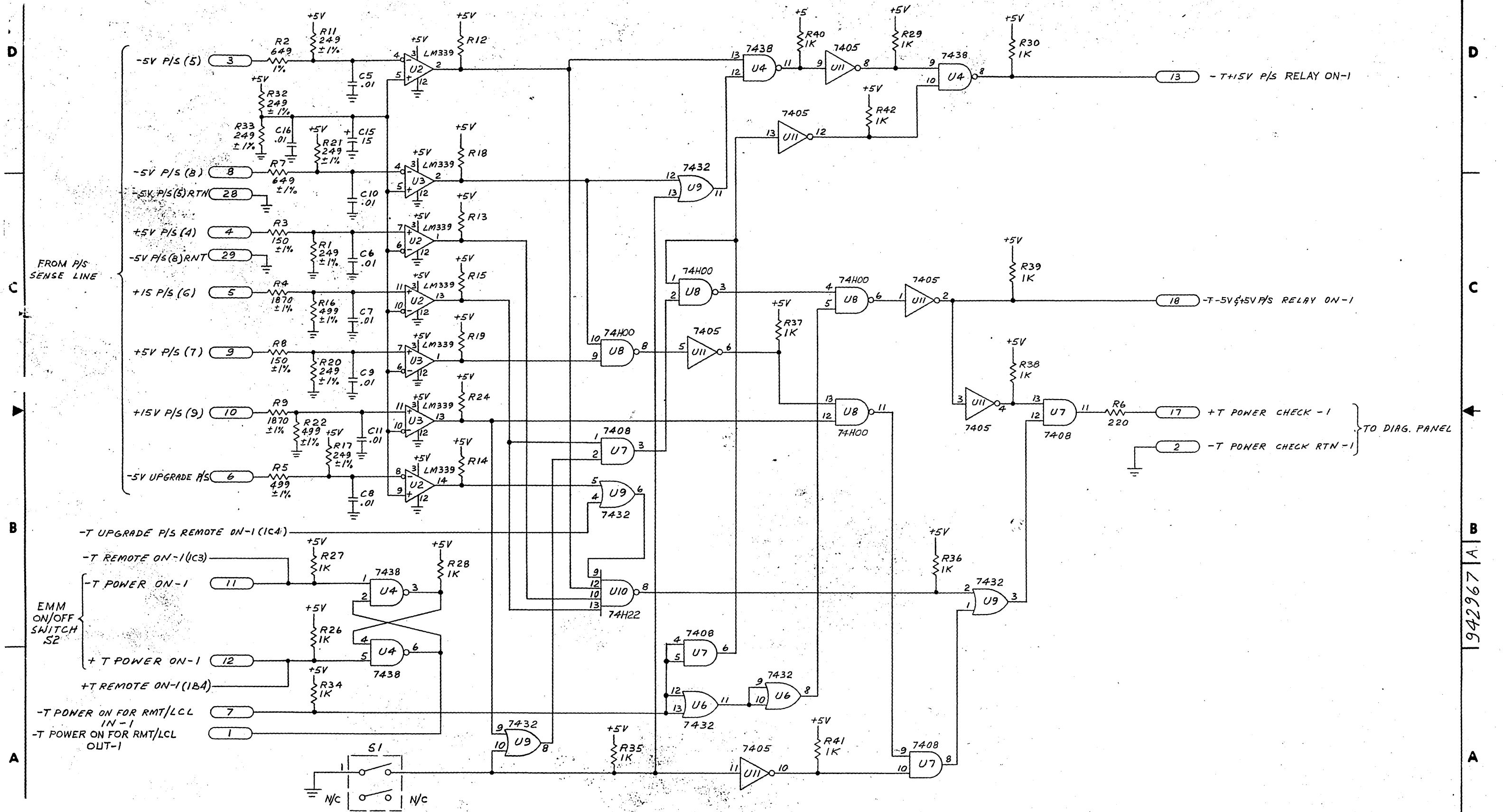
NOTES: UNLESS OTHERWISE SPECIFIED

DASH NO. & QTY PER ASSY		NOTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION/MATERIAL	SPEC/SOURCE	CODE IDENT NO.	FIND NO.
SEE PART IDENT BLOCK FOR PART MARKING REQ		DO NOT SCALE DRAWING	PARTS LIST		EMM COMPUTER PRODUCTS DIVISION ELECTRONIC MEMORIES & MAGNETICS CORPORATION		
		COUNTERBORE AND SPOTFACE FILLET RADIUS TO BE .015 MAXIMUM	CONTRACT NO.		DRAWN AGUILAR 6-24-77 CHECK E. LOH ENGR PROD. DESIGN 15 DEC 77		
		REMOVE ALL BURRS AND BREAK SHARP EDGES EQUIVALENT TO .010R	STANDARD HOLE TOLERANCE PER AND 10387 TOLERANCES ON: .XX ± .03 .XXX ± .010 ANGLES ± 0° 30'		SIZE CODE IDENT NO. DWG NO. D 16224 942967		
		ROUGHNESS OF MACHINED SURFACES 125 PER USAS B46.1	INTERPRET DIMENSIONS AND TOLERANCES PER USAS Y143		SCALE: — WEIGHT SHEET 1 OF 3		
DASH NO. 942965 NEXT ASSY 7370/148 USED ON APPLICATION		DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND FINISH UNLESS OTHERWISE SPECIFIED		OTHER APPROVALS		DISTR. NO. 1410	

942967

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REVISIONS					
AUTH	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			SEE SHT. 1		



S1 SHOWN IN OFF POSITION
 TURN ON ONLY IF EMM IS 2 MEGS.

SIZE	CODE IDENT. NO.	DWG. NO.
D	16224	942967
SCALE: -	WEIGHT	SHEET 2 OF 3