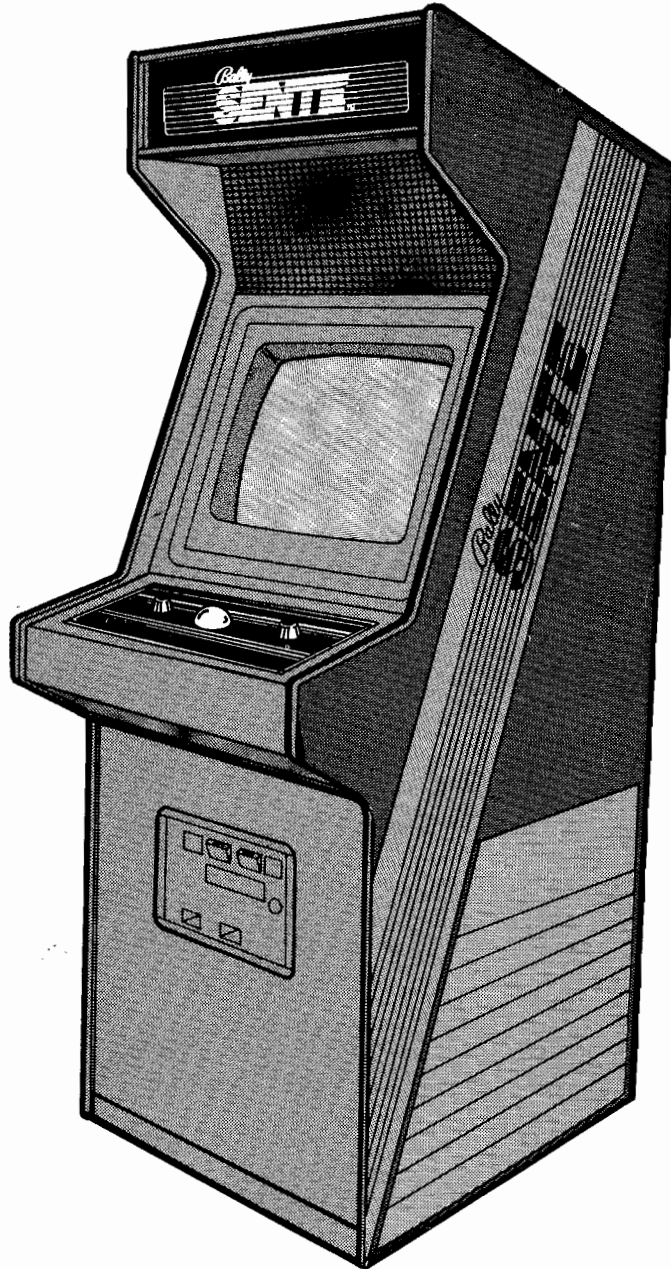


# SAC 1 B<sup>TM</sup>

SENTE ARCADE COMPUTER<sup>TM</sup> - UPRIGHT MODEL



*Bally*

**SENTE<sup>TM</sup>**

**WARNING**

**THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.**

**WARNING:** This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.



*Invites You To Use*

**OUR TOLL FREE NUMBERS FOR  
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY  
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ANSWERS TO YOUR PROBLEMS.**

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# SAC 1 B<sup>TM</sup>

SENTE ARCADE COMPUTER<sup>TM</sup> - UPRIGHT MODEL

- OPERATION
- ILLUSTRATED PARTS
- SCHEMATICS

Published by:



10601 West Belmont Avenue  
Franklin Park, IL 60131

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**SECTION 1**  
**Installation and General**  
**Game Conversion Instructions**

## SAFETY

The following safety hints apply to all game operators and service personnel. Specific warnings and cautions will be found throughout this manual where they apply.

## WARNINGS

**AC POWER CONNECTION.** Before connecting the game to the AC power source, verify that the proper voltage-selection plug is installed on the electronic chassis assembly.

**PROPERLY GROUND THE GAME.** Customers may receive an electrical shock if this game is not properly grounded! To avoid shocks, do not plug in the game until it has been inspected and properly grounded. Sente games should only be plugged into a grounded 3-wire outlet. Customers may receive an electrical shock if the control panel is not properly grounded! After servicing any parts on the panel, check that the grounding wires are secure. Only then should you lock up the game.

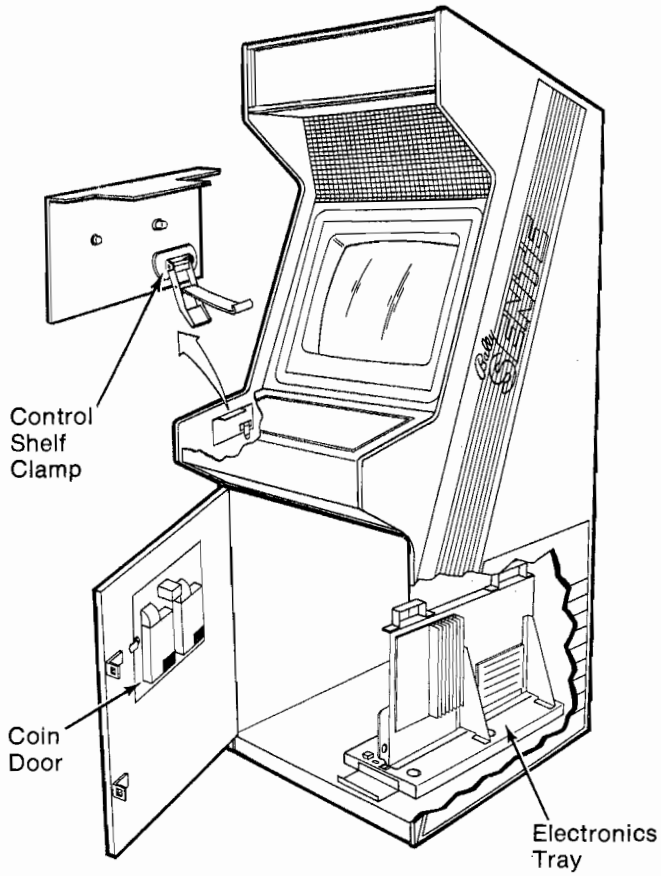
**DISCONNECT POWER DURING REPAIRS.** To avoid electrical shock, disconnect the game from the AC power source before removing or repairing any part of the game. When removing or repairing the monitor, extra precautions must be taken to avoid electrical shock because high voltages may exist within the display circuitry and cathode-ray tube (CRT) even after power has been disconnected. Do not touch internal parts of the display with your hands or metal objects! Always discharge the second anode from the CRT before servicing this area of the game. To discharge the CRT: Attach one end of a large, well-insulated, 20-kV jumper to ground. Momentarily touch the free end of the grounded jumper to the anode by sliding it under the anode cap. Wait two minutes and discharge the anode again.

**USE THE PROPER FUSES.** To avoid electrical shock, use replacement fuses which are specified in the parts list for this game. Replacement fuses must match those replaced in fuse type, voltage rating, and current rating. In addition, the fuse cover must be in place during game operation.

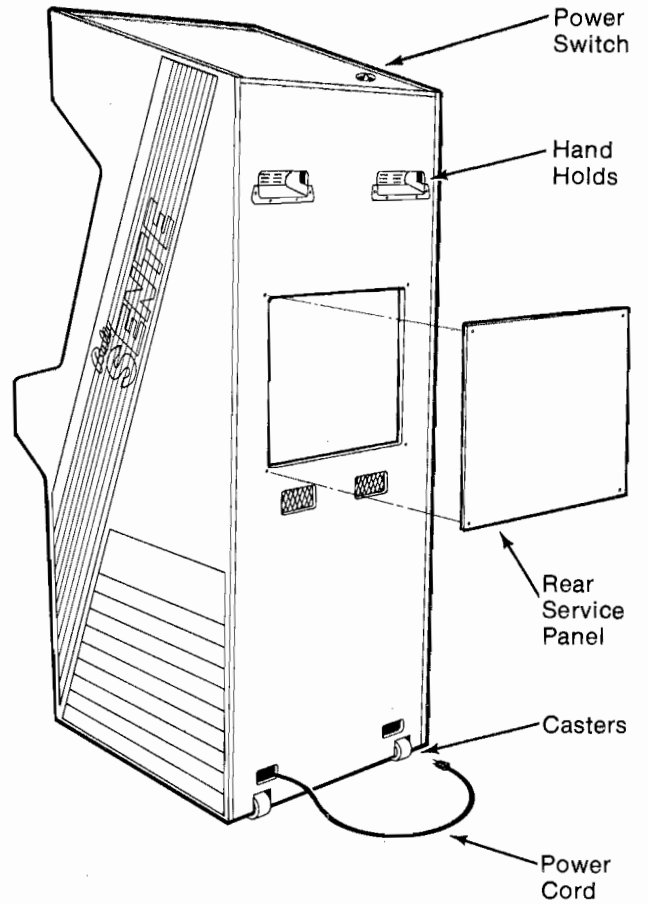
**HANDLE FLUORESCENT TUBE AND CRT WITH CARE.** If you drop a fluorescent tube or CRT and it breaks, it may implode! Shattered glass can fly eight feet or more from the implosion.

## CAUTION

**PROPERLY ATTACH ALL CONNECTORS.** Make sure that the connectors on each printed-circuit board (PCB) are properly plugged in. If they do not slip on easily, do not force them. A reversed connector may damage your game and void the warranty.

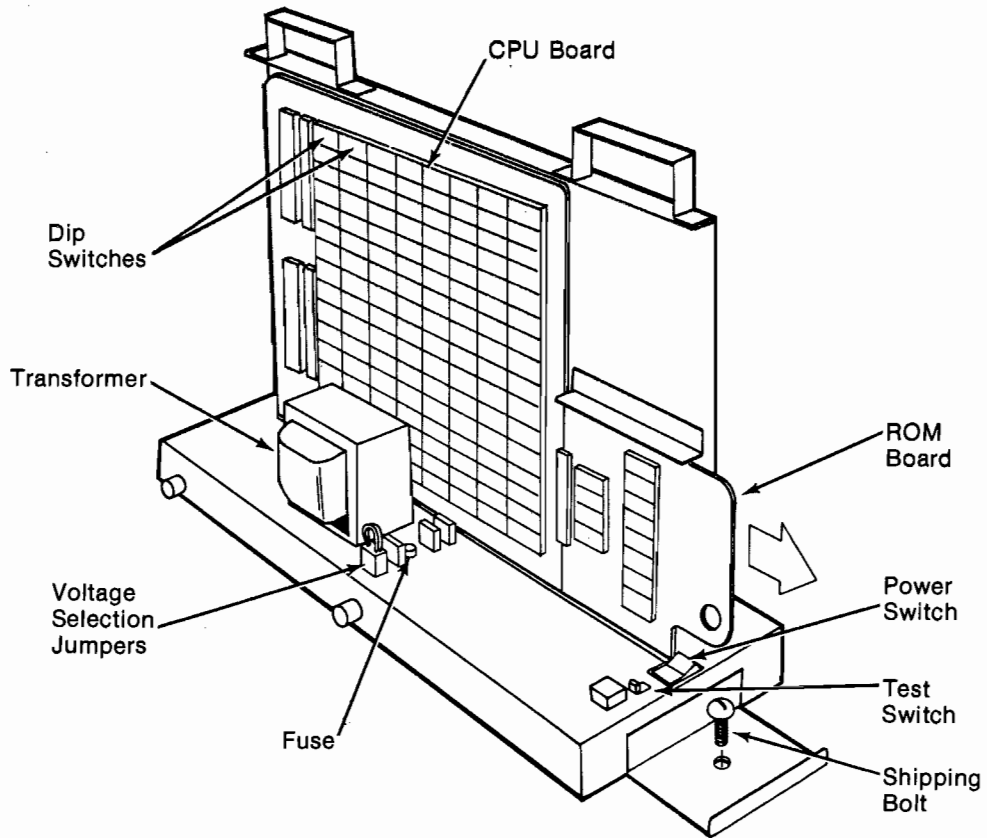


**Figure 1-1** SAC 1B System - Front View

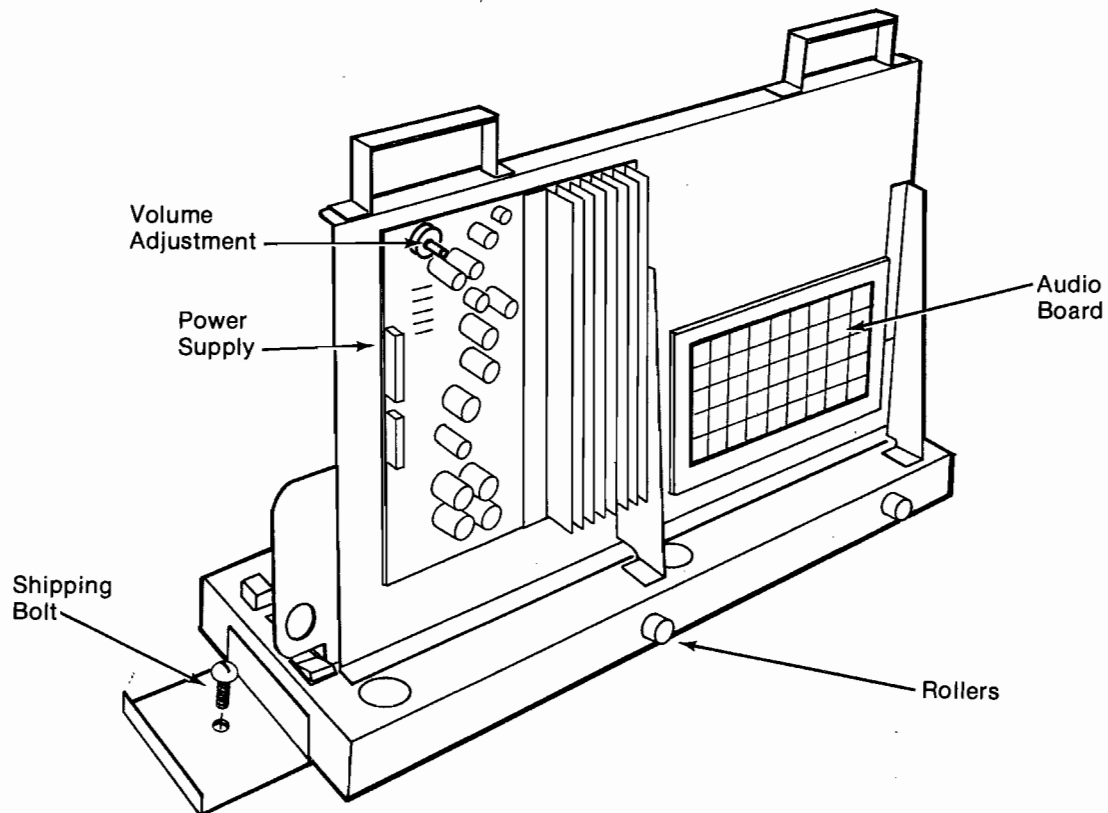


**Figure 1-2** Cabinet Assembly - Rear View





**Figure 1-3** Electronic Tray Assembly - Left Side View



**Figure 1-4** Electronic Tray Assembly - Right Side View

# SAC 1B GAME CONVERSION INSTRUCTIONS

The following instructions will cover the conversion of most SAC 1B games. Additional instructions will be provided, when needed, for special conversions. Each SAC 1B conversion kit should contain the following material:

- 1 control panel insert assembly
- 1 game cartridge with ROMS
- 1 option switch settings/game description sheet
- 1 set attaching hardware (nuts and screws)
- 1 control panel schematic
- 1 attract (header) art

If a conversion kit does not contain all of this material or if the material included is not for the correct game, contact your distributor.

## SIMPLIFIED INSTRUCTIONS

1. Power off SAC 1B unit.
2. Change attract (header) art.
3. Change control panel insert.
4. Change game cartridge.
5. Check option switch settings.
6. Power on SAC 1B unit.
7. Play game.

**BE SURE TO SAVE GAME CARTRIDGE, CONTROL PANEL INSERT, AND ATTRACT (HEADER) ART FOR REUSE.**

## DETAILED INSTRUCTIONS

### **To Change Attract (Header) Art:**

1. Remove bolts holding in Attract Retainer located at top front of cabinet.  
Remove Attract Retainer.
2. Slide Attract Glass up and out of cabinet.
3. Remove old Attract Art and replace with new Attract Art.
4. Slide Attract Glass containing new art back into cabinet.
5. Replace and secure Attract Retainer.
6. Clean front of Attract Glass.

### **To Change Control Panel Insert:**

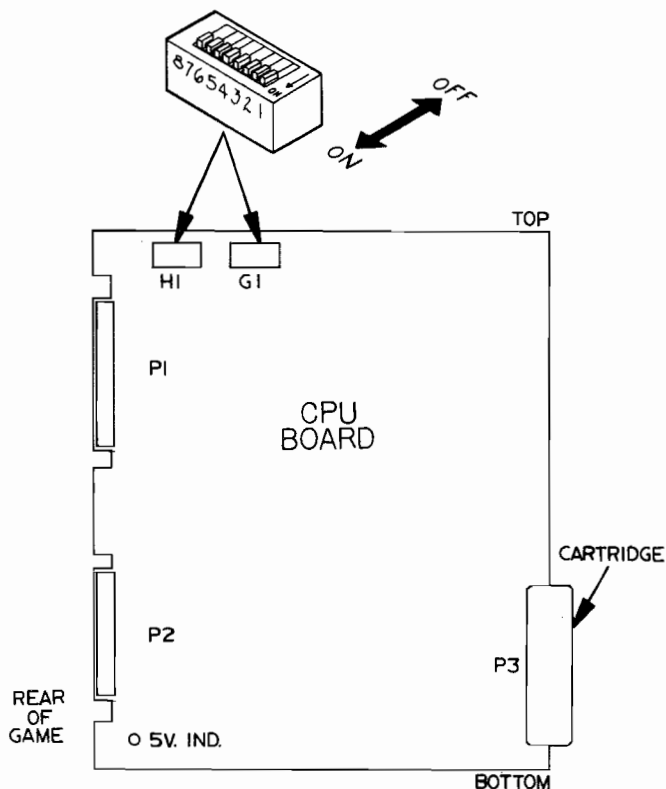
1. Power off SAC 1B unit using switch located at top of cabinet toward the rear.
2. Unlock and open Coin Mech (top) door at front of cabinet.
3. Reach through Coin Mech door, grasp and unlatch one top latch bar and one bottom latch bar from their large front service door strikes.
4. Unlatch large front service door by lifting each latch away from its respective strike and pushing door open.
5. Disconnect Control Panel Harness from Main Harness by pulling plugs apart.
6. Release the two control panel latches located inside cabinet above the large front door and Coin Mech door respectively.
7. Swing out Control Panel on its hinge.
8. Remove bolts from Control Panel Insert and remove Control Panel Insert from Control Panel.

9. Place new Control Panel Insert in Control Panel and secure with bolts.
10. Replace Control Panel.
11. Latch Control Panel into place.
12. Plug Control Panel Harness into Main Harness.
13. Close and latch large front door.
14. Close and lock Coin Mech door.
15. Power on SAC 1B unit using switch at rear of cabinet.
16. Play game to check if all switches and controls are operating correctly.

**To Change Game Cartridge:**

1. Power off SAC 1B unit using switch at top of cabinet toward the rear.
2. Unlock Coin Mech door and reach through to unlatch large front door from inside cabinet.
3. Find Game Cartridge On/Off Switch located at bottom front right of electronic chassis just inside large front door (this switch may be used to power unit on and off in place of switch at the rear of cabinet).
4. Turn Game Cartridge On/Off Switch off to permit Game Cartridge to slide out of Electronic Chassis.
5. Slide old Game Cartridge out of chassis.
6. Slide new Game Cartridge between runners to plug into the Main PC Board. Be sure Game Cartridge is securely plugged in, ROMs on the Game Cartridge should be facing to the left as you look into the cabinet.
7. Turn Game Cartridge ON/Off Switch back on (this prevents cartridge from being removed with power on).
8. Set game option switch settings.\*
9. Close and latch large front door.
10. Close and lock Coin Mech door.
11. Power on SAC 1B unit using switch on top of cabinet toward the rear.
12. Play game to test if unit is working properly.

**\*IMPORTANT: Always set option switch settings according to instructions in each game kit! Failure to do so could result in greatly reduced collections!**



**Figure 1-5 CPU Board/Option Switches**

Due to memory constraints, not all Sente game cartridges have a self-test program implemented. However, those that do follow the general format outlined below. A comprehensive diagnostic cartridge for the SAC 1 system is available through your distributors.

To initiate Self-Test, flick Self-Test Switch. Please refer to Electronics Tray Assembly (left-side view) illustration - Figure 1-3.

## SELF TEST

### I. RAM TEST

- A. Only first error encountered is reported.
- B. Error address is displayed on screen.
- C. Error is reported as 9 tones.
  - 1. 1st tone is address odd/even (high/low pitch).
  - 2. Next 8 tones report data bits at error address, from bit 0 to bit 7 (high = OK, low = bad).

### II. SOUND BOARD TEST

- A. All 0's = OK, and 1's = BAD, all 1's = Bad Serial Communications.

#### BIT

0 (LSB)	VOICE 1	0 = OK	1 = BAD
1	VOICE 2	0 = OK	1 = BAD
2	VOICE 3	0 = OK	1 = BAD
3	VOICE 4	0 = OK	1 = BAD
4	VOICE 5	0 = OK	1 = BAD
5	VOICE 6	0 = OK	1 = BAD
6.7			
00	OK		
01	RAM BAD		
10	ROM BAD		
11	OPTIONAL RAM BAD		

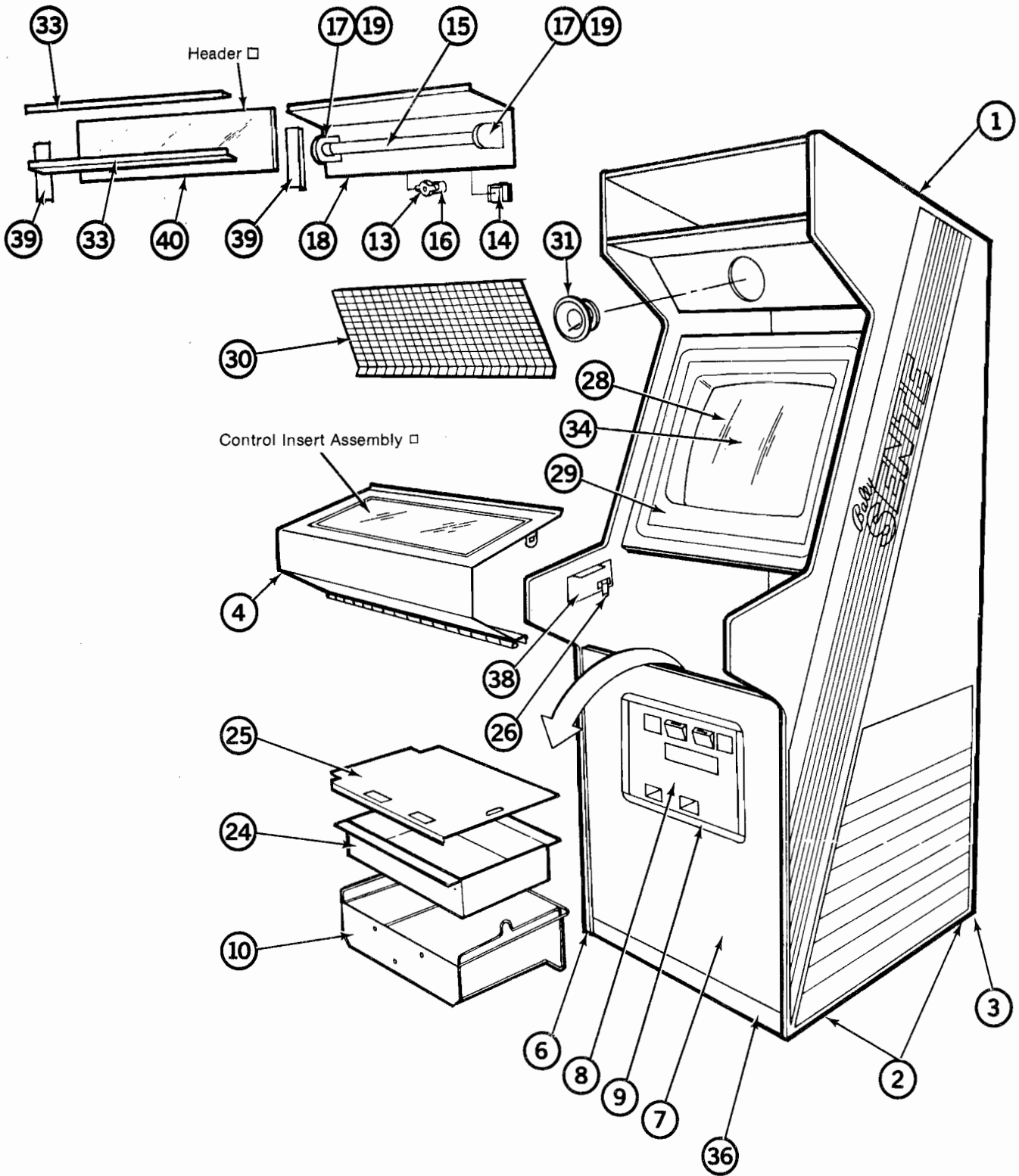
### III. OPTION SWITCHES

Option switch settings are controlled by the ROM board. Switch settings for each game will be found in the documentation enclosed with each game package.

### IV. ACCOUNTING

Accounting information for each game may be found included in each game package.

**SECTION 2**  
**Illustrated**  
**Parts Lists**



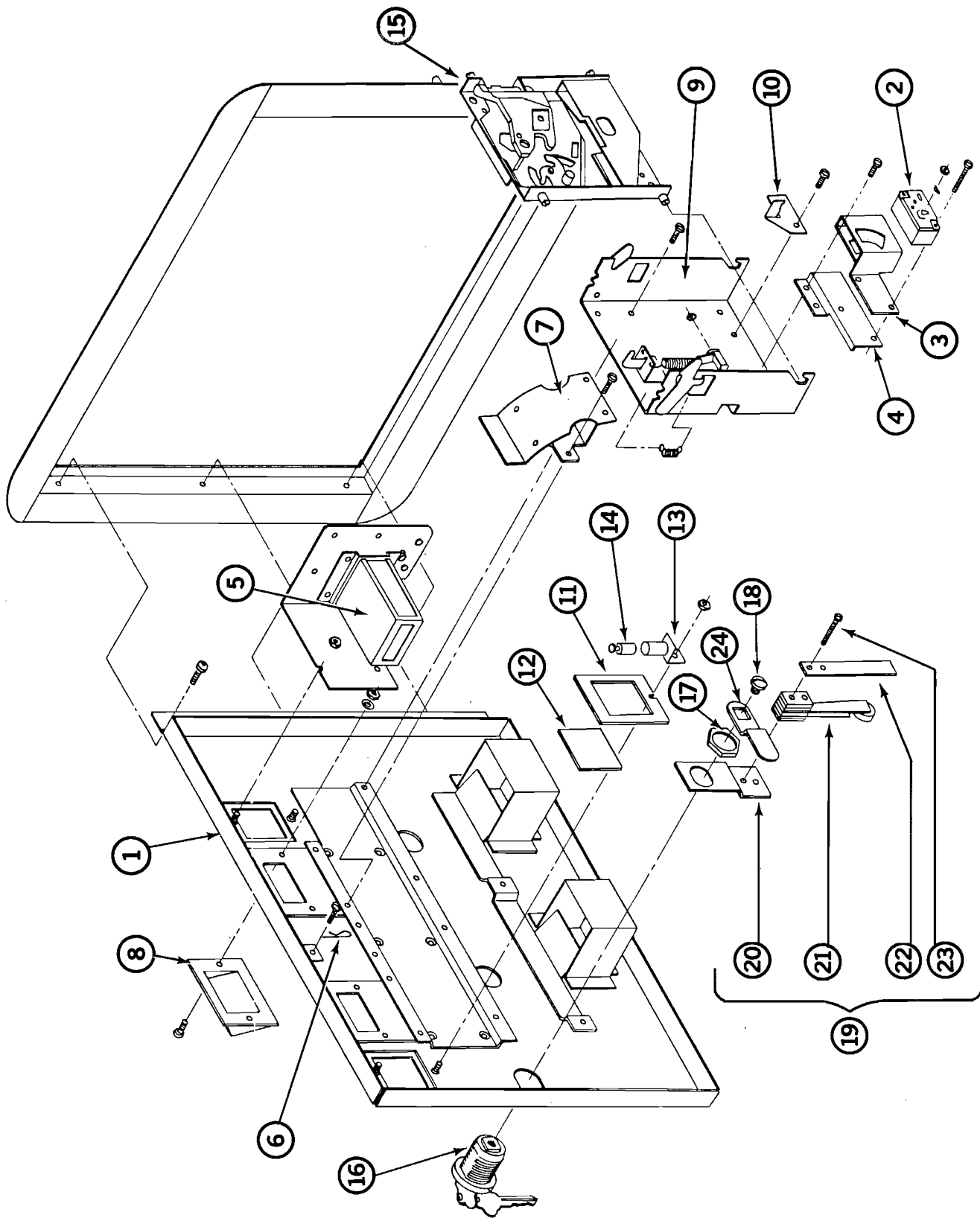
□ Included in Game Kit

**Figure 2-1** Game Cabinet SAC 1B - Front View

## GAME CABINET, SAC 1B PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
	AE19-00500-0000	Cabinet Assy. (Includes Items 1 thru 3)	1
1	0E19-00500-0000	Cabinet, SAC 1B	1
2	A961-00007-0000	Caster Wheel Assembly	2
3	0349-00103-00XF	Leg Leveler Plate	4
	AC47-00007-0000	Control Shelf & Tape Assy. (Includes Items 4 & 5)	1
4	AC47-00006-00XF	Control Shelf-Weld (Painted) (Includes Following Items)	1
	0C47-00107-0000	Panel, Control Shelf	1
	0C47-00108-0000	Strike Strip, Right	1
	0C47-00108-0100	Strike Strip, Left	1
	0C47-00109-0000	Mounting Strip	1
	0C47-00900-0000	Hinge	1
5*	0017-00081-0187	Tape, Foam PVC SGL .38 X 1/16	23"
	AE19-00004-0000	Front Door Assembly (Service Access) (Includes Items 6 thru 11)	1
6	0E19-00100-00XF	Hinge, Front Service Door	1
7	0E19-00502-0000	Front Door (Service Access), Wood	1
8	A982-00014-0018	Coin Door Assembly (See Common Assembly)	1
9	0090-00002-04BK	Door-Frame, Large & Black Double	1
10	0950-00901-0000	Basket, Coin Box - Wire	1
11*	0982-00102-0000	Strike, Front Service Door	2
	A383-00018-0000	Header Light Assembly (Includes Items 12 thru 19)	1
12*	A383-00022-0000	Header Light Cable Assembly	1
13	0017-00003-0019	Starter, Fluorescent, FS 2	1
14	0017-00003-0026	Ballast	1
15	0017-00003-0043	Lamp, 18", 15 Watt	1
16	0017-00003-0412	Socket, Starter	1
17	0017-00031-0036	Socket, Lamp	1
18	0595-00105-0000	Fluorescent Lamp Bracket, 18"	1
19	0017-00003-0445	Lamp-Lock, Fluorescent	2
20*	AE19-00008-0000	Rear Door Assembly (Service Access)	1
21*	AE19-00009-0000	Electronics Tray Assembly (See Common Assembly)	1
22*	AC47-00011-0000	High Voltage Cable Assembly	1
23*	AC47-00013-0000	Speaker Cable Assembly	1
24	0017-00009-0477	Coin Box	1
25	0A12-00144-0000	Cover, Coin Box	1
26	0017-00009-0534	Latch, Control Shelf & Service Door	4
27*	0E19-00102-0000	Bracket, Door Support	1
28	0C47-00901-00XF	Viewing Glass	1
29	0017-00042-0314	Bezel, 19" Monitor/Horiz. Mount	1
30	0E19-00103-00XF	Grille, Speaker	1
31	0017-00003-0513	Speaker, 6 x 9, 8 Ohm, 10 Watt	1
32*	0017-00009-0490	Grille, Vent	2
33	0574-00903-0600	Header Retainer	2
34	A311-00002-0000	Monitor, 19" Color, Horiz. Mount	1
35*	0017-00032-0105	On/Off Switch DPST, 6 Amp	1
36	0935-00906-0100	Kick Plate L=23"	2
37*	0C47-00104-0000	Monitor Rail	2
38	0C47-00110-0000	Mounting Bracket, Control Shelf	2
39	0C47-00902-0000	Glass Channel, Plastic	2
40	R901-30000-0064	Glass (U.R.), Square Corners	1

\* Indicates part is not shown

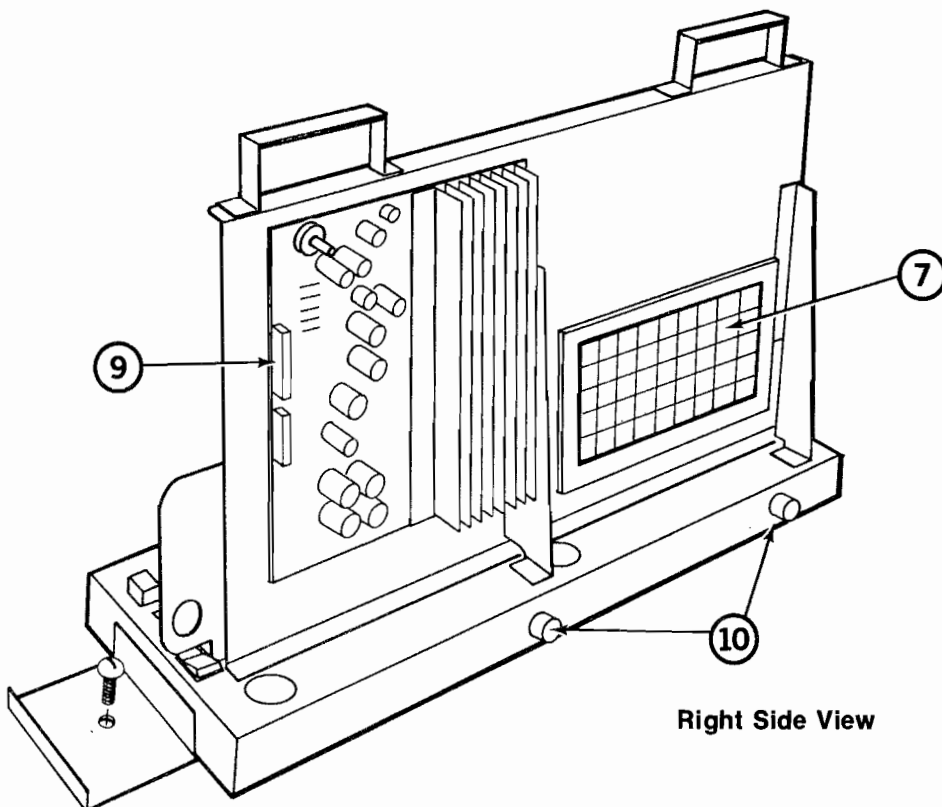
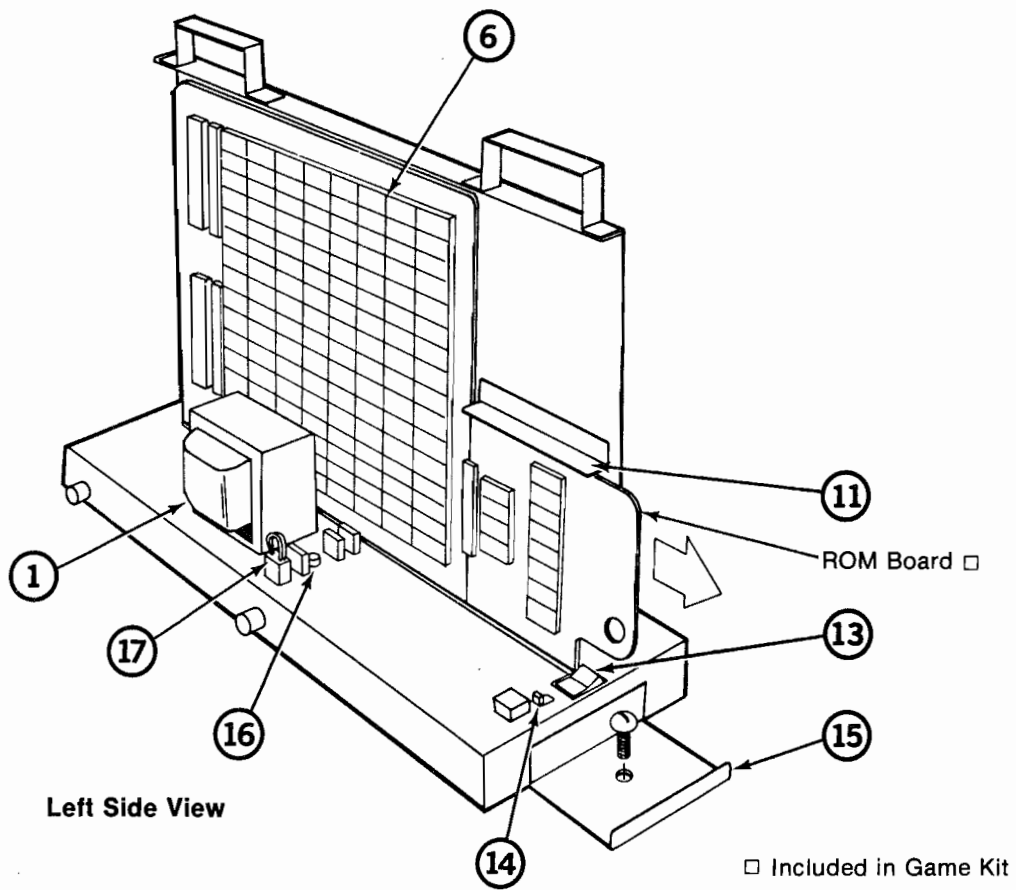


**Figure 2-2** Coin Door Assembly (Part No. A982-00014-0018)



**COIN DOOR ASSEMBLY, SAC 1B**  
**PART NO. A982-00014-0018**  
**PARTS LIST**

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	A0090-00072-06BK	Coin Door, Two Hole Painted	1
2	A090-00059-0400	Coin Switch and Wire	2
3	0017-00005-0203	Chute, Coin Switch	2
4	0090-00162-00XF	Bracket, Coin Switch	2
5	A090-00089-0100	Coin Meter, 12 Volt	1
6	0017-00007-0019	Key Hook	1
7	A090-00087-0000	Coin Chute and Bracket Assembly (Includes Item 8)	2
8	0090-00172-00XF	Top Coin Chute	1
9	A0090-00117-0000	Coin Acceptor Frame Assembly (Includes Item 10)	1
10	A090-00064-0100	Anti-Penny Assembly	1
11	0090-00143-0000	Retainer, Coin Plexi	2
12	0090-00903-9500	Plexi, U.S. 25 Cents	2
13	0017-00031-0048	Socket, Lamp	2
14	0017-00003-0249	Lamp, 14 Volt	2
15	0151-00086-0000	Coin Acceptor w/ String Cutter	2
16	0017-00005-0200	Lock-Indiv. Keyed w/ 2 Keys	1
17	0017-00103-0079	3/4" Hex Nut	1
18	0017-00101-0125	#10-32x1/4" Slot. Pan Hd. Screw	1
19	A090-00096-0000	Anti-Slam Switch & Brkt. Assy. (Includes Items 20 thru 23)	2
20	0090-00185-00XF	Door Tilt Switch Bracket	1
21	A090-00095-0000	Door Anti-Slam Switch	1
22	0090-00126-01XF	Switch Back-Up Plate	1
23	0017-00101-0155	#4-40x9/16" Phil. Pan Hd. Screw	1
24	0017-00005-0238	Door Cam	1

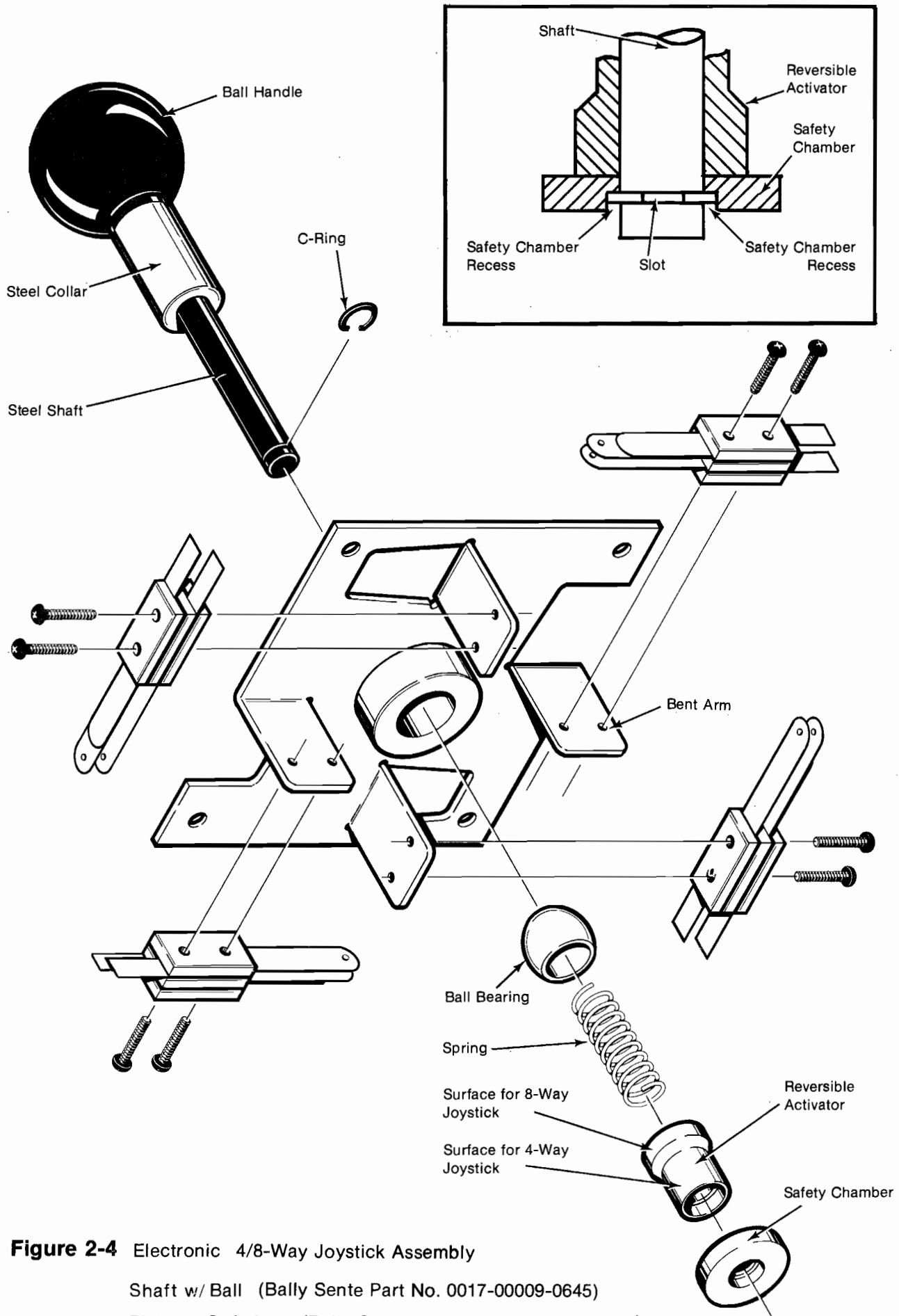


**Figure 2-3** Electronics Tray Assembly (Part No. AE19-00009-0000)

**ELECTRONICS TRAY ASSEMBLY, SAC 1B**  
**PART NO. AE19-00009-0000**  
**PARTS LIST**

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	AB18-00034-0000	Tranformer, Power	1
2	AC47-00010-0000	Master Cable Assembly	1
3*	AC47-00012-0000	High Voltage Cable Assembly	1
4*	AC47-00015-0000	Filter Adapter Cable Assembly	1
5*	AC47-00016-0000	Filter Assembly	1
6	B006-08001-100C	CPU PCB Assembly	1
7	B006-08002-100B	Audio 6VB PCB Assembly	1
8*	AE19-00005-0000	AC Sense Cable Assembly	1
9	B006-08009-100B	Power Supply, Linear PCB Assembly	1
10	0B18-00900-0000	Glide Wheel	1
11	0C47-00114-0000	Bracket, Cartridge Retainer	1
12*	0C47-00700-00XF	Spacer, Wheel	1
13	0017-00032-0144	Switch, Rocker, DPDT, 15A, 125V	1
14	0017-00032-0007	Switch, SPDT Slide 4A	1
15	0E19-00101-0000	Bracket, Hand Pull	1
16	0017-00003-0263	Fuse: MDA 3AG 4 Amp 250V S-B	1
17	AB18-00024-0100	Jumper Plug Assy.: 110 VAC	1
17	AB18-00024-0200	Jumper Plug Assy.: 220 VAC	1
18*	M051-00C47-A009	Label, On/Off & Test Switch	1

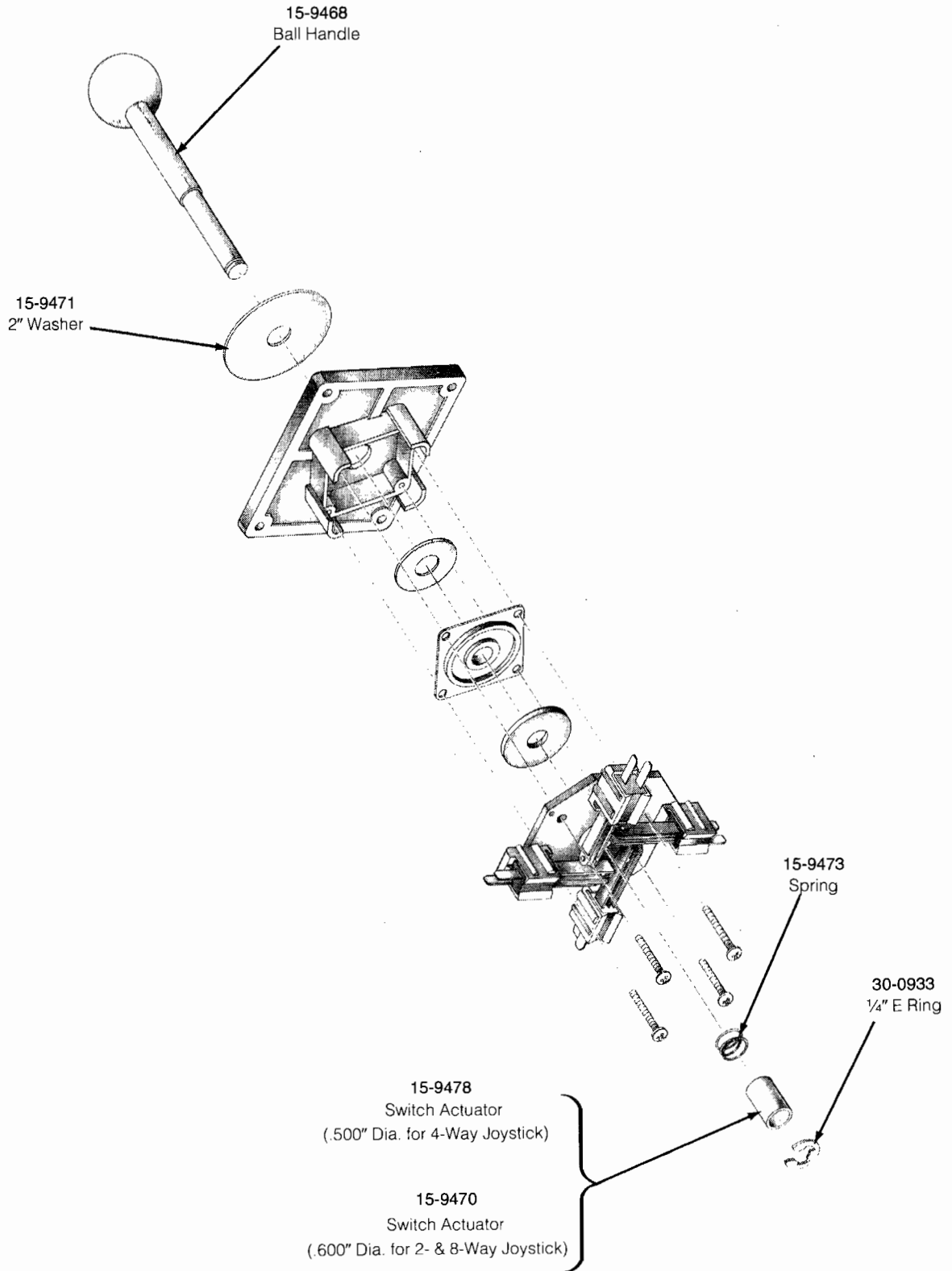
\* Indicates part is not shown



**Figure 2-4** Electronic 4/8-Way Joystick Assembly

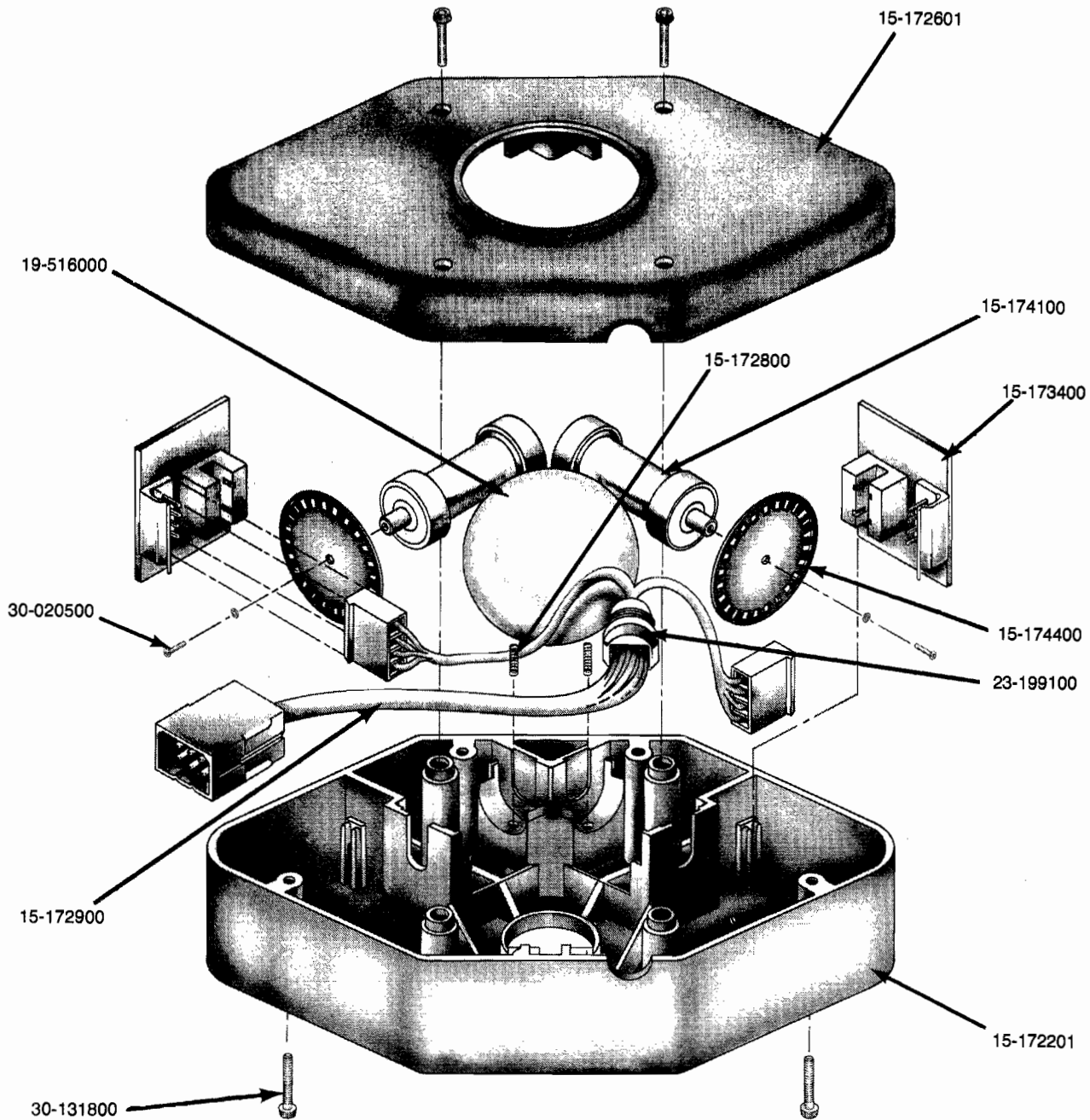
Shaft w/ Ball (Bally Sente Part No. 0017-00009-0645)

Plate w/ Switches (Bally Sente Part No. 0017-00009-0686)

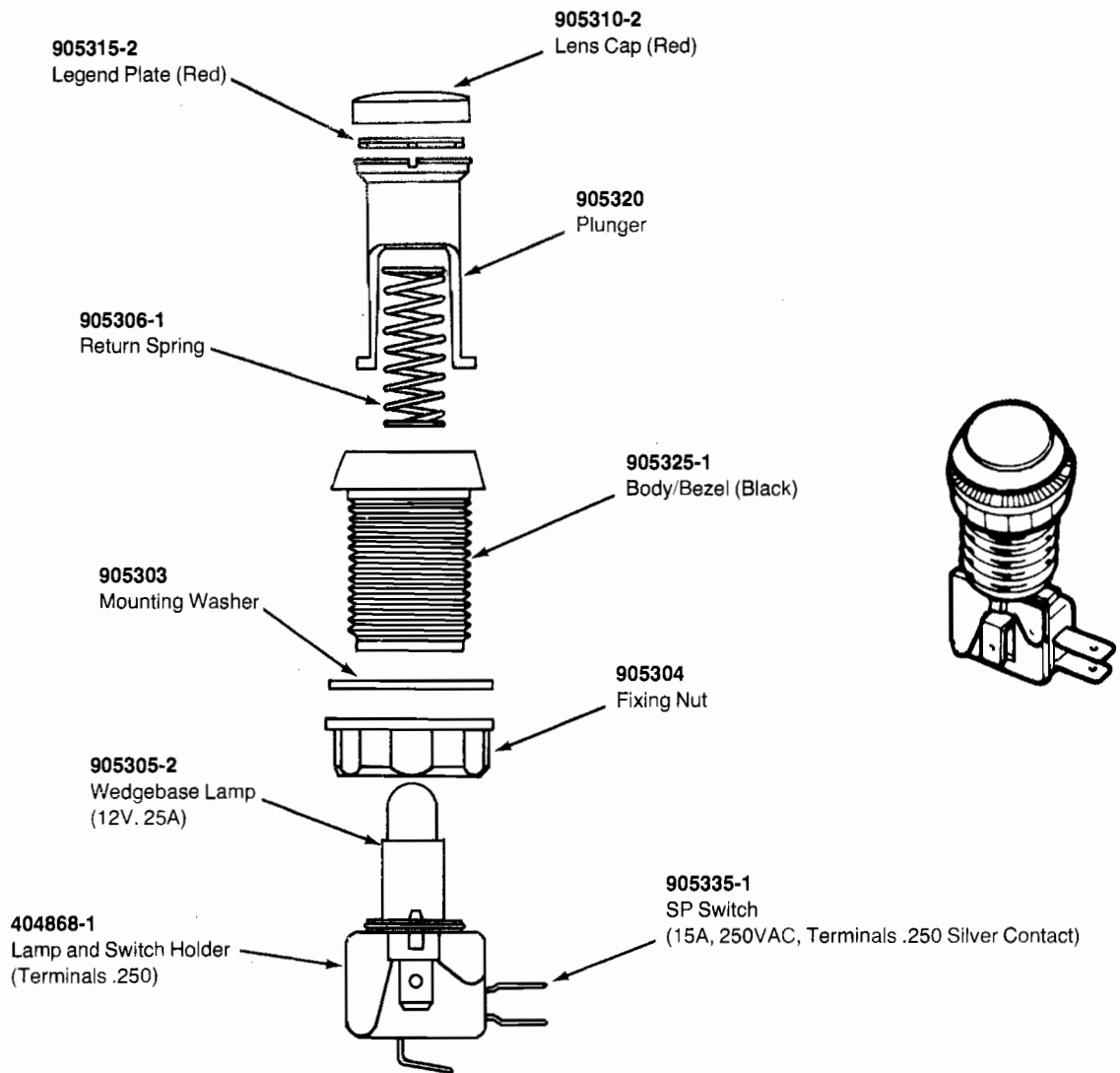


**Figure 2-5** Wico Joystick Assembly (700-0163-01)

NOTE: FOR YOUR CONVENIENCE  
THESE ARE WICO PART NUMBERS.



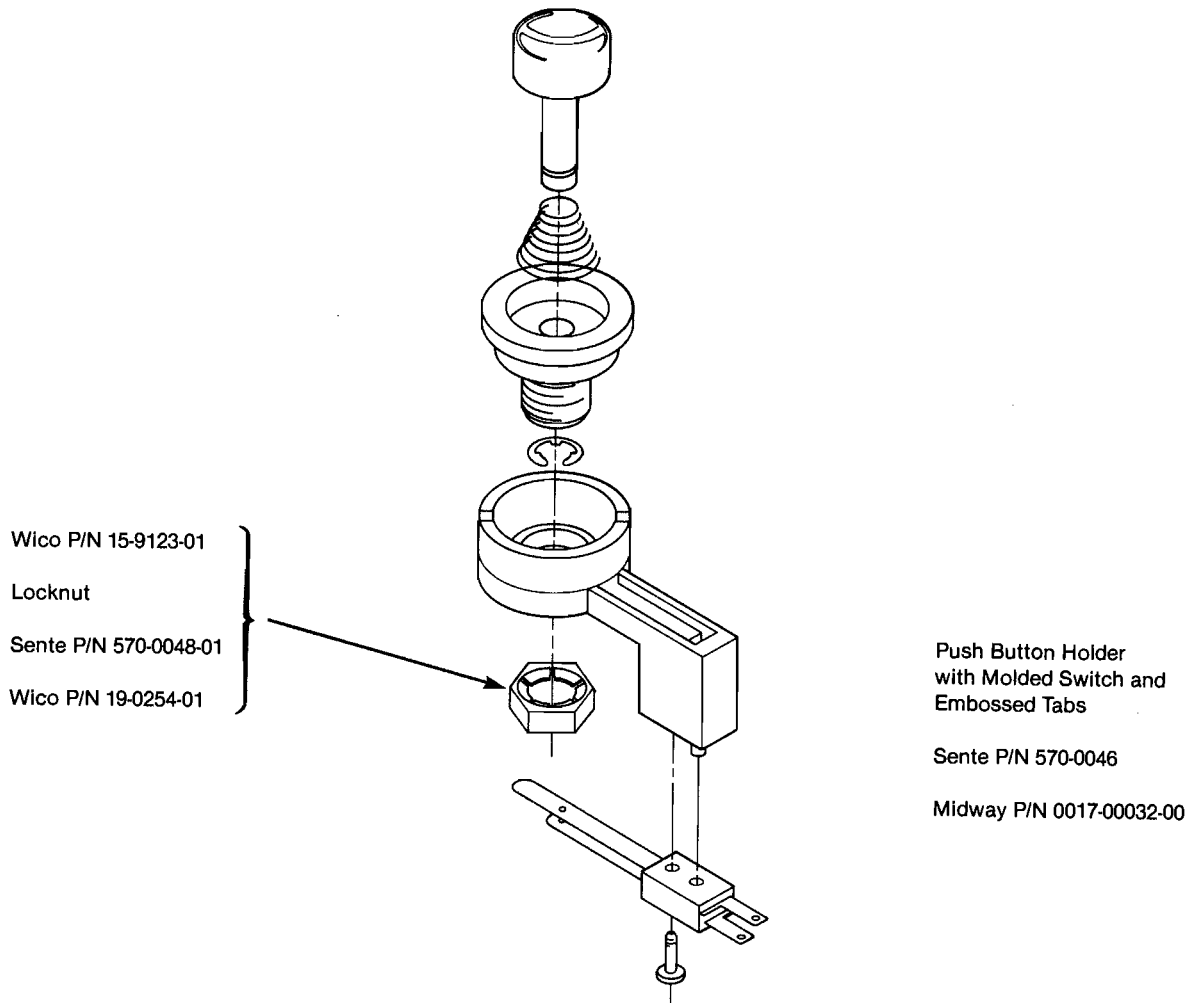
**Figure 2-6** Track Ball Assembly (700-0162-01)



**Figure 2-7** Coinco Switch Assembly (570-0039-01)

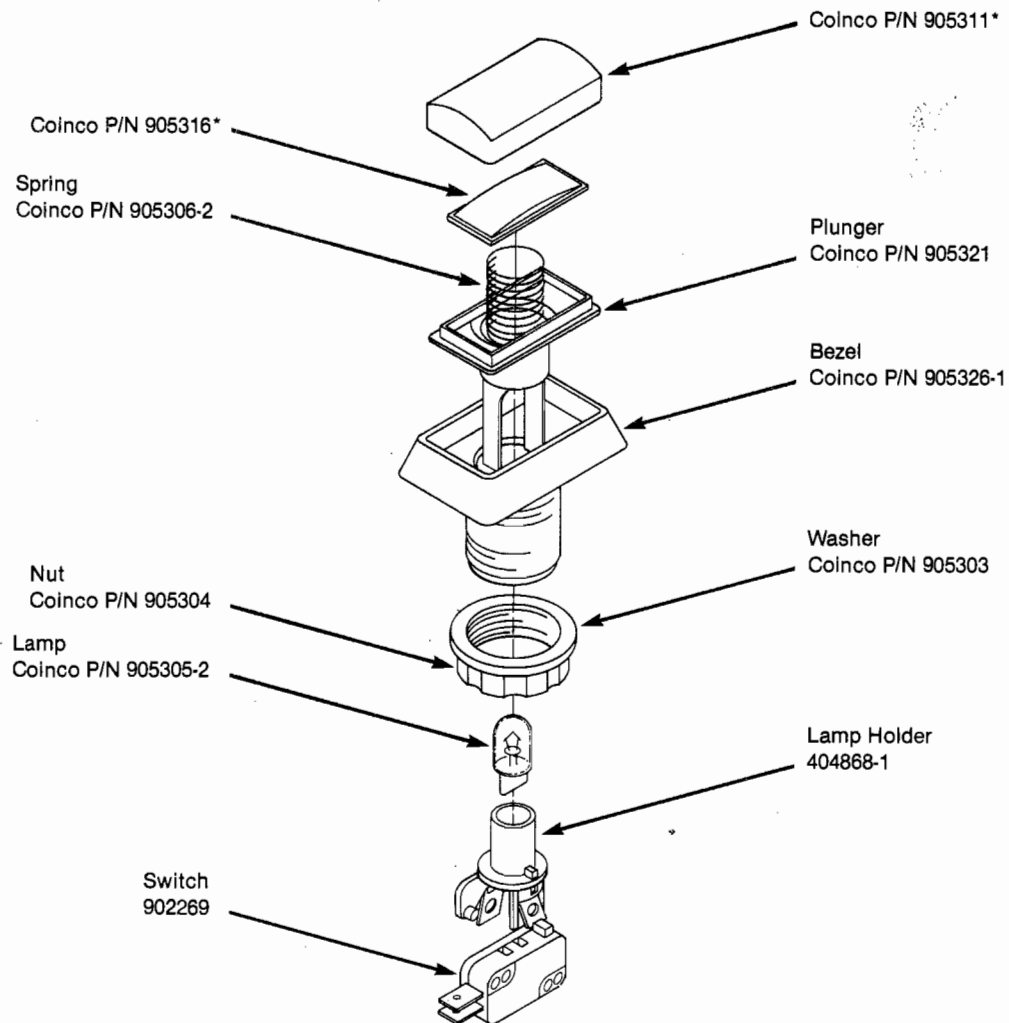
**COINCO SWITCH ASSEMBLY  
(570-0039-01)  
PARTS LIST**

COMPONENT PART NUMBER (COINCO)	QUANTITY	REFERENCE	DESCRIPTION
905310-2	1		Lens Cap (Red)
905315-2	1		Legend Plate (Red)
905320	1		Plunger
905306-1	1		Return Spring
905325-1	1		Body/Bezel (Black)
905303	1		Mounting Washer
905304	1		Fixing Nut
905305-2	1		Wedgebase Lamp (12V. 25A)
404868-1	1		Lamp and Switch Holder (Terminals .250)
905335-1	1		SP Switch (15A, 250VAC, Terminals .250 Silver Contact)



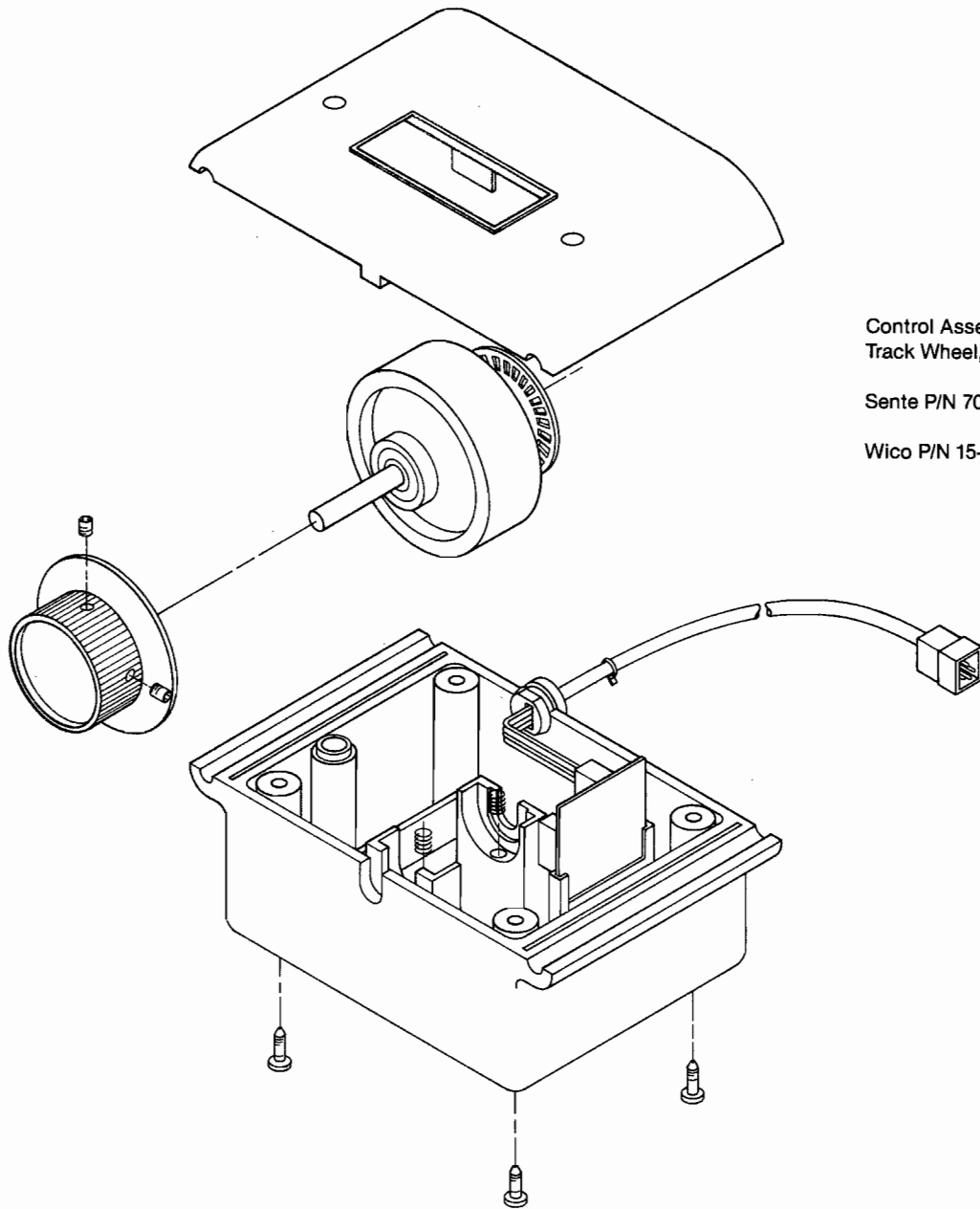
**Figure 2-8** Push Button Assembly





**Figure 2-9** Switch Button Assembly (570-0042-XX\*)

- \* Order By Color**
- 570-0042-01 Black
  - 02 Red
  - 03 Yellow
  - 04 Green
  - 05 Amber
  - 06 White
  - 07 Blue
  - 01 Clear



Control Assembly,  
Track Wheel, 5VDC

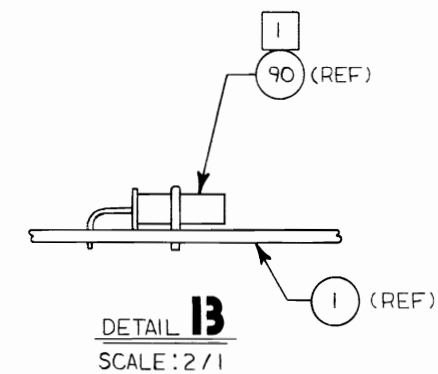
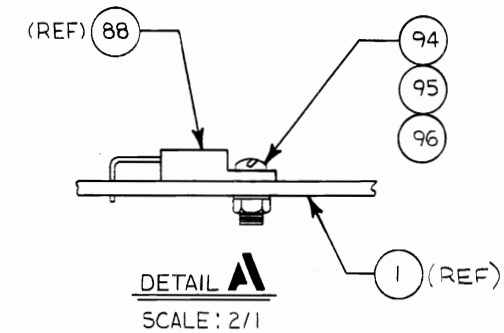
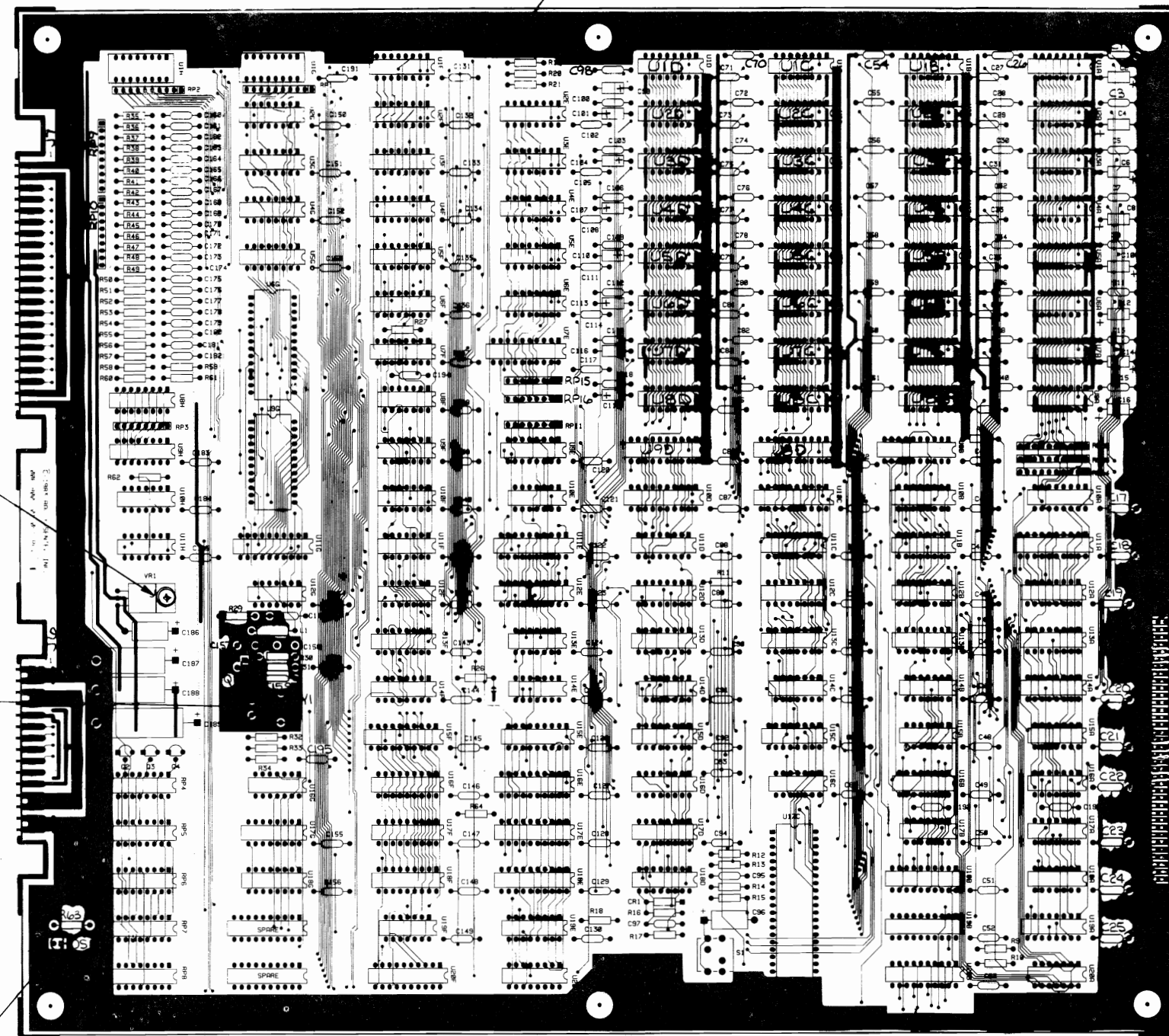
Sente P/N 700-0170-01

Wico P/N 15-2045-01

**Figure 2-10** 5VDC Track Wheel Control Assembly

**SECTION 3**  
**Illustrated**  
**PCB Parts Lists**

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
C	1963		DELETED 007-8001-10-0A, ADDED 007-8001-10-0C # RP11 THRU RP15		
C1	1990		DELETED ITEM 15, ADDED ITEM 40, CHG QTY ON ITEMS 18, 19 & 53		



SEE DETAIL A

SEE DETAIL B

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 Y1 (ITEM 90) TO HAVE 20 AWG WIRE WRAPPED AROUND BODY AND SOLDERED IN HOLES PROVIDED.

RELEASED BY: WES. 12/1/85

M051-00C52-C013

ITEM	DESCRIPTION/MATERIAL	QTY
-10	000-8011-10	
DASH NO.	NEXT ASSY NO.	
USED ON		
MATERIAL	SEE L/M	
FINISH		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°		
SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010		
DO NOT SCALE DRAWING		
DRAWN BY: L. PERCIVAL 1/30/84		
CHECKED: L. FORTE 2/2/84		
ENGINEER: R.E. Silva 2/8/84		
MFG. ENGINEER: C. Longene		
PROJECT ENGINEER:		
TITLE: PCB ASSEMBLY, CPU, SAC-I		
SIZE: D	DRAWING NO. 006-8001-10-0C	REV: C1
SCALE: 1/1 & NOTED		SHEET 1 OF 6

VENDOR NOTE: TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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PCB ASSEMBLY, CPU  
(006-8001-10-0C) (M051-00C52-C013)  
PARTS LIST - SHEET 2 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	007-8001-01-0C		PCB, FABRICATION, CPU, SAC-1
2				
3	3	200-0039-01	U11F, 14D, 14C	IC, DIG, TTL, 74LS00, NAND GATE
4	2	200-0040-01	U14E, 15B	IC, DIG, TTL, 74LS02, NOR GATE
5	1	200-0041-01	U16C	IC, DIG, TTL, 74LS04, HEX INVERTER
6	1	200-0042-01	U13E	IC, DIG, TTL, 74LS20, 4-IN NAND
7	3	200-0043-01	U8F, 9F, 14B	IC, DIG, TTL, 74LS32, OR GATE
8	1	200-0044-01	U17B	IC, DIG, TTL, 74LS74, DUAL D F/F
9	1	200-0075-01	U10H	IC, DIG, TTL, 74LS86, QUAD X-OR
10	1	200-0045-01	U16D	IC, DIG, TTL, 74LS96, 5 BIT SHIFT
11	2	200-0046-01	U13F, 14F	IC, DIG, TTL, 74LS109, DUAL JK F/F
12	1	200-0047-01	U19F	IC, DIG, TTL, 74LS125, QUAD BUFFER
13	2	200-0048-01	U17D, U20E	IC, DIG, TTL, 74LS138, 3-8 DECODER
14				
15				
16	2	200-0052-01	U12C, 13C	IC, DIG, TTL, 74LS163, 4 BIT COUNT
17	1	200-0076-01	U11H	IC, DIG, TTL, 74LS164, 8 BIT SHIFT
18	5	200-0053-01	U10B, 11B, 15C, 17G, 18G	IC, DIG, TTL, 74LS174, HEX D F/F
19	3	200-0032-01	U19A, 15D, 19E	IC, DIG, TTL, 74LS175, QUAD D F/F
20	7	200-0055-01	U18B, 20B, 12E, 18E, 17E, 16E, 15F	IC, DIG, TTL, 74LS244, 8TS BUFFER
21	1	200-0056-01	U19B	IC, DIG, TTL, 74LS245, 8 BUS XCVR
22	6	200-0057-01	U11D, 11C, 26, 36, 46, 56	IC, DIG, TTL, 74LS253, DATA SELECT
23	1	200-0078-01	U12A	IC, DIG, TTL, 74LS257, 4 2-1 MUX
24	1	200-0058-01	U9H	IC, DIG, TTL, 74LS259, 8 BIT LATCH
25	1	200-0059-01	U11A	IC, DIG, TTL, 74LS273, OCTAL D F/F
26	1	200-0077-01	U11G	IC, DIG, TTL, 74LS299, 8 BIT SHIFT
27	5	200-0060-01	U10C, 10D, 9D, 9C, 11E	IC, DIG, TTL, 74LS374, OCTAL D F/F
28				
29				
30	2	200-0061-01	U17A, 15A	IC, DIG, TTL, 74S00, NAND GATE
31	1	200-0062-01	U16A	IC, DIG, TTL, 74S02, NOR GATE
32	2	200-0063-01	U12G, 18A	IC, DIG, TTL, 74S04, HEX INVERTER
33	1	200-0064-01	U10F	IC, DIG, TTL, 74S08, AND GATE
34	1	200-0065-01	U10E	IC, DIG, TTL, 74S32, OR GATE
35	1	200-0066-01	U12F	IC, DIG, TTL, 74S74, DUAL D F/F
36	7	200-0067-01	U2E-6E, 1F, 2F	IC, DIG, TTL, 74S151, 8-1 MUX
37	3	200-0068-01	U12B, 13B, 13A	IC, DIG, TTL, 74S157, 4 2-1 MUX
38	6	200-0069-01	U3F, 4F, 5F, 6F, 13D, 12D	IC, DIG, TTL, 74S163, 4 BIT COUNT
39	3	200-0070-01	U9E, 14A, 10A	IC, DIG, TTL, 74S174, HEX D F/F
40	2	200-0082-01	U20A, U16G	IC, DIG, TTL, 74S86, QUAD X-OR
41				
42	1	210-0005-01	U18D	IC, DIG, CMOS, 4049UB, HEX INVERTER
43	1	230-0007-01	U15E	IC, DIG, NOV RAM, X 2212, 256 X 4

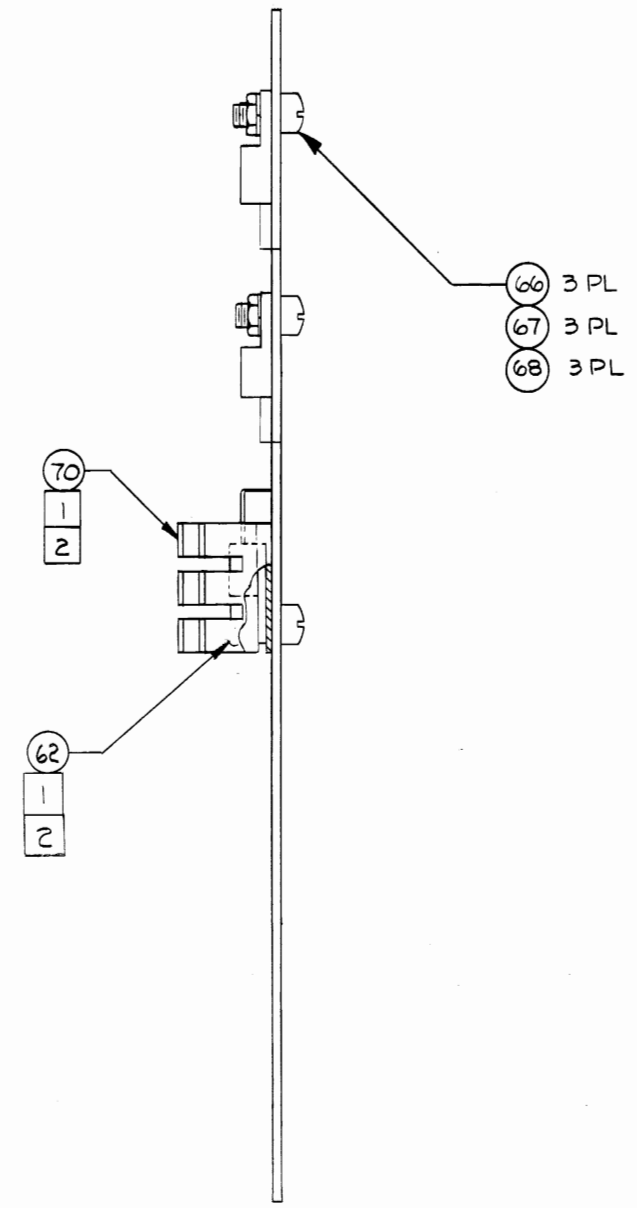
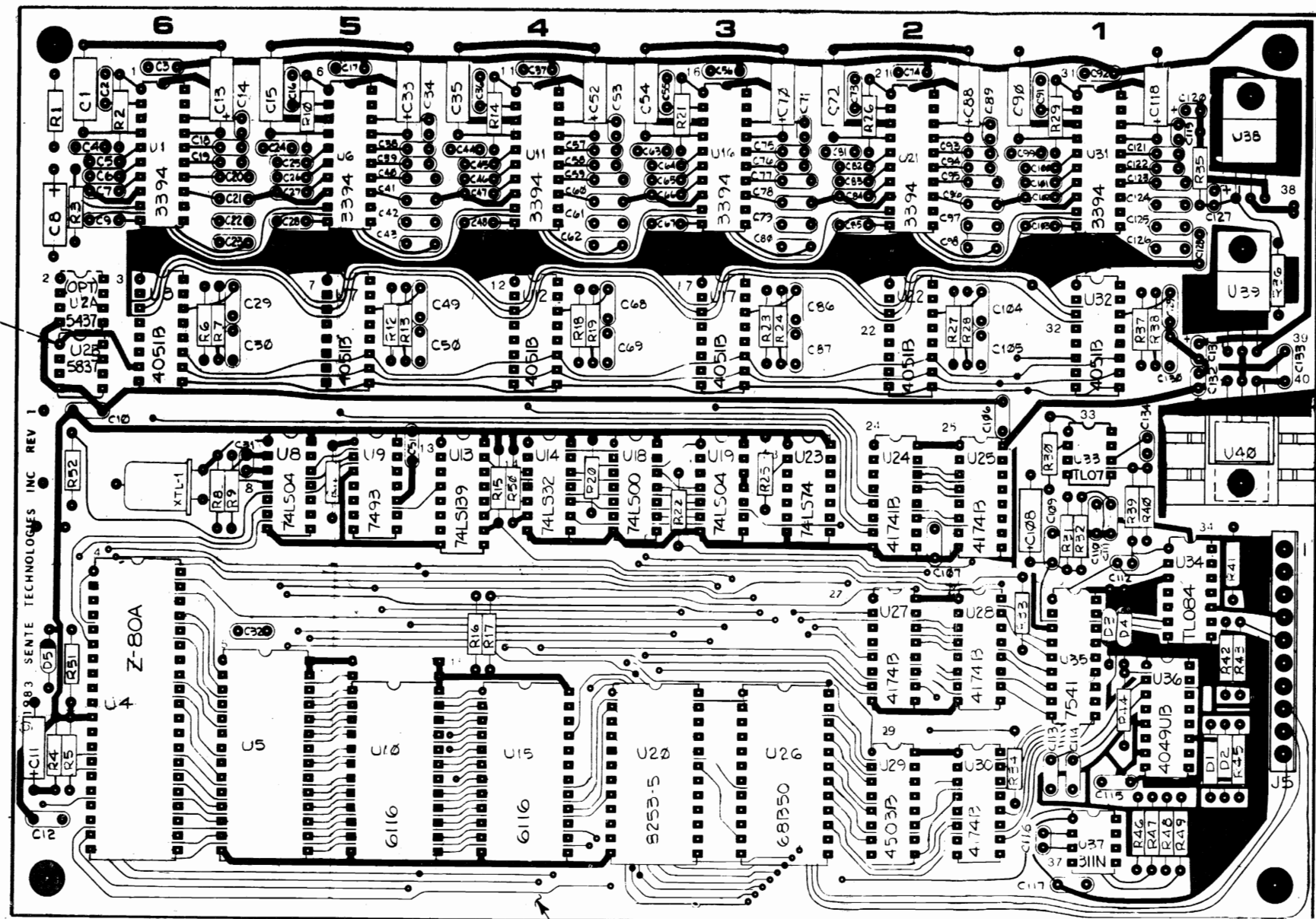
PCB ASSEMBLY, CPU  
(006-8001-10-0C) (M051-00C52-C013)  
PARTS LIST - SHEET 3 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
44	3	240-0003-01	U18F, 17F, 16F	IC, DIG, RAM, 2148, 1K X 4, 70NS
45	32	240-0004-01	U1A-BA, 1B-8B, 1C-8C, 1D-8D	IC, DIG, RAM, 4116, 16K X 1, 150NS
46	1	260-0002-01	U8H	IC, DIG, INT, ULN2003, DRIVER
47	1	015-8001-10-0B	U20F	PAL, SAC-1
48	1	250-0010-01	U9G	IC, DIG, MPS, 68B50, ACIA, .75MHZ
49	1	250-0006-01	U17C	IC, DIG, MPU, 68A09E
50	1	260-0030-01	U6G	IC, SP, , ADC 8 BIT, ADC0809
51	1	320-0006-01	C157	CAP, MIC, RAD, 12PF, 500V, 5%
52	1	320-0007-01	C158	CAP, MIC, RAD, 100PF, 500V, 5%
53	172	300-0009-01	C1, 3, 5, 7, 9, 11, 13, 15, 17-95, 97, 98, 100, 102, 103, 105, 106, 108, 109, 111, 112, 114, 115, 117, 118, 120, 121-156, 159-185, 190-195	CAP, CER, AXL, 0.1UF, 50V, 20%
54	2	340-0015-01	C96, 186	CAP, ELEC, AXL, 1.0UF, 63V, 50/-10%
55	2	340-0011-01	C187, C188	CAP, ELEC, AXL, 100UF, 16V, 50/-10%
56	1	340-0018-01	C189	CAP, ELEC, AXL, 470UF, 6.3V, 50/-10%
57	8	310-0013-01	C2, 6, 10, 14, 101, 107, 113, 119	CAP, TAN, AXL, 2.2UF, 10V, 20%
58	8	310-0014-01	C4, 8, 12, 16, 99, 104, 110, 116	CAP, TAN, AXL, 4.7UF, 20V, 20%
59	4	460-0015-01	RP11, RP13, RP15, RP16	RES, PAK, SIP, 8 PIN, 4X, 33 OHM
60	2	460-0016-01	RP12, RP14	RES, PAK, SIP, 10 PIN, 5X, 33 OHM
61				
62	1	400-1500-01	R63	RES, CF, 1/4W, 5%, 150 OHM
63	1	400-2200-01	R29	RES, CF, 1/4W, 5%, 220 OHM
64	3	400-4700-01	R32-34	RES, CF, 1/4W, 5%, 470 OHM
65	37	400-1001-01	R7, 8, 9, 11, 14, 15, 18-21, 27, 28, 35-57, 62, 64	RES, CF, 1/4W, 5%, 1K OHM
66	1	400-2701-01	R12	RES, CF, 1/4W, 5%, 2.7K OHM
67	6	400-4701-01	R13, 31, 58-61	RES, CF, 1/4W, 5%, 4.7K OHM
68	2	400-1002-01	R26, 30	RES, CF, 1/4W, 5%, 10K OHM
69	2	400-1003-01	R16, 17	RES, CF, 1/4W, 5%, 100K OHM
70	5	460-0011-01	RP4-8	RES, PAK, DIP, 16 PIN, 8X, 2.2K OHM
71	2	460-0012-01	RP9, 10	RES, PAK, SIP, 10 PIN, 9X, 470 OHM
72	1	460-0014-01	RP3	RES, PAK, SIP, 8 PIN, 7X, 1.0K OHM
73	2	460-0013-01	RP1, 2	RES, PAK, SIP, 10 PIN, 9X, 10K OHM
74	1	400-2700-01	R10	RES, CF, 1/4W, 5%, 270 OHM
75				
76	1	510-0019-01	U9G	SOCKET, IC, 24P, LOW PROF, PC
77	1	510-0020-01	U6G	SOCKET, IC, 28P, LOW PROF, PC
78	1	510-0021-01	U17C	SOCKET, IC, 40P, LOW PROF, PC

PCB ASSEMBLY, CPU  
 (006-8001-10-0C) (M051-00C52-C013)  
 PARTS LIST - SHEET 4 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
79				
80				
81				
82	1	550-0063-01	J22	CONN,AMP 1-102589-7
83	1	500-0016-01	L1	INDUCTOR,FER,AXL,100UH,10%
84	1	100-0002-01	CR1	D10,SI,10MA,75 PIV,IN914
85				
86				
87	4	120-0003-01	Q1,2,3,4	XSTR,SI,NPN,2N3904
88	1	260-0011-01	VR1	IC,LIN,VR,7905,5V NEG
89				
90	1	820-0004-01	Y1	CRYSTAL,20.000MHZ
91	1	840-0036-01	DS1	OPT,DSP,LED,SNG,RED
92	2	570-0036-01	U1G,1H	SW,DIP,8 PST
93				
94	1	801-0440-06-01		SCREW PH PH 4-40 X 3/8"
95	1	812-0440-00-01		NUT,HEX,4-40
96	1	822-0004-00-01		WASHER,SPLIT LOCK #4
97	1	800-00237-01	DS1	SPACER,LED
98				
99				
100				
101				
102	2	200-0079-01	U7F,U16B	IC,DIG,TTL,74F175,QUAD D F/F
103	2	200-0080-01	U7E,U9B	IC,DIG,TTL,74F374,OCTAL D F/F
104				
105				

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
	1		PROTOTYPE	12/1/83	WES
	A	1892	PRODUCTION RELEASE	1/20/84	WES
	A	1900	ADDED NOTE 3, REVERSED POLARITY OF C8.	1/20/84	WES
	B	1924	ADDED 2 HEATSINKS, ITEMS 62 & 70	1/25/84	WES



- NOTES:
- 1 FASTEN U40 (ITEM 53) TO HEATSINK (ITEM 62), HEATSINK (ITEM 70), AND PCB (ITEM 69), WITH HARDWARE (ITEM 66,67 & 68) BEFORE SOLDERING TO PCB.
  - 2 APPLY HEATSINK COMPOUND TO HEATSINK (ITEM 62) & HEATSINK (ITEM 70) PRIOR TO MOUNTING.
  - 3 SHORT PIN 1 TO PIN 2 OF U23, AND MOUNT C8 AS SHOWN TO USE AMI 2688 (5837 EQUIV).

RELEASED BY: WES 12/1/83 MO51-00C52-B015

ITEM	DESCRIPTION/MATERIAL	QTY
10	000-8011-10	
DASH NO.	NEXT ASSY NO.	
USED ON		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°	DO NOT SCALE DRAWING	<p>1289 Anvilwood Ave. Sunnyvale, CA 94089</p>
SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010	DRAWN BY: L. Witt 9/3/83	
MATERIAL: SEE L/M	CHECKED: L. FORTE 11/14/83	TITLE: PCB ASSEMBLY, AUDIO, 6VB 3-5
FINISH:	MFG ENGINEER: C. J. [Signature] 11/29/83	DRAWING NO: D 006-8002-10-0B 0B
	PROJECT ENGINEER:	SCALE: 2:1 SHEET 1 OF 6

VENOR NOTE: TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN CONTACT BUYER PRIOR TO SHIPMENT.

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PCB ASSEMBLY, AUDIO 6VB  
(006-8002-10-0B) (M051-00C52-B015)  
PARTS LIST - SHEET 2 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	2	400-1001-01	R1,R44	RES,CF,1/4W,5%,1K OHM
2	1	400-6802-01	R3	RES,CF,1/4W,5%,68K OHM
3	5	400-1003-01	R4,5,42,45,51	RES,CF,1/4W,5%,100K OHM
4	12	400-1004-01	R6,7,12,13	RES,CF,1/4W,5%,1.0M OHM
5	3	400-3300-01	R8,9,11	RES,CF,1/4W,5%,330 OHM
6	6	400-2001-01	R15,16,17,20,22,50	RES,CF,1/4W,5%,2.0K OHM
7	3	400-4701-01	R25,41,46	RES,CF,1/4W,5%,4.7K OHM
8	2	400-4702-01	R48,49	RES,CF,1/4W,5%,47K OHM
9	1	400-3307-01	R43	RES,CF,1/4W,5%,33 OHM
10	1	401-1005-01	R47	RES,CC,1/4W,5%,10M OHM
11	6	450-3013-01	R2,10,14,21,26,29	RES,MF,1/8W,1%,301K OHM
12	1	450-1962-01	R40	RES,MF,1/8W,1%,19.6K OHM
13				
14	1	450-2002-01	R30	RES,MF,1/8W,1%,20.0K OHM
15	1	450-4021-01	R31	RES,MF,1/8W,1%,4.02K OHM
16	1	450-1001-01	R32	RES,MF,1/8W,1%,1.00K OHM
17	1	450-1210-01	R35	RES,MF,1/8W,1%,121 OHM
18	1	450-4990-01	R36	RES,MF,1/8W,1%,499 OHM
19	1	450-1002-01	R39	RES,MF,1/8W,1%,10.0K OHM
20				
21	12	330-0005-01	C14,18,34,38,53, 57,71,75,89,93,119, 121	CAP,PES,RAD,0.001UF, 100V,10%
22	6	330-0009-01	C1,15,35 54,72,90	CAP,PST,AXL,0.002UF, 100V,5%
23	48	330-0006-01	C2,5,6,7,9,16,23,25, 26,27,28,29,30,36,43, 45,46,47,48,49,50,55, 62,64,65,66,67,68,69, 73,80,82,83,84,85,86, 87,91,98,100,101,102, 103,104,105,126,129, 130	CAP,PES,RAD,0.01UF,100V, 10%
24	20	330-0007-01	C20,21,22,40,41,42, 59,60,61,77,78,79,95, 96,97,113,114,123, 124,125	CAP,PES,RAD,0.033UF,100V 10%
25	3	300-0011-01	C112,116,134	CAP,CER,RAD,33PF,50V,10%
26	7	300-0012-01	C19,31,39,58,76,94, 122	CAP,CER,RAD,680PF,50V,5%
27	25	300-0002-01	C3,4,10,12,17,24,32, 37,44,51,56,63,74,81, 92,99,106,107,109, 110,111,115,117,128, 133	CAP,CER,RAD,0.1UF,50V,20%
28	3	310-0012-01	C127,131,132	CAP,TAN,RAD,1.0UF,25V,20%
29	3	340-0016-01	C8,11,108	CAP,ELC,AXL,2.2UF,63V,50/ 10%

PCB ASSEMBLY, AUDIO 6VB  
(006-8002-10-0B) (M051-00C52-B015)  
PARTS LIST - SHEET 3 of 4

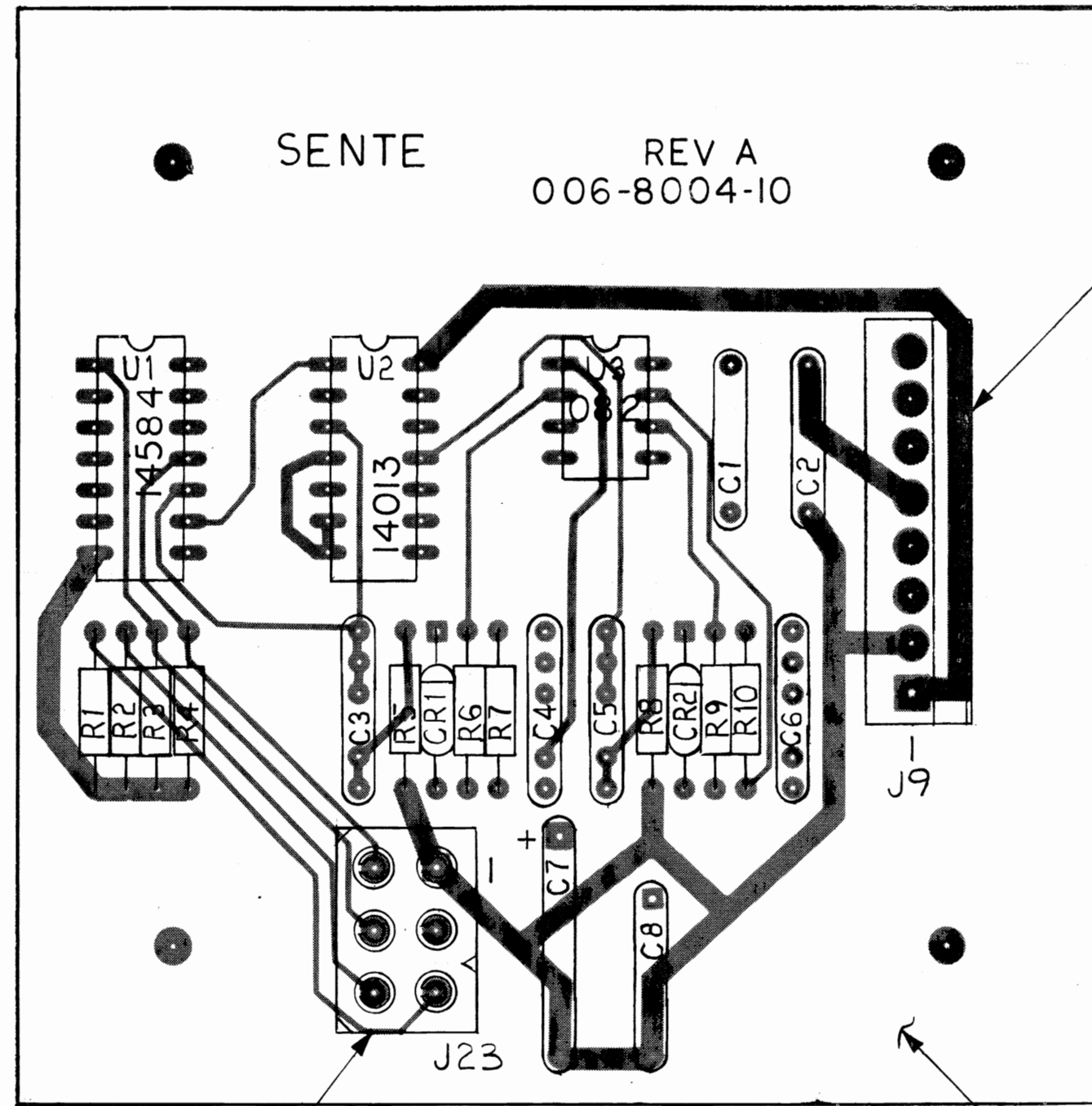
ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
30	6	340-0017-01	C13,33,52,70,88,118	CAP,ELC,AXL,10UF,35V,50/ 10%
31	6	260-0033-01	U1,6,11,16,21,31	IC,SP,SOUND,SYNTH,CEM, 3394
32	5	210-0007-01	U24,25,27,28,30	IC,DIG,CMOS,4174B,HEX D F/F
33	6	210-0006-01	U3,7,12,17,22,32	IC,DIG,CMOS,4051B,8 CHAN MUX
34	1	210-0005-01	U36	IC,DIG,CMOS,4049UB,HEX INVERT
35	1	260-0029-01	U34	IC,LIN,OPAMP,TL084,QUAD, JFET
36	1	260-0031-01	U35	IC,SP,DAC 12 BIT, 7541
37	1	260-0007-01	U37	IC,LIN,COMP,LM311N
38	1	260-0037-01	U33	IC,LIN,OPAMP,TL071,JFET, INPUT
39	1	210-0008-01	U29	IC,DIG,CMOS,4503B,HEX TS BUFFER
40	1	260-0040-01	U2	IC,SP,NOISE SOURCE MM5837
41	1	200-0039-01	U18	IC,DIG,TTL,74LS00,NAND GATE
42	2	200-0041-01	U8,19	IC,DIG,TTL,74LS04,HEX INVERTER
43	1	200-0043-01	U14	IC,DIG,TTL,74LS32,OR GATE
44	1	200-0044-01	U23	IC,DIG,TTL,74LS74,DUAL D F/F
45	1	200-0074-01	U9	IC,DIG,TTL,7493,4 BIT COUNT
46	1	200-0049-01	U13	IC,DIG,TTL,74LS139,2-4 DECODER
47	1	250-0007-01	U4	IC,DIG,MPU,Z-80A
48				
49	2	240-0005-01	U10,15	IC,DIG,RAM,6116,2KX8, 200NS
50	1	250-0008-01	U20	IC,DIG,MPS,8253-5,TIMER
51	1	250-0010-01	U26	IC,DIG,MPS,68B50,ACIA .75MHZ
52	1	260-0027-01	U38	IC,LIN,VR,337T,VARIABLE NEG.
53	1	260-0028-01	U40	IC,LIN,VR,78M05CT,5V POS
54	1	260-0008-01	U39	IC,LIN,VR,7805,5V POS
55	4	100-0006-01	D1,2,3,4	DIO,GR,50MA,75PIV,IN34
56	1	550-0062-01	J5	CONN 10 PIN LOCKING 09-74-1101
57	4	510-0019-01	U10,15,20,26	SOCKET,IC,24P,LOW PRO
58	1	510-0020-01	U5	SOCKET,IC,28P,LOW PRO
59	1	510-0021-01	U4	SOCKET,IC,40P,LOW PRO
60	1	100-0002-01	D5	DIO,S1,10MA,75 PIV,IN914



PCB ASSEMBLY, AUDIO 6VB  
 (006-8002-10-0B) (M051-00C52-B015)  
 PARTS LIST - SHEET 4 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
61	1	820-0003-01	XTL-1	CRYSTAL 8.000MHZ
62	1	850-0007-01	HS-1	HEATSINK, THM-6070
63	1	310-0015-01	C120	CAP, TANT, RAD, 47UF, 15V, 20%
64	2	400-2703-01	R33, 34	RES, CF, 1/4W, 5%, 270K OHM
65	1	400-2700-01	R52	RES, CF, 1/4W, 5%, 270 OHM
66	3	801-0632-06-01		SCREW PAN HD-PHIL 6-32X 3/8
67	3	822-0006-00-01		WASHER SPLITLOCK 6
68	3	816-0632-00-01		NUT, HEX, SM PAT, 6-32
69	1	007-8002-01-0A		PCB, FAB, AUDIO, 6VB
70	1	850-0008-01	HS-2	HEATSINK, THM-6071

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
1	1		PROTOTYPE REVISION	8/30/83	[Signature]
A	1892		PRODUCTION RELEASE	11/24/83	[Signature]
A1	1964		R1-R4 WAS 2.2K; IS 3.3K	11/24/83	[Signature]



PCB ASSEMBLY, TRACKBALL CONVERTER  
(006-8004-010A) (M051-00B18-A007)  
PARTS LIST - SHEET 2 of 2

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	007-8004-01-0A0		PCB, FAB, TRACKBALL CONVERTER
2				
3	1	210-0003-01	U2	IC, DIG, CMOS, 4013B, DUAL D F/F
4	1	210-0009-01	U1	IC, DIG, CMOS, 4584B, HEX INV.
5	1	260-0034-01	U3	IC, LIN, OP AMP, TL082, DUAL JFET
6				
7	2	330-0007-01	C3, C5	CAP, PES, RAD, 0.033UF, 100V, 10%
8	1	310-0013-01	C7	CAP, TANT, AXL, 2.2UF, 10V, 20%
9	3	30-0009-01	C1, C2, C8	CAP, CER, AXL, 0.1UF, 50V, 20%
10	2	33-0008-01	C4, C6	CAP, RES, RAD, 0.10UF, 100V, 10%
11				
12	4	40-03301-01	R1 - R4	RES, CF, 1/4W, 5%, 3.3K OHM
13	2	40-01002-01	R5, R8	RES, CF, 1/4W, 5%, 10K OHM
14	2	40-0220-01	R10, R7	RES, CF, 1/4W, 5%, 220K OHM
15	2	40-0390-01	R6, R9	RES, CF, 1/4W, 5%, 39K OHM
16				
17	2	10-0000-01	CR1, CR2	DIODE, SI, 10MA, 75PIV, IN914
18				
19	1	55-0006	J9	CONN, 8P, MOLEX, 09-74-1081
20	6	55-00018-01	J23	CONN, PC, F, PINS, MLX 02-09-1134
21	1	55-00061-01	J23	CONN, CBL, 6P, RCP, MLX 03-09-1064
22				
23				

6PL (21)  
(20)

(1)

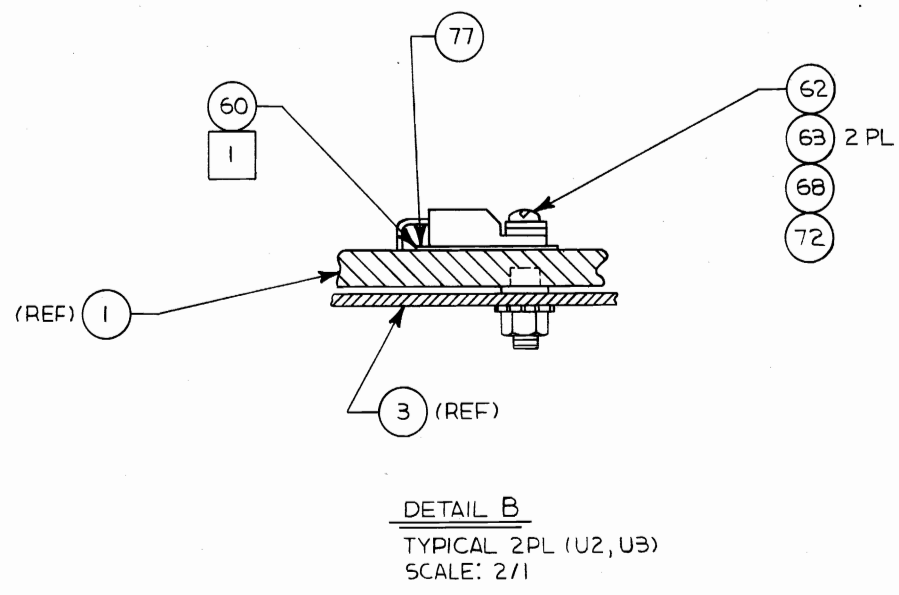
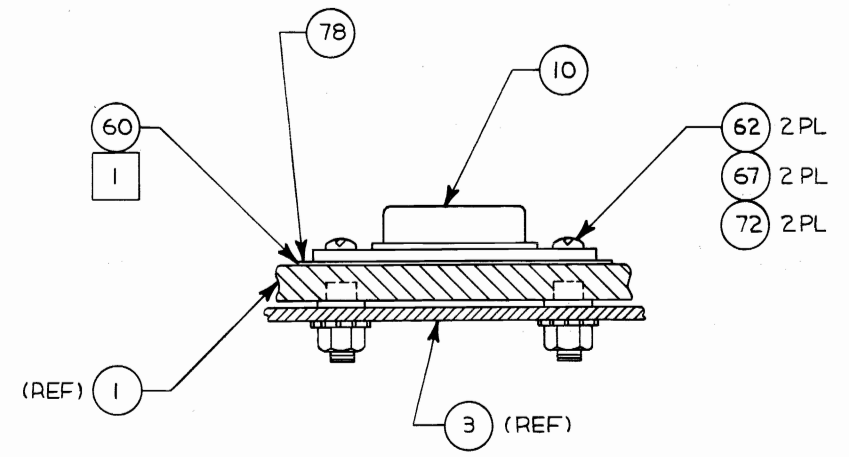
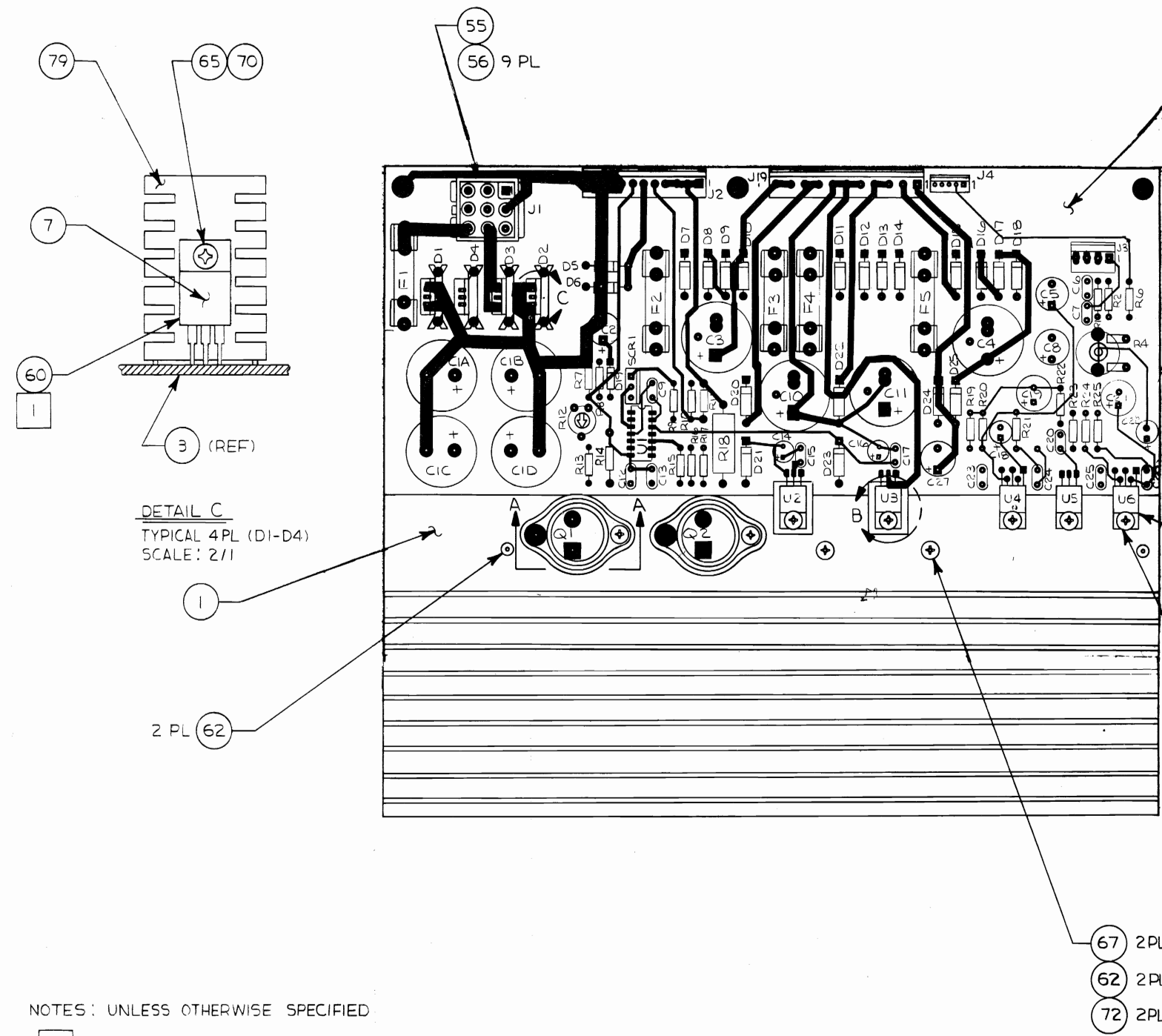
RELEASED BY: RLW 10/3/85 M051-00B18-A007

ITEM	DESCRIPTION/MATERIAL	QTY
10	000-8002-10	
DASH NO.	NEXT ASSY NO.	USED ON
MATERIAL	SEE L/M	FINISH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = ± 1°		DO NOT SCALE DRAWING
SURFACE FINISH X = ± .1 XX = ± .05 XXX = ± .010		DRAWN BY DATE G. CAI/NAP 8/30/83
MFG ENGINEER L. FORTE 11/3/83		CHECKED 11/3/83
PROJECT ENGINEER		ENGINEER 11/24/83
TITLE PCB ASSEMBLY, TRACKBALL CONVERTER		SIZE DRAWING NO. D 006-8004-10-0A
SCALE 2/1		REV A1
SHEET 1 OF 2		

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH P.T.T. PART NUMBER, EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN. CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
	B	1998	RELEASED REDESIGNED PCB		



**DETAIL C**  
TYPICAL 4PL (D1-D4)  
SCALE: 2/1

**VIEW A-A**  
TYPICAL 2PL (Q1, Q2)  
SCALE: 2/1

**DETAIL B**  
TYPICAL 2PL (U2, U3)  
SCALE: 2/1

NOTES: UNLESS OTHERWISE SPECIFIED

**1** APPLY HEATSINK COMPOUND (ITEM 60) ON BOTH SIDES OF INSULATOR (ITEM 78) AT Q1 AND Q2, AND ON BOTH SIDES OF INSULATOR (ITEM 77) AT U2 AND U3. APPLY BETWEEN HEATSINK AND COMPONENT AT U4, U5, U6, D1, D2, D3 AND D4.

<b>RELEASED BY:</b> WES 3/3/86		<b>MO51-00C52-BO17</b>	
ITEM	DESCRIPTION/MATERIAL	QTY	
10	000-BO11-10		
DASH NO.	NEXT ASSY NO.	USED ON	
MATERIAL		FINISH	
SEE L/M			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:		DO NOT SCALE DRAWING	
ANGLES = ± 1°		DRAWN BY DATE	
SURFACE FINISH ✓ X = ± .1 XX = ± .03 XXX = ± .010		L. PERCIVAL 9/13/84	
CHECKED		ENGINEER	
L. FORTE 9/19/84		MFG. ENGINEER	
PROJECT ENGINEER		TITLE	
		PCB ASSY, LINEAR POWER SUPPLY	
SIZE	DRAWING NO.	REV	
D	006-8009-10-0B	B	
SCALE 1/1 & NOTED		SHEET 1 OF 3	

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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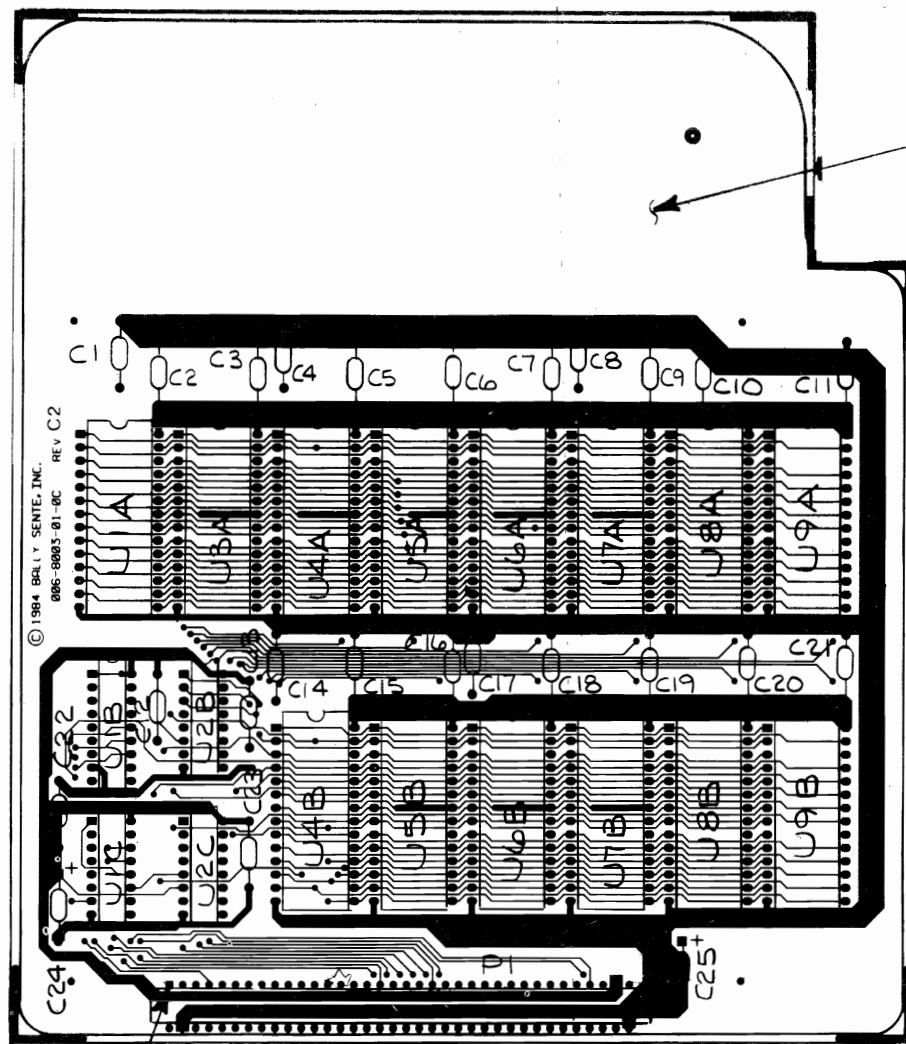


PCB ASSEMBLY, LINEAR POWER SUPPLY  
(006-8009-10-0B) (M051-00C52-B017)  
PARTS LIST - SHEET 2 of 3

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	001-8076-01-0B		HEATSINK,E-368/#5555
2				
3	1	007-8009-10-0B		PCB FAB, LINEAR PWR SPLY
4				
5	20	100-0008-01	D5-D18,D20-D25	D10,SI,3A,100 PIV,MR501
6				
7	4	105-0004-01	D1-D4	D10,RECTIFIER,16A, MUR1610 CT
8	1	110-0004-01	D19	D10,ZEN,5.6V,20MA,1N752A
9				
10	2	120-0004-01	Q1,Q2	XSTR,SI,NPN,2N3055
11				
12	1	160-0004-01	SCR1	SCR,8A,50V,C122F1
13				
14	2	260-0039-01	U4,U6	IC,LIN,SP,TDA2002,AUD AMP
15	1	260-0042-01	U2	IC,LIN,VR,MC7912,-12V, 3 POS
16	1	260-0043-01	U3	IC,LIN,VR,MC7812,+12V, 3 POS
17	1	260-0044-01	U5	IC,LIN,VR,MC7815,+15V, 3 POS
18	1	260-0045-01	U1	IC,LIN,VR,MC1723,SI,MONO
19				
20	9	300-0002-01	C6,C7,C12,C13,C15,C17, C20,C23,C25	CAP,CER,RAD,.1MF,50V
21	2	300-0001-01	C24,C26	CAP,CER,RAD,.022UF,50V, 20%
22	1	320-0007-01	C9	CAP,MIC,RAD,100PF,500V, 5%
23				
24	4	340-0026-01	C14,C16,C18,C22	CAP,ELC,RAD,10MF,50V,20%
25	2	340-0027-01	C19,C21	CAP,ELC,RAD,470MF,16V, -10%,+50%
26	4	340-0028-01	C1A,C1B,C1C,C1D	CAP,ELC,RAD,10.000MF,16V +10%,-30%
27	4	340-0029-01	C3,C4,C10,C11	CAP,ELC,RAD,6800MF,25V, -10%,+30%
28	4	340-0030-01	C2,C5,C8,C27	CAP,ELC,RAD,1000MF,50V, 20%
29				
30	2	400-1000-01	R8,R16	RES,CF,1/4W,5%,100 OHM
31	2	400-1008-01	R1,R2	RES,CF,1/4W,5%,1 OHM
32				
33	2	400-1007-01	R7,R11	RES,CF,1/4W,5%,10 OHM
34				
35	1	400-1501-01	R13,R10	RES,CF,1/4W,5%,1.5K OHM
36				
37	1	400-2200-01	R15	RES,CF,1/4W,5%,220 OHM

PCB ASSEMBLY, LINEAR POWER SUPPLY  
(006-8009-10-0B) (M051-00C52-B017)  
PARTS LIST - SHEET 3 of 3

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
38	2	400-2208-01	R19,R23	RES,CF,1/4W,5%,2.2 OHM
39				
40	1	400-2701-01	R17	RES,CF,1/4W,5%,2.7K OHM
41	1	400-3900-01	R9	RES,CF,1/4W,5%,390 OHM
42	1	400-4701-01	R14	RES,CF,1/4W,5%,4.7K OHM
43	2	400-4707-01	R21,R25	RES,CF,1/4W,5%,47 OHM
44	1	480-0007-01	R12	RES,VAR,STR,TRIM,1K OHM
45	1	480-0008-01	R4	RES,VAR,STR,TRIM,100 OHM
46	3	410-2200-01	R20,22,24	RES,CF,1/2W,5%,220 OHM
47	1	440-0508-01	R18	RES,WW,5W,10%,.05 OHM
48	1			
49				
50	1	550-0067-01	J3	CONN,PC,4P,M,09-74-1041
51	1	550-0068-01	J4	CONN,PC,5P,M,22-23-2051
52				
53	1	550-0102-01	J2	CONN,PC,11P,M,09-74-1111
54	1	550-0103-01	J19	CONN,PC,11P,M,10-19-1111
55	1	550-0110-01	J1	CONN,PC,9P,PLG,19-09-2099
56	9	550-0111-01	J1	CONN,PIN,M,PC,02-09-8113
57				
58	10	580-0070-01	F1-F5	FUSE,CLIP,PC,1/4"
59				
60	A/R	790-0007-01		THERMAL JOINT COMPOUND
61				
62	13	800-0240-01		BUSHING,INSULATED,NYLON
63	10	800-0241-01	U2-U6	WSHR,RECTANGULAR,METAL,#6
64				
65	4	801-0440-04-01	D1-D4	SCREW,PH,PH,4-40 X 1/4"
66				
67	6	801-0632-08-01	Q1,Q2	SCREW,PH,PH,6-32 X 1/2"
68	5	801-0632-10-01	U2-U6	SCREW,PH,PH,6-32 X 5/8"
69				
70	4	812-0440-00-01	D1-D4	NUT,HEX,4-40
71				
72	11	813-0632-00-01		NUT,HEX,KEP,6-32
73				
74	4	830-0019-01	F2-F5	FUSE,3AG,3A,250V,FAST ACTING
75	1	830-0020-01	F1	FUSE,3AB,10A,250V,SLO-BLO
76				
77	2	850-0009-01	U2,U3	INSULATOR,MICA,TO-220
78	2	850-0010-01	Q1,Q2	INSULATOR,MICA,TO-3
79	4	850-0011-01	D1-D4	HEATSINK,PC MOUNT,VERT, TO-220
80	1	400-1201-01	R6*(REV B1)	RES,CF,1/4W,5%,1.2K OHM



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006-8003-01-0C REV C2

PCB ASSEMBLY, CARTRIDGE, SAC 1, GENERIC  
(006-8003-00-0A) (M051-00C47-A023)  
PARTS LIST - SHEET 2 of 2

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	007-8003-01-0C		PCB FAB,CARTRIDGE,SAC 1
2				
3	2	200-0048-01	U2B, U2C	IC,DIG,TTL,74LS138,3-8 DECODER
4	1	200-0049-01	U1C	IC,DIG,TTL,74LS139,2-4 DECODER
5				
6	1	230-0007-01	U1B	IC,DIG,NOVRAM,X2212,256X4
7				
8	23	300-0009-01	C1 - C23	CAP,CER,AXL,0.1UF,50V,20%
9				
10	2	310-0013-01	C24, C25	CAP,TANT,AXL,2.2UF,10V,20%
11				
12	14	510-0020-01	U1A, U3A - U9A U4B - U9B	SOCKET,IC,28P,LOW PRO,PC
13				
14	1	550-0064-01	P1	CONN,AMP 2-102584-0

RELEASED BY: WES 3/4/86 M051-00C47-A023

DASH NO.		NEXT ASSY NO.		ITEM	QTY	DESCRIPTION/MATERIAL		P/N REF
APPLICATION				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°		DO NOT SCALE DRAWING		 1289 Anvilwood Ave. Sunnyvale, CA 94089
				SURFACE FINISH ✓ X = ± .1 .XX = ± .01 .XXX = ± .005		DRAWN BY L. FORTE DATE 11/14/84		
				MATERIAL SEE L/M		CHECKED		TITLE PCB ASSEMBLY, CARTRIDGE, SAC 1, GENERIC
				FINISH		ENGINEER		SIZE C
						MFC. ENGINEER		DRAWING NO. 006-8003-00-0A
						PROJECT ENGINEER		REV. A
						SCALE FULL		SHEET 1 OF 2

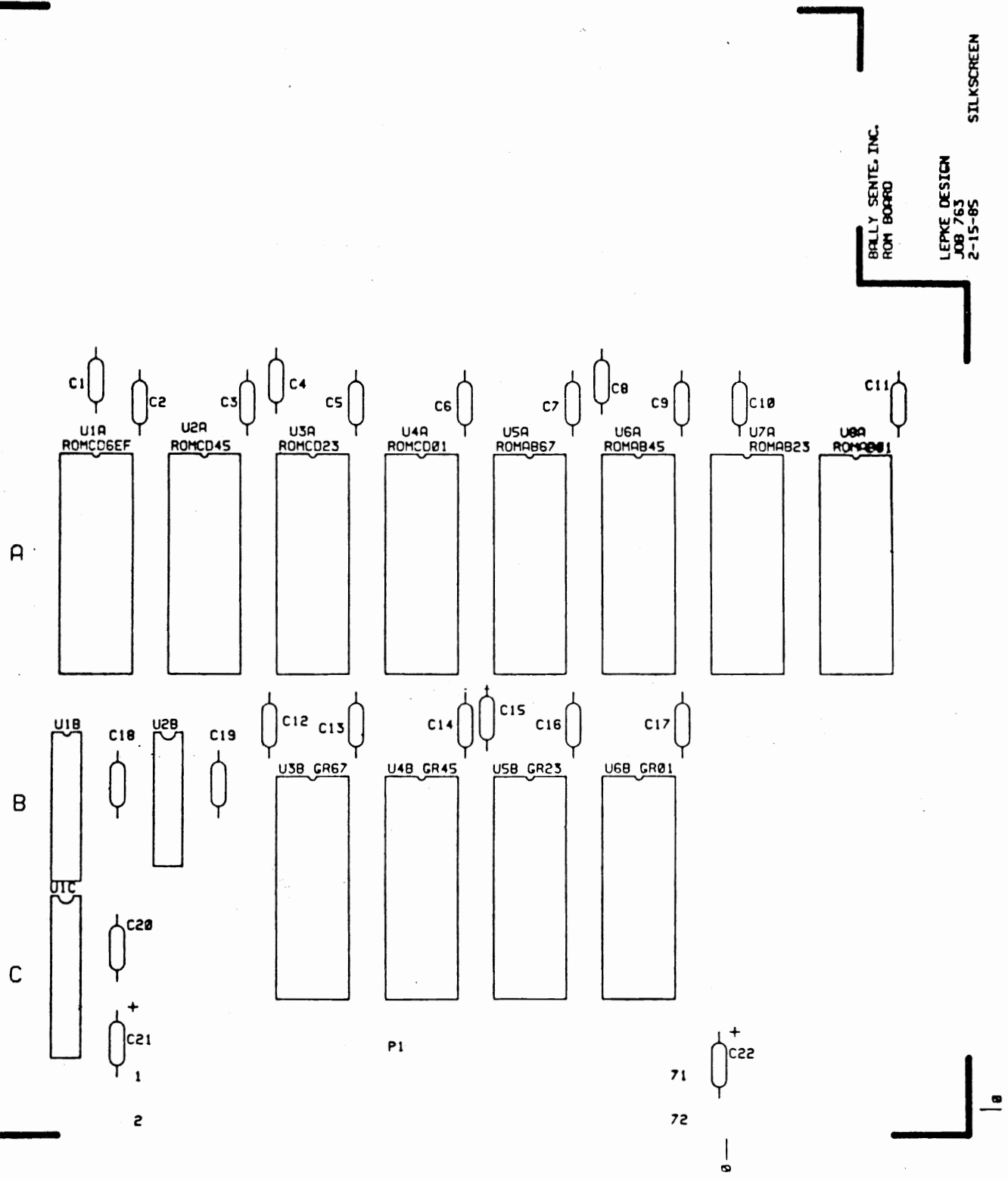
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PCB ASSEMBLY, 128K CARTRIDGE, SAC 1, GENERIC  
 U006-08025-10-0A A082-91798-A000  
 M051-00C47-A017

SHEET 1 OF 2

PCB ASSEMBLY, 128K CARTRIDGE, SAC 1, GENERIC  
 (A082-91798-A000) (006-8025-01-0A) (M051-00C47-A017)  
 PARTS LIST - SHEET 2 of 2

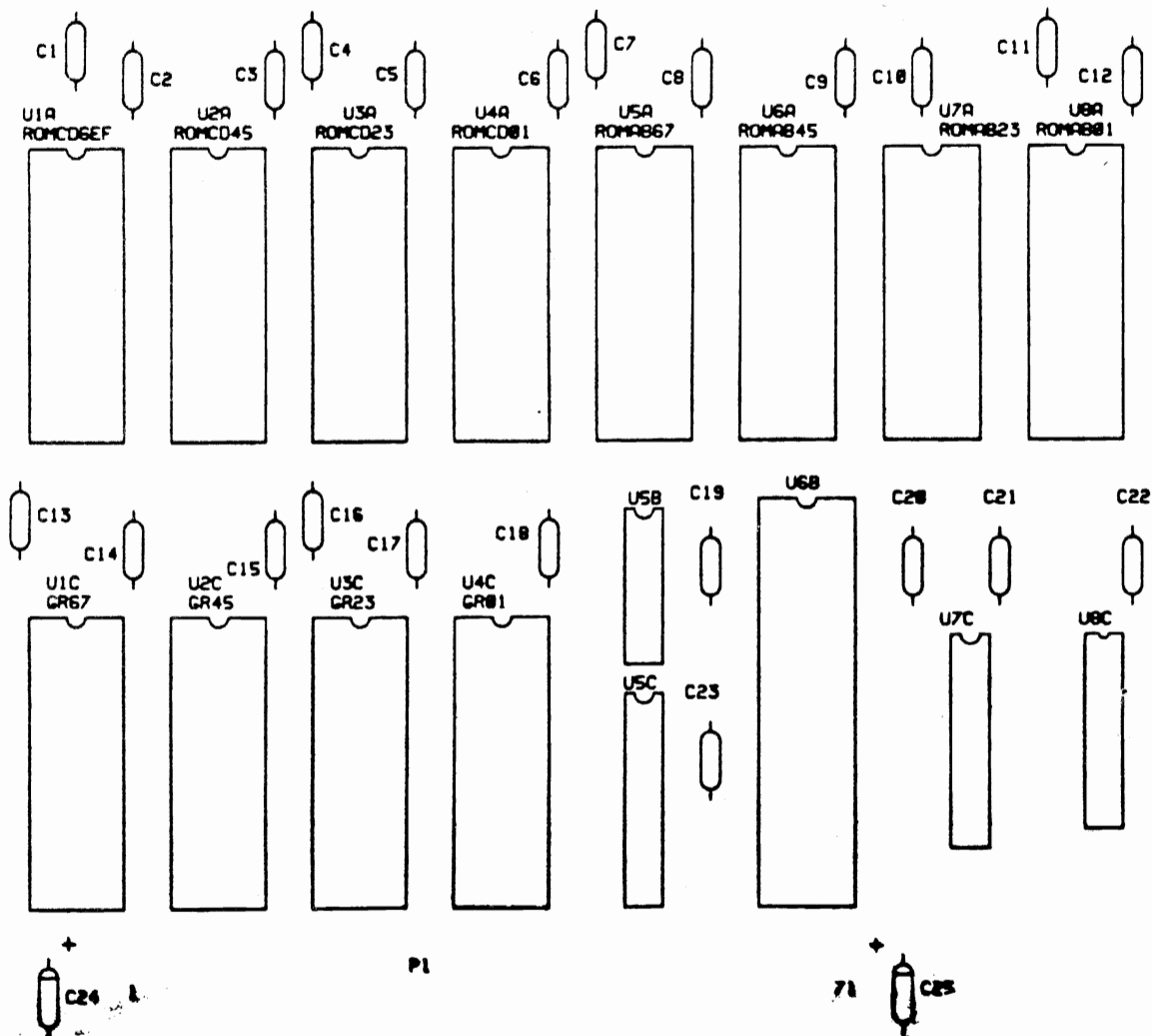
ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	B082-91798-A000 (007-8025-01-0A)		PCB, FAB, 128K, CARTRIDGE, SAC-1
2	1	200-0049-01	U2B	IC, DIG, TTL, 74LS139, 2-4 DECODER
3				
4	1	230-0007-01	U1B	IC, DIG, NOVRAM, X2212, 256X4
5	20	300-0009-01	C1 - C20	CAP, CER, AXL, 0.1UF, 50V, 20%
6	2	310-0013-01	C21, C22	CAP, TANT, AXL, 2.2UF, 10V, 20%
7	12	510-0020-01	U1A-U8A, U3B-U6B	SOCKET, IC, 28 PIN, LOW PRO, PC
8	1	510-0017-01	U1C	SOCKET, IC, 20 PIN, LOW PRO, PC
9	1	550-0064-01	P1	CONN, AMP 2-102584-0



UN-PROG CARTRIDGE 128K W/SECURE CHIP  
A082-91834-A000  
(SENTE BOARD NO. 006-8027-01-0B)

CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>REFERENCE NO.</u>	<u>PART NOS.</u>
PCB	1		A080-91834-A000
74LS139	1	U5R	U200-00049-0100
74LS245	1	U5C	U200-00056-0100
RAM NOV	1	U8C	U230-00007-0100
ST 1002 SECURITY CHIP	1	U6R	U260-00050-010A
CAP CER. .1M 50V 20%	23	C1-C23	U300-00009-0100
CAP TANT. 2.2MF 10V 20%	2	C24,C25	U310-00013-0100
SOCKET 28 PIN	12	U1A-U8A,U1C-U4C	110E-00001-0010
SOCKET 20 PIN	1	U7C	U510-00017-0100
SOCKET 40 PIN	1	U6R	110E-00001-0011
CONNECTOR AMP 2-102584-0	1	P1	U550-00064-0100

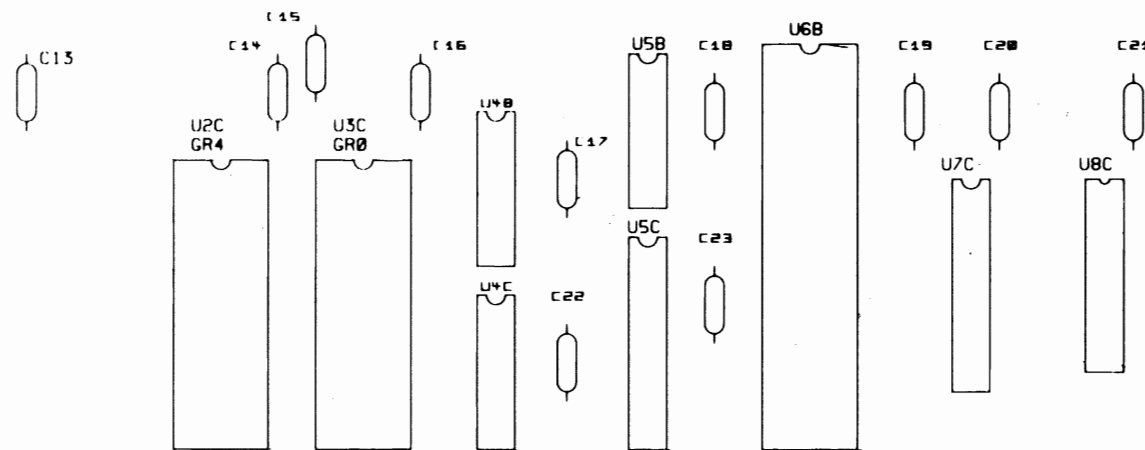
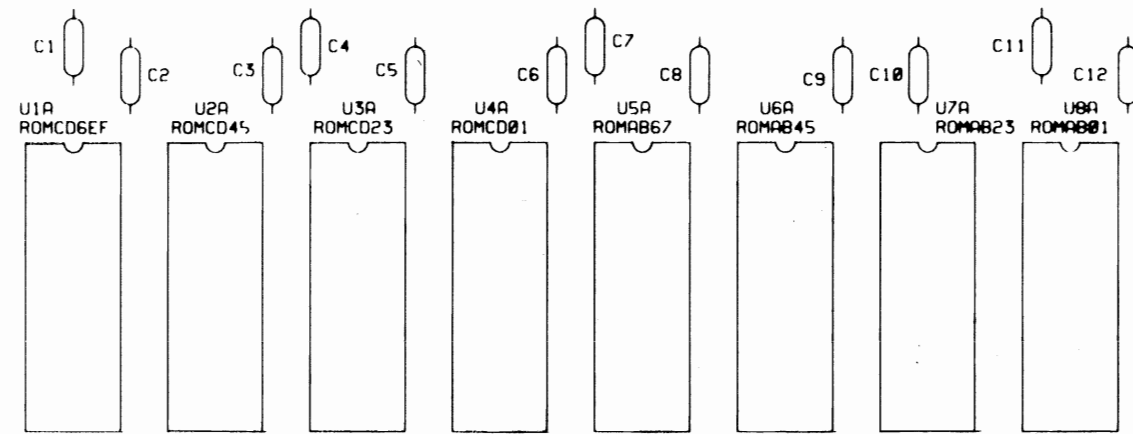


REV: Revisions due  
to type errors  
on 1/17/86. and  
2-20-86  
M051-00114-A144

ULTRA SECURE CARTRIDGE, 256K BOARD  
 U006-08030-010A  
 A082-91856-A000  
 M051-00114-A148

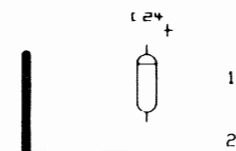
CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
P.C. BOARD	1		U007-08030-010A
ST1002 CUST.	1	U6B	U260-00050-010A
X2212 RAM	1	U8C	U230-00007-0100
74LS245	1	U5C	U200-00056-0100
74LS74	1	U4R	U200-00044-0100
74LS10	1	U4C	0360-00803-0046
74LS139	1	U5B	U200-00049-0100
28 PIN SOCKET	10	U1A, U2A, U3A, U4A U5A, U6A, U7A, U8A U2C, U3C	110E-00001-0010
40 PIN SOCKET	1	U6B	110E-00001-0011
20 PIN SOCKET	1	U7C	U510-00017-0100
2.2UF TANT 20V	2	C24, C25	U310-00013-0100
.1UF 50V	23	C1 - C23	U300-00004-0100
CONNECTOR (2-102584-0)	1	P1	U550-00064-0100

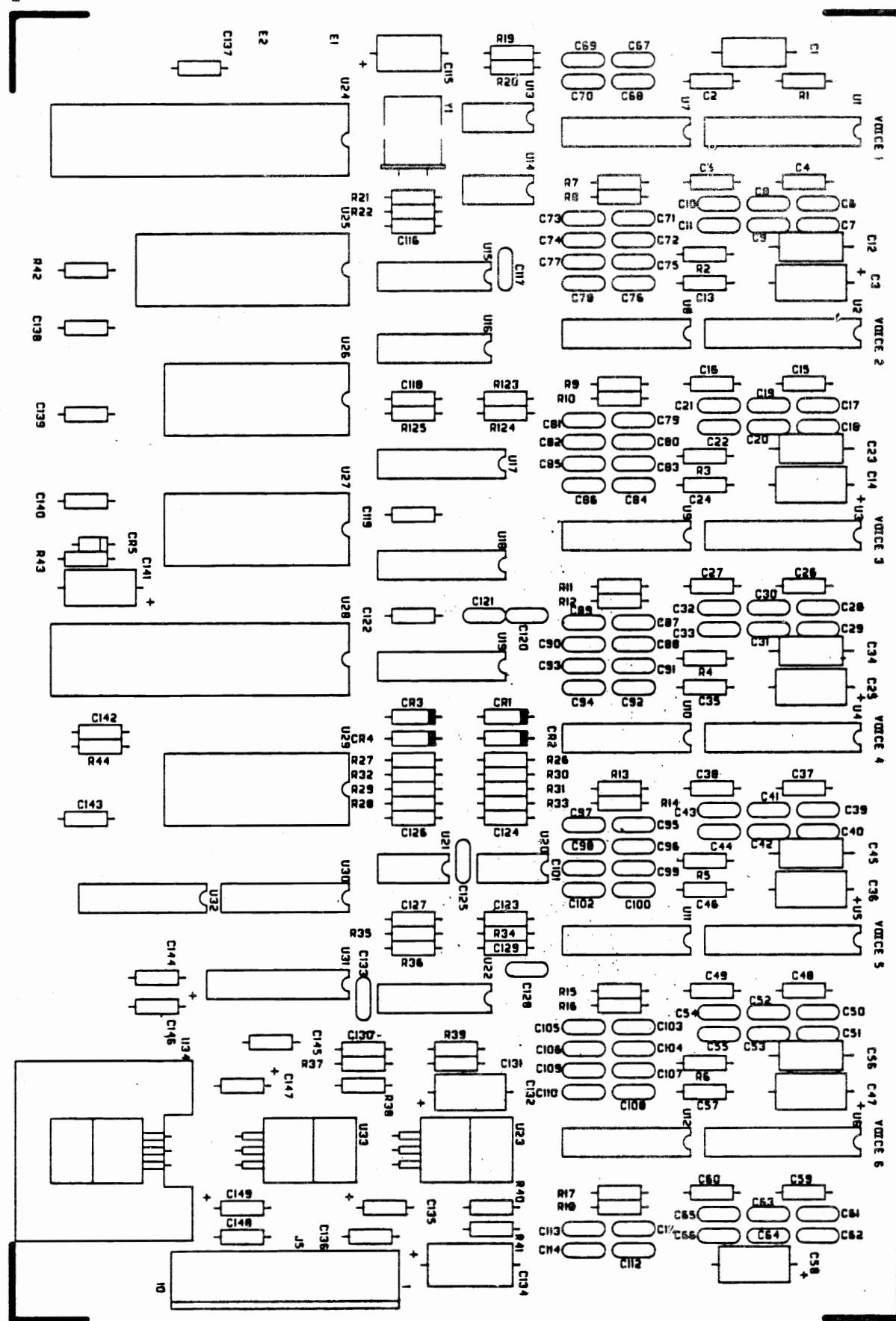


BALLY SENTE  
ROM BOARD

SILKSCREEN  
LEPKE DESIGN  
JOB 951  
1 17 86







CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
PCB, AUDIO 6VB	1	PCB	U007-08002-010R
PROM., 6VB SOUND	1	U25	U015-08002-100R
DIODE, SI, 10MA, 75PIV	1	CR5	U100-08002-0100
DIODE, GR, 50MA, 75PIV, IN34	4	CR1, CR2, CR3, CR4	U100-00006-0100
IC, DIG, TTL, 74LS04, HEX INVERTER	1	U15	U200-00041-0100
IC, DIG, CMOS, 4049UR, HEX INVERTER	1	U19	U210-00005-0100
IC, DIG, CMOS, 4051B, 8 CHAN MUX	6	U7, U8, U9, U10, U11, U12	U210-00006-0100
IC, DIG, CMOS, 4174B, HEX D F/F	4	U17, U18, U30, U32	U210-00007-0100
IC, DIG, CMOS, 74HCT74, DUAL D F/F	1	U16	U210-00013-0100
IC, DIG, RAM, 6116, 2K X 8, 200NS	2	U26, U27	U240-00005-0100
IC, DIG, MPU, Z80A	1	U24	U250-00007-0100
IC, DIG, MPS, 68B50, ACIA, 75MHZ	1	U29	U250-00010-0100
IC, LIN, COMP, LM311N	1	U21	U260-00007-0100
IC, LIN, VR, 7805, 5V POS	2	U33, U34	U260-00008-0100
IC, LIN, VR337T, VARIABLE NEG.	1	U23	U260-00027-0100
IC, LIN, OPAMP, TL084, QUAD, JFET	1	U22	U260-00029-0100
IC, SP, DAC 12 BIT, 7541	1	U31	U260-00031-0100
IC, SP, SOUND, SYNTH, CEM3394	6	U1, U2, U3, U4, U5, U6	U260-00033-0100
IC, SP, NOISE SOURCE MM5837	1	U13	U260-00040-0100
IC, SP, SOUND CONTROLLER, ST1001, (CUSTOM)	1	U28	U260-00041-0100
IC, LIN, OPAMP, TL081, JFET	1	U20	U260-00048-0100
CAP, CER, RAD, 0.1UF, 50V, 20%	39	C2, C4, C5, C13, C15, C16, C24, C26, C27, C35, C37, C38, C46, C48, C49, C57, C59, C60, C116, C118, C119, C122-C124, C126, C127, C129, C130, C131, C136-C140, C142-C145, C148, C125, C128, C133	U300-00002-0100 U300-00011-0100
CAP, CER, RAD, 33PF, 50V, 10%	3	C125, C128, C133	U300-00011-0100
CAP, CER, RAD, 680PF, 50V, 5%	7	C8, C19, C30, C41, C52, C63, C117	U300-00012-0100
CAP, TANT, AXL, 1.0MF, 20V, 20%	4	C135, C146, C147, C149	U310-00016-0100
CAP, TAN, AXL, 47UF, 10V, 20%	1	C134	U310-00017-0100
CAP, PES, RAD, 0.001UF, 100V, 10%	12	C6, C7, C17, C18, C28, C29, C39, C40, C50, C51, C61, C62	U330-00005-0100

U006-08002-100C  
(M051-00C52-C015)

SIKESCREEN  
LEPRE DESIGN  
JOB-532  
7-12-84

BALLY SERVICE  
AUDIO 6VB

CROSS REFERENCE LIST

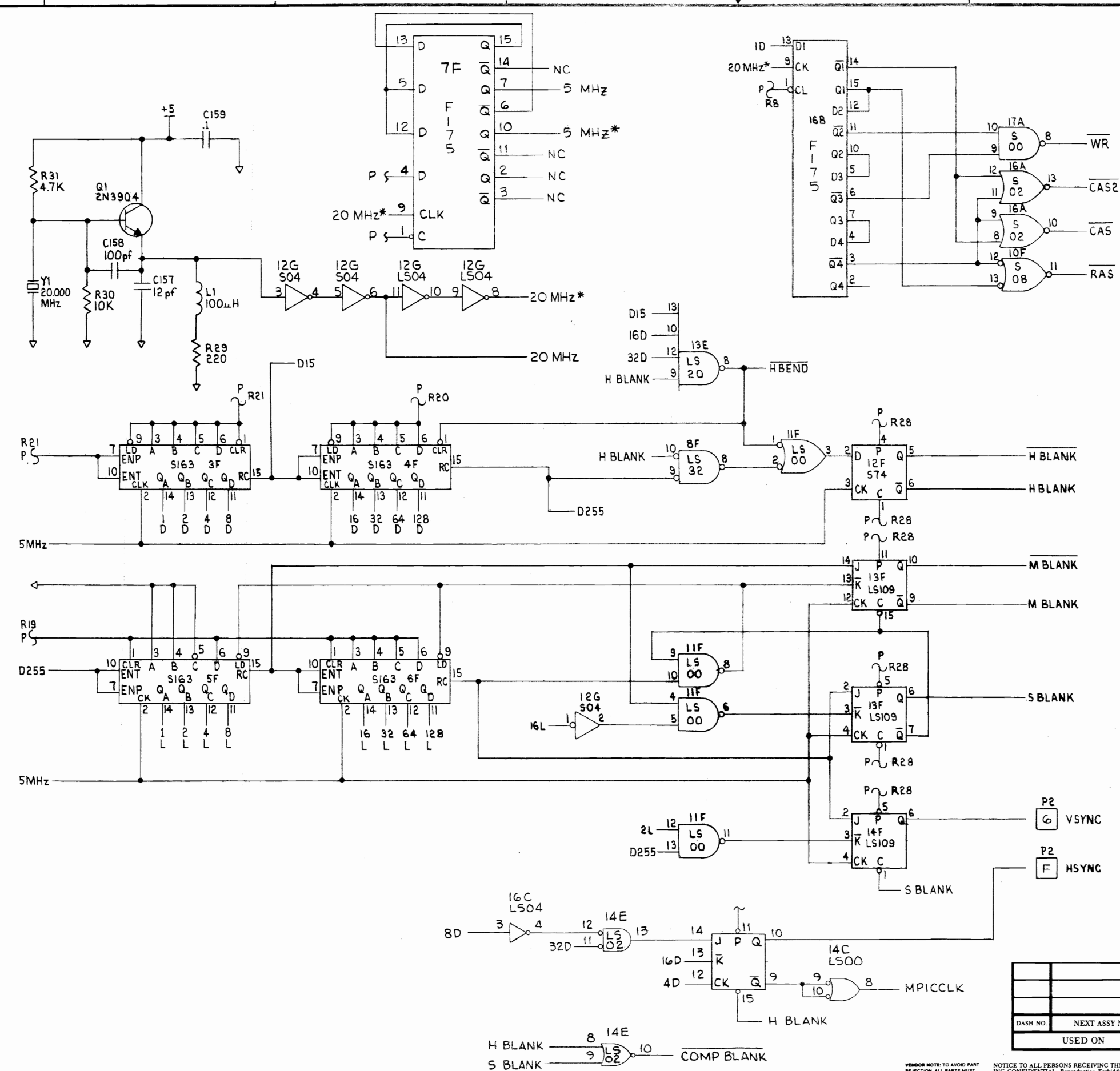
<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
CAP,PES,RAD,0.01MF,100V	48	C67,C68,C69,C70 C71,C72,C73,C74 C75,C76,C77,C78 C79,C80,C81,C82 C83,C84,C85,C86 C87,C88,C89,C90 C91,C92,C93,C94 C95,C96,C97,C98 C99,C100,C101 C102,C103,C104 C105,C106,C107 C108,C109,C110 C111,C112,C113 C114	U330-00006-0100
CAP,PES,RAD,0.033MF,100V,10%	20	C9,C10,C11,C20 C21,C22,C31,C32 C33,C42,C43,C44 C53,C54,C55,C64 C65,C66,C120,C121	U330-00007-0100
CAP,PST,AXL,0.002UF,100V,5%	6	C1,C12,C23,C34,C45 C56	U330-00009-0100
CAP,ELC,AXL,2.2UF,63V,50/-10%	2	C115,C132	U340-00016-0100
CAP,ELC,AXL,10MF,35V,50/-10%	7	C3,C14,C25,C36,C47 C58,C141	U340-00017-0100
RES,CF,1/4W,5%,1K OHM	2	R20,R26	U400-01001-0100
RES,CF,1/4W,5%,1.0M OHM	12	R7,R8,R9,R10,R11 R12,R13,R14,R15 R16,R17,R18	U400-01004-0100
RES,CF,1/4W,5%,2.2K OHM	1	R125	U400-02201-0100
RES,CF,1/4W,5%,270K OHM	2	R123,R124	U400-02703-0100
RES,CF,1/4W,5%,330 OHM	2	R21,R22	U400-03300-0100
RES,CF,1/4W,5%,33 OHM	1	R31	U400-03307-0100
RES,CF,1/4W,5%,4.7K OHM	5	R29,R30,R39,R44 R27	U400-04701-0100
RES,CF,1/4W,5%,47K OHM	4	R32,R33,R42,R43	U400-04702-0100
RES,CF,1/4W,5%,68K OHM	1	R19	U400-06802-0100
RES,CF,1/4W,5%,10M OHM	1	R28	U400-01005-0100
RES,MF,1/8W,1%,1.00K OHM	1	R38	U450-01001-0100
RES,MF,1/8W,1%,10.0K OHM	1	R36	U450-01002-0100
RES,MF,1/8W,1%,121 OHM	1	R41	U450-01210-0100

CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
RES,MF,1/8W,1%,19.6K OHM	1	R35	U450-01962-0100
RES,MF,1/8W,1%,20.0K OHM	1	R34	U450-02002-0100
RES,MF,1/8W,1%,301K OHM	6	R1,R2,R3,R4,R5,R6	U450-03013-0100
RES,MF,1/8W,1%,4.02K OHM	1	R37	U450-04021-0100
RES,MF,1/8W,1%,499 OHM	1	R40	U450-04990-0100
CONN. 10 PIN LOCKING	1	J5	U550-00062-0100
SCREW PAN HD-PHL 6-32 X 3/8	3		U801-00632-0601
NUT,HEX,SM PAT,6-32	3		U816-00632-0001
CRYSTAL,8,000 MHZ	1	Y1	U820-00003-0100
WASHER SPLIT LOCK 6	3		U822-00006-0001
HEATSINK,THRM 6071	1	HS-2	U850-00008-0100
SOCKET,IC,24P,LOW PRO	3	U26,U27,U29	110E-00001-0007
SOCKET,IC,28P,LOW PRO	1	U25	110E-00001-0010
SOCKET,IC,40P,LOW PRO	1	U24	110E-00001-0011
HEATSINK THRM T0-220	1	HS-1	112E-00001-0010

**SECTION 4**  
**PCB Schematics**

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
A	1892		PRODUCTION RELEASE	1/28/83	AD
B	1931		U7F, U16B WAS 74S175; IS 74F175	2/7/83	AD
C	1947		U9B, U7E WAS 74S273; IS 74F374		
C	1963		ADDED RPI11, T4E0, RPI5, SHT #15, 4.70F10, MODIFIED SHT 1 ZONE C6 + C7	2/2/84	AD
C1	1990		U13A WAS LS157; IS 5157, U11B WAS LS175 IS LS174, ADDED U20A + U16G	8/5/89	AD



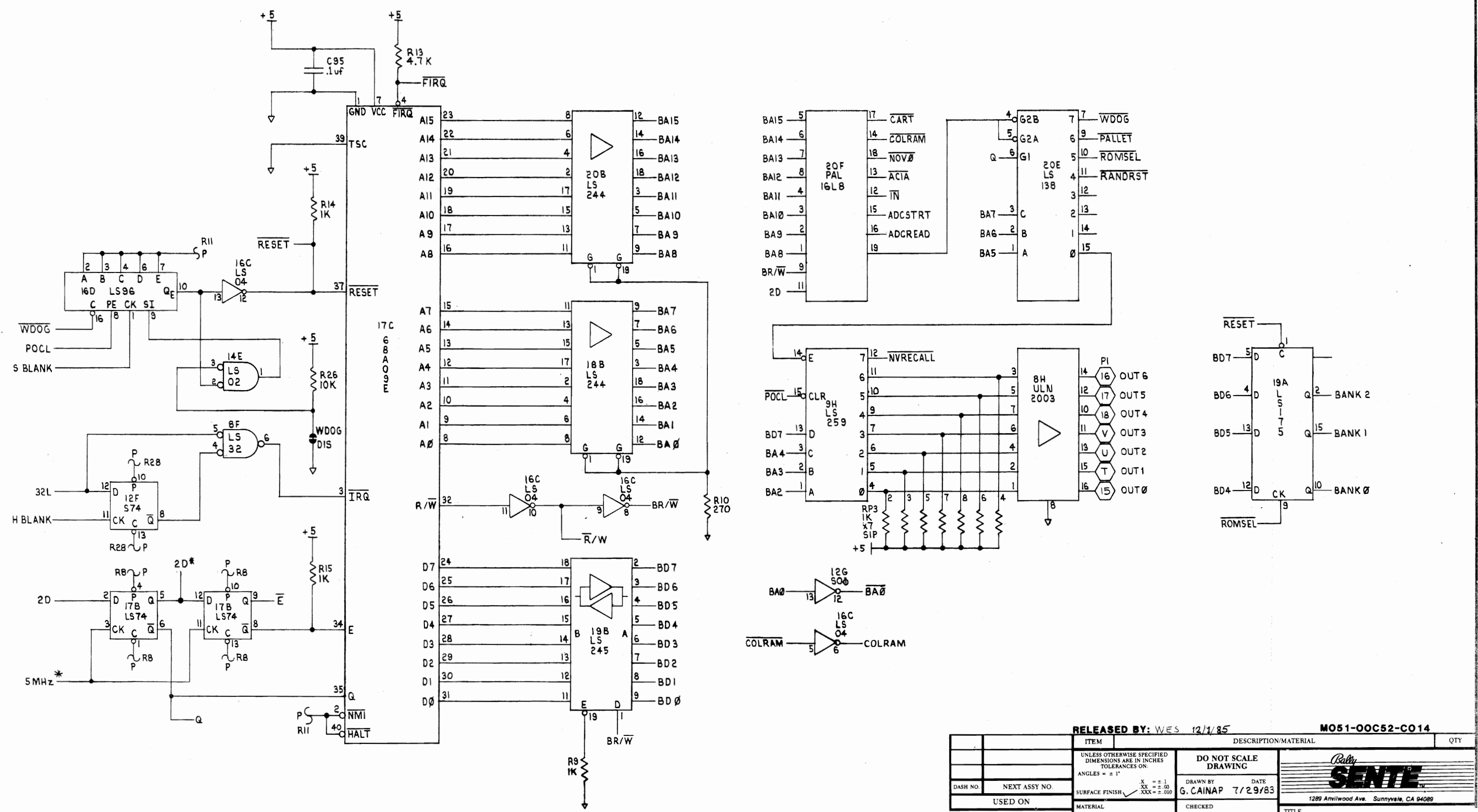
**VENDOR NOTE:** TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN. CONTACT BUYER PRIOR TO SHIPMENT.

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ITEM	DESCRIPTION/MATERIAL	QTY
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°	
DASH NO.	NEXT ASSY NO.	
USED ON		
MATERIAL		
FINISH		
<b>DO NOT SCALE DRAWING</b> DRAWN BY: G. CAINAP DATE: 7/1/83 CHECKED: [Signature] ENGINEER: [Signature] MFG. ENGINEER: [Signature] PROJECT ENGINEER: [Signature]		 1289 Anvilwood Ave. Sunnyvale, CA 94089 TITLE: PCB SCHEMATIC, CPU, SAC-I SIZE: D DRAWING NO.: 008-8001-01-0C REV.: C1 SCALE: NONE SHEET 1 OF 10

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



RELEASED BY: WES 12/1/85      MOS1-OOC52-CO 14

ITEM	DESCRIPTION/MATERIAL	QTY
DASH NO.	NEXT ASSY NO.	USED ON

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ON:  
ANGLES = ± 1°  
SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010

DO NOT SCALE DRAWING

DRAWN BY G. CAINAP DATE 7/29/83

CHECKED

ENGINEER

PROJECT ENGINEER

**SENTINEL**  
1289 Arvilwood Ave. Sunnyvale, CA 94089

TITLE  
PCB SCHEMATIC, CPU, SAC-I

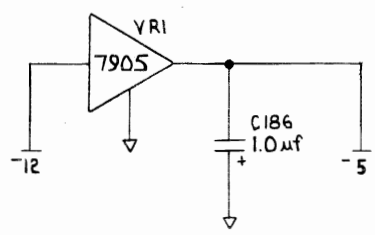
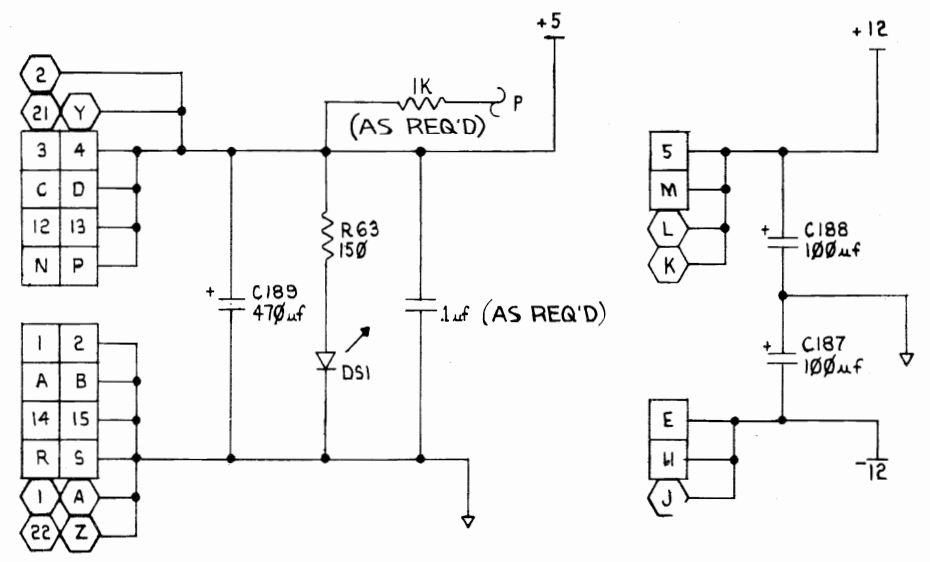
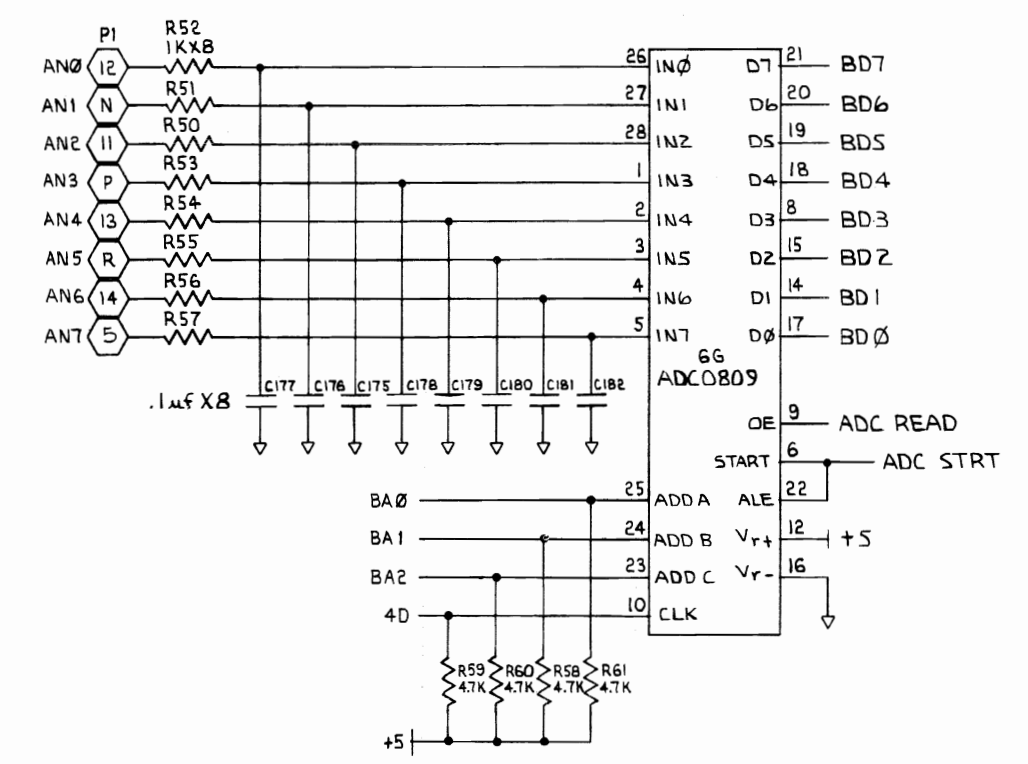
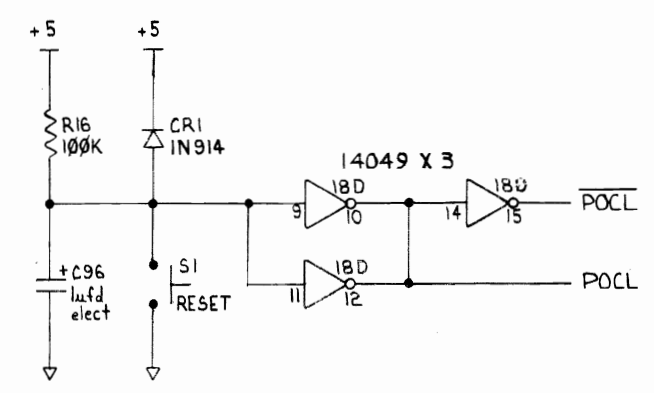
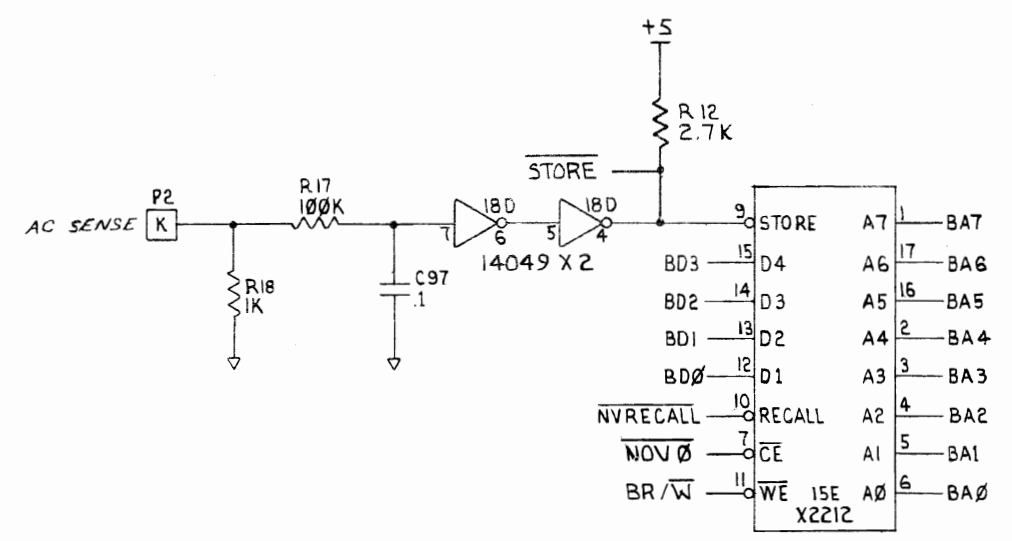
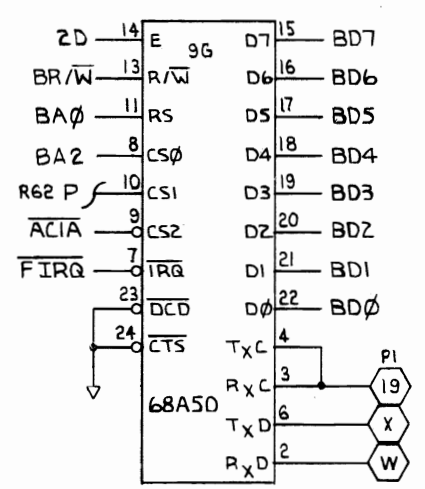
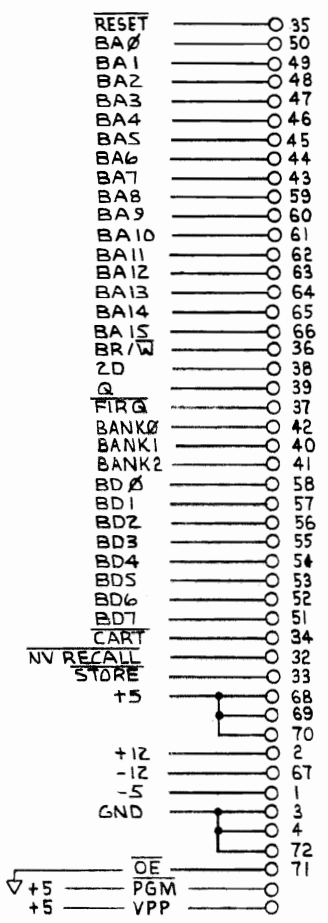
SIZE D DRAWING NO. 008-8001-01-0C REV C

SCALE NONE SHEET 2 OF 10

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED

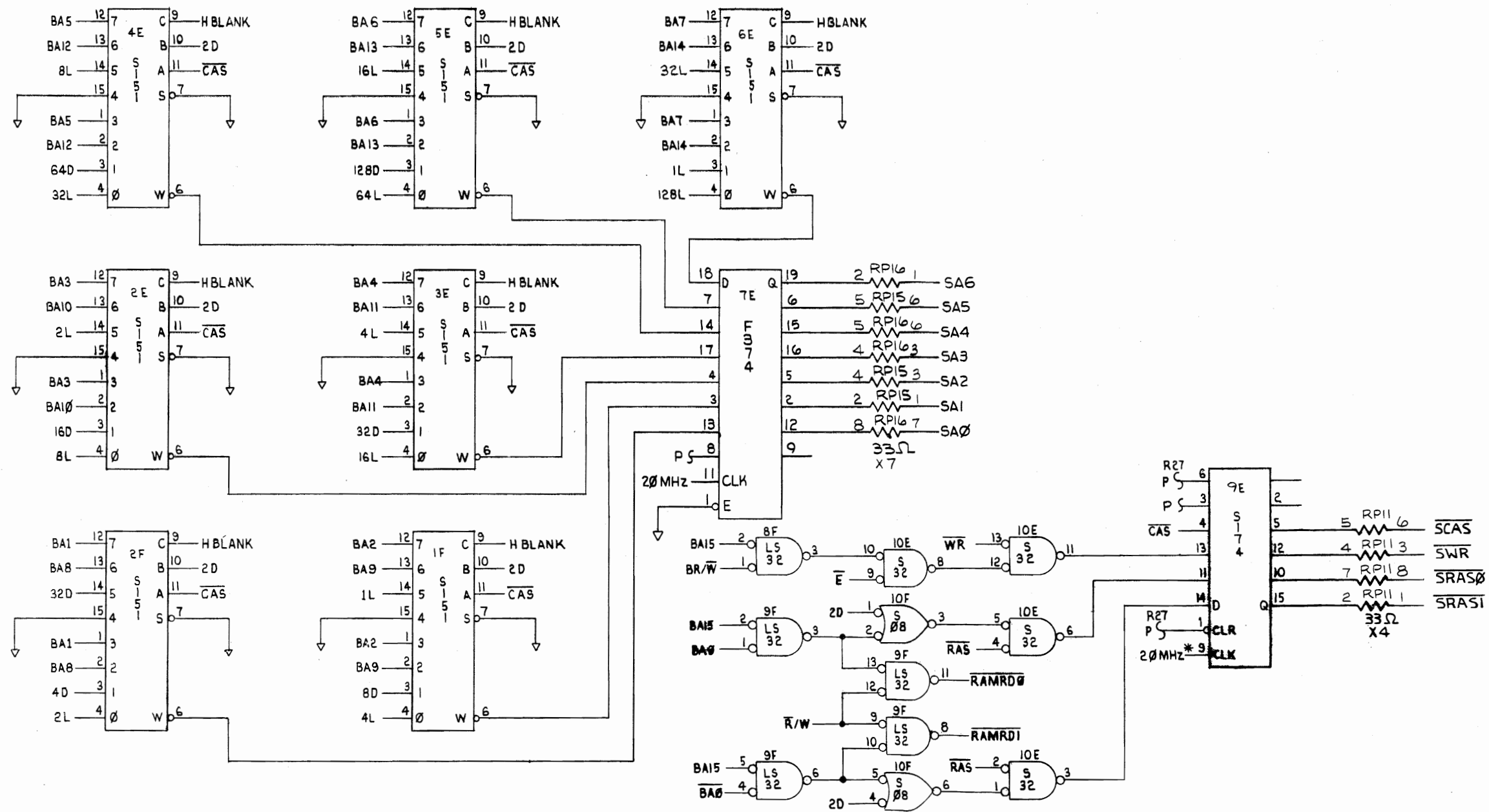


VENDOR NOTE: TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P.T.T. PART NUMBER, EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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RELEASED BY: WES 12/1/85		M051-00C52-C014	
ITEM	DESCRIPTION/MATERIAL	QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°		DO NOT SCALE DRAWING	
DASH NO.	NEXT ASSY NO.	SURFACE FINISH	DRAWN BY DATE G. CAINAP 7-29-83
USED ON		CHECKED	ENGINEER 11-21-83
MATERIAL		MFG. ENGINEER	
FINISH		PROJECT ENGINEER	
TITLE PCB SCHEMATIC, CPU, SAC-I		SIZE D	DRAWING NO. 008-8001-01-00
SCALE NONE		SHEET 3 OF 10	

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



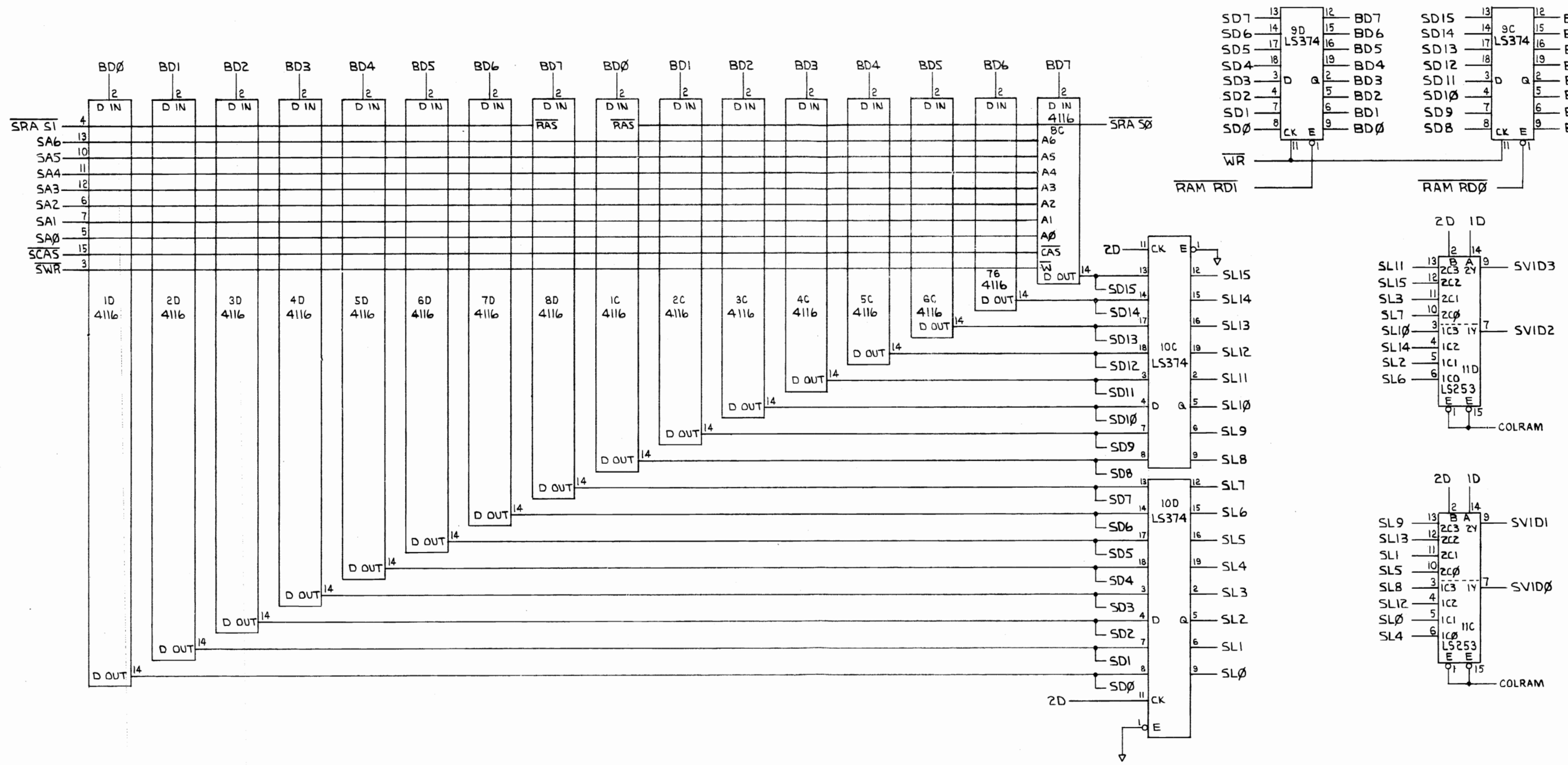
RELEASED BY: WES 12/1/85 MO51-OOC52-CO14

ITEM	DESCRIPTION/MATERIAL	QTY
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DASH NO.	NEXT ASSY NO.	
USED ON		
MATERIAL	CHECKED	
FINISH	ENGINEER	
	MFG. ENGINEER	
	PROJECT ENGINEER	
1289 Anvilwood Ave. Sunnyvale, CA 94089		
TITLE		
PCB SCHEMATIC, CPU, SAC-I 4-5		
SIZE	DRAWING NO.	REV
D	O08-8001-01-OC	CI
SCALE	NONE	SHEET 4 OF 10

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH P.T.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



RELEASED BY: WES 12/1/85 MO51-OOC52-C014

ITEM	DESCRIPTION/MATERIAL	QTY

DASH NO.	NEXT ASSY NO.	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1° SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010

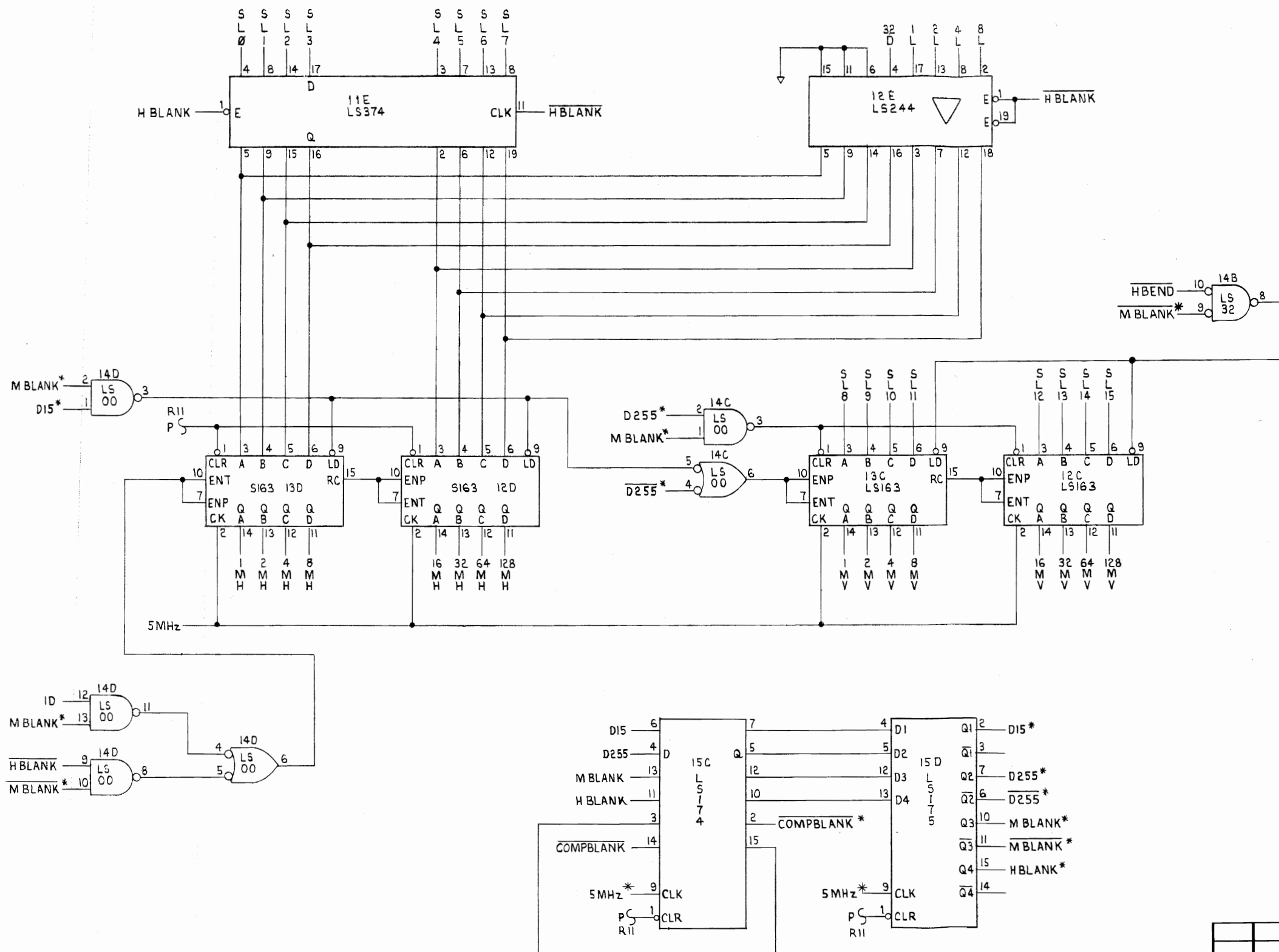
<b>DO NOT SCALE DRAWING</b> DRAWN BY: G. CAINAP DATE: 7-29-83 CHECKED: ENGINEER: MFG ENGINEER: PROJECT ENGINEER: FINISH: TITLE: PCB SCHEMATIC, CPU. SAC-I SIZE: D DRAWING NO. 008-8001-01-0C SCALE: NONE SHEET 5 OF 10		 1289 Amilwood Ave. Sunnyvale, CA 94089 TITLE: PCB SCHEMATIC, CPU. SAC-I SIZE: D DRAWING NO. 008-8001-01-0C SCALE: NONE SHEET 5 OF 10

VENDOR NOTE TO AVOID PART SELECTION: ALL PARTS MUST BE MARKED WITH P.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS SAG AND TAG IF UNCERTAIN. CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED

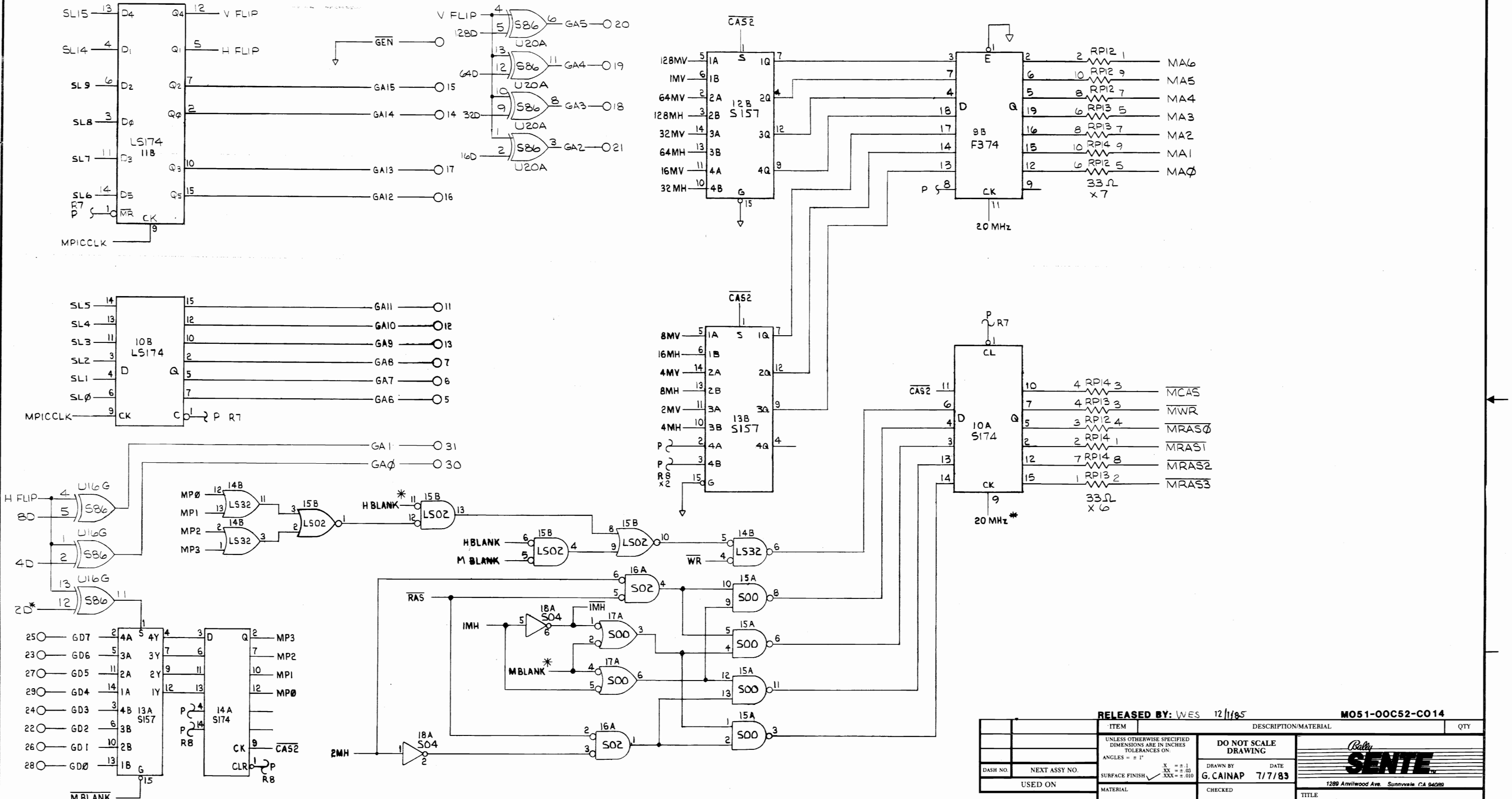


RELEASED BY: WES 12/1/83		MO51-OOC52-CO14	
ITEM	DESCRIPTION/MATERIAL	QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = 1°		DO NOT SCALE DRAWING	
DASH NO.	NEXT ASSY NO.	DRAWN BY	DATE
USED ON		G. CAINAP	7-29-83
MATERIAL	CHECKED	TITLE	
		PCB SCHEMATIC, CPU, SAC-I 4-7	
FINISH	MFG ENGINEER	SIZE	DRAWING NO.
		D	008-8001-01-OC
	PROJECT ENGINEER	SCALE	NONE
		SHEET	6 OF 10

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH P.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



VENDOR NOTE: TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P.T.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG. IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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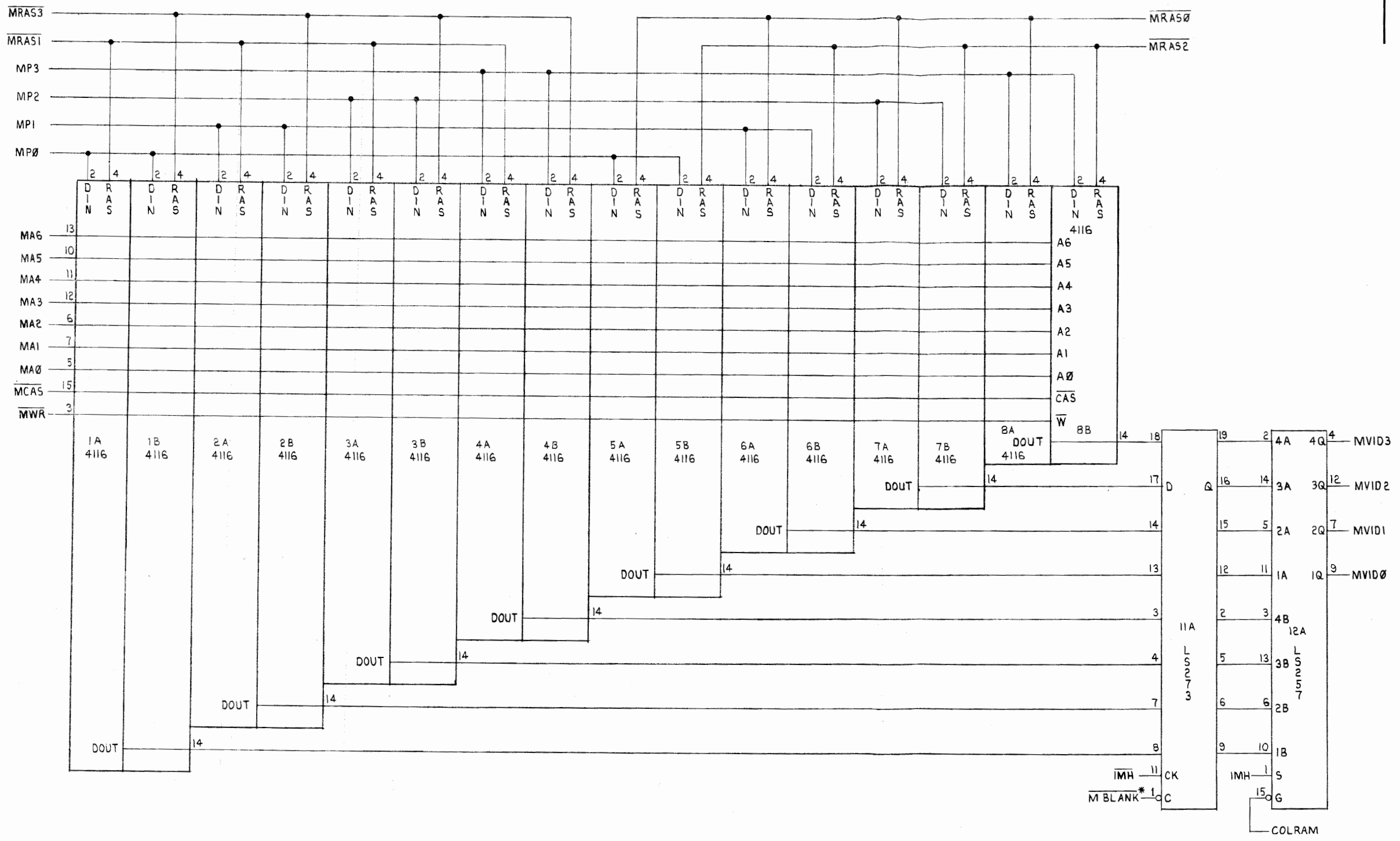
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**DO NOT SCALE DRAWING**  
DRAWN BY DATE  
G. CAINAP 7/7/83  
CHECKED  
ENGINEER  
MFC. ENGINEER  
PROJECT ENGINEER

*Bally*  
**SENTE**  
1289 Armitwood Ave. Sunnysvale CA 94088

TITLE  
PCB SCHEMATIC,  
CPU, SAC-I  
SIZE DRAWING NO.  
D 008-8001-01-0C  
SCALE NONE SHEET 7 OF 10

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



**VENDOR NOTE: TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P.T.T. PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG, IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.**

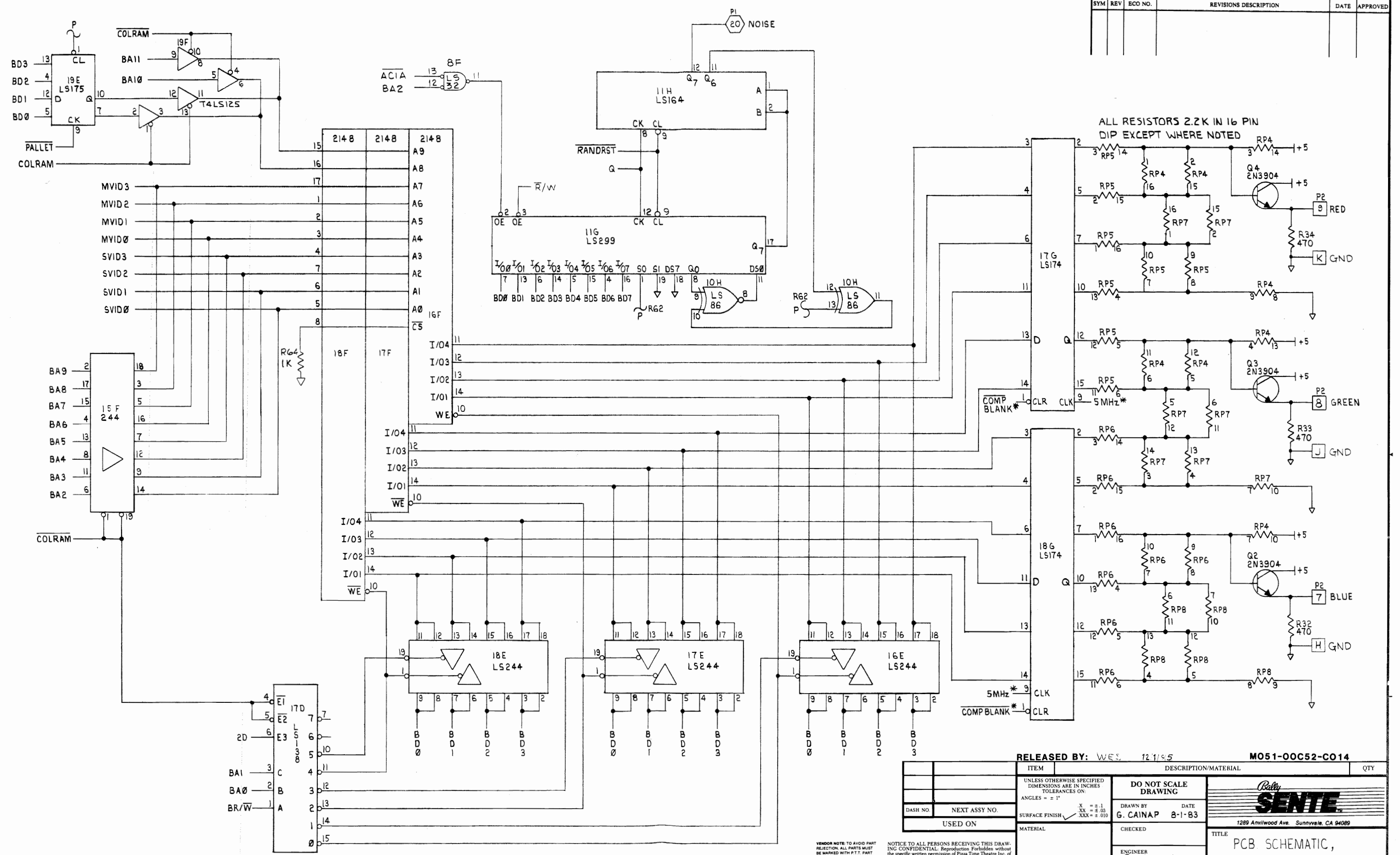
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RELEASED BY: WES 12/1/85		MO51-00C52-C014	
ITEM	DESCRIPTION/MATERIAL	QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:		DO NOT SCALE DRAWING	
ANGLES = ± 1°		DRAWN BY G. CAINAP DATE 8-1-83	
DASH NO.	NEXT ASSY NO.	SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010	
USED ON		CHECKED	
MATERIAL		ENGINEER <i>G. Cainap</i>	
FINISH		MFG. ENGINEER	
		PROJECT ENGINEER	
SIZE D	DRAWING NO. 008-8001-01-0C	REV	C1
SCALE NONE	SHEET 8	OF 10	



TITLE  
PCB SCHEMATIC, 4-9  
CPU, SAC-I

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED

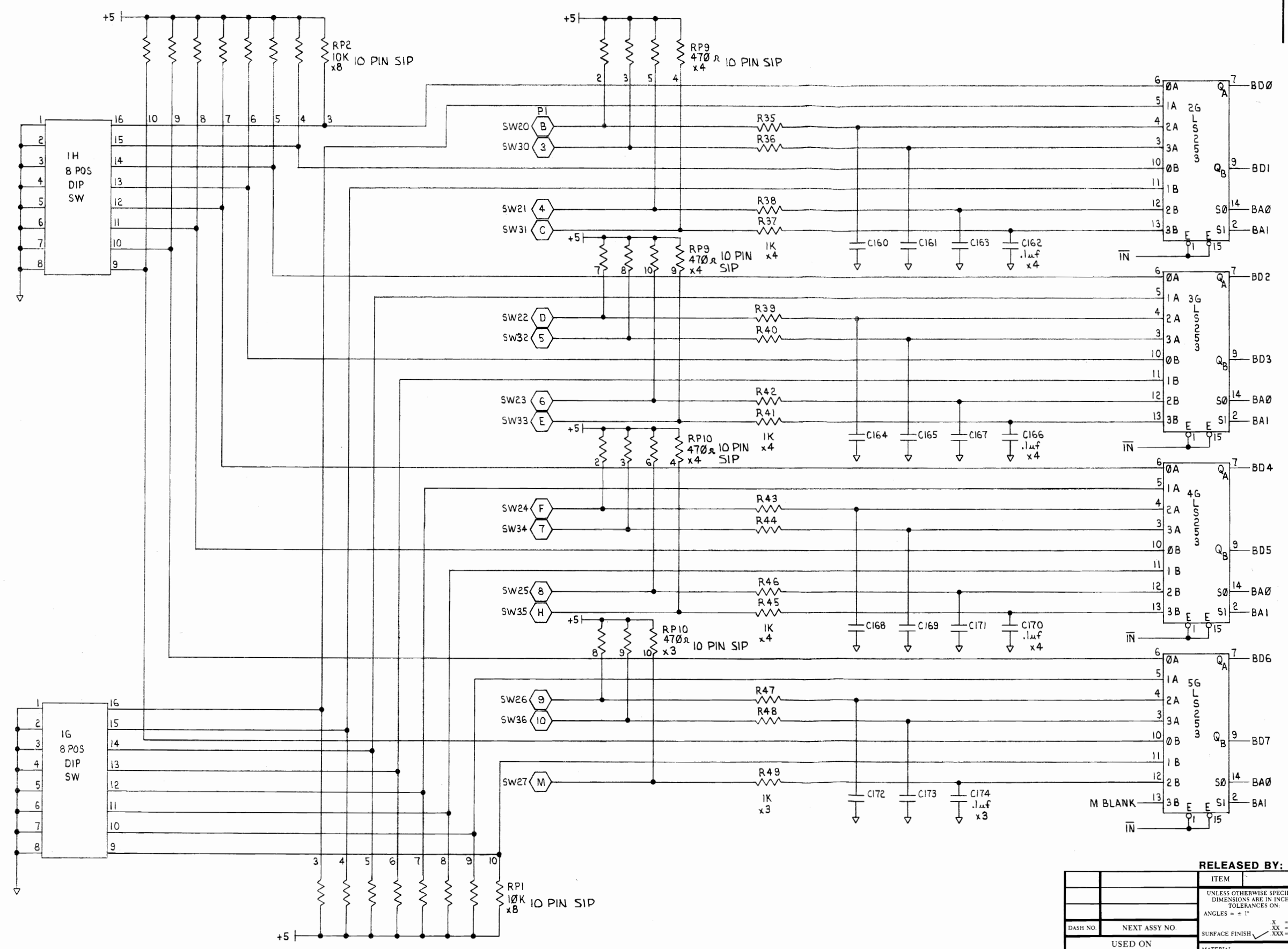


RELEASED BY: WES. 12/1/85		MO51-00C52-C014	
ITEM	DESCRIPTION/MATERIAL	QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:		DO NOT SCALE DRAWING	
ANGLES = ± 1°		DRAWN BY DATE	
DASH NO. NEXT ASSY NO.		G. CAINAP 8-1-83	
USED ON		CHECKED	
MATERIAL		ENGINEER	
FINISH		MFG. ENGINEER	
		PROJECT ENGINEER	
		TITLE	
		PCB SCHEMATIC, CPU, SAC-I	
SIZE	DRAWING NO.	REV	
D	008-8001-01-0C	CI	
SCALE	NONE	SHEET 9 OF 10	

**VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH P.T.Y. PART NUMBER, EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.**

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



RELEASED BY: WSS 1/17/86 MO51-OOC52-C014

ITEM		DESCRIPTION/MATERIAL		QTY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:				
ANGLES = ± 1°				
SURFACE FINISH				
DASH NO		NEXT ASSY NO		
USED ON				
MATERIAL		FINISH		

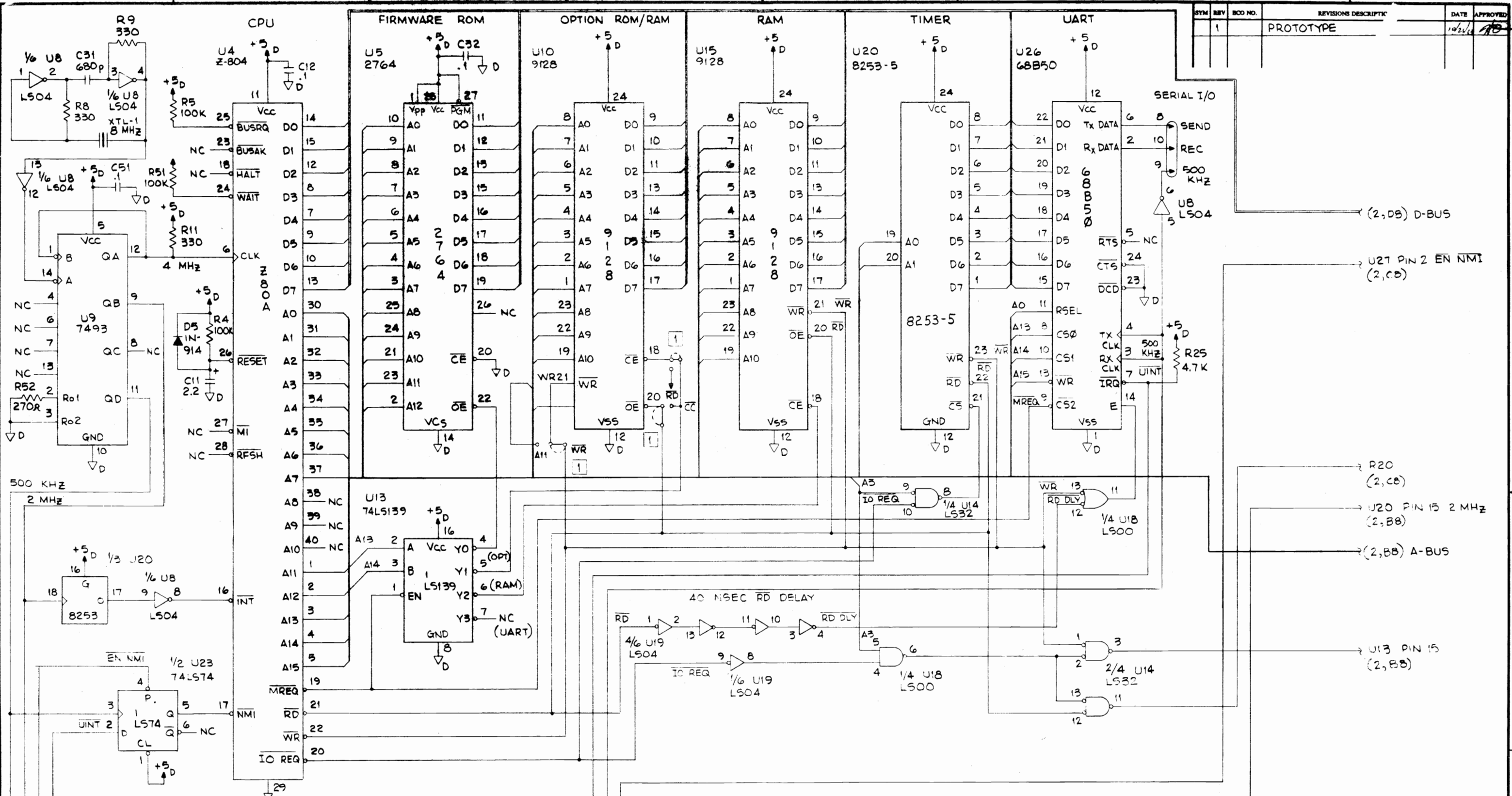
DO NOT SCALE DRAWING	
DRAWN BY G.CAINAP	DATE 8/1/83
CHECKED	
ENGINEER <i>[Signature]</i>	
MFG ENGINEER	
PROJECT ENGINEER	

TITLE PCB SCHEMATIC, CPU, SAC-I		4-11
SIZE D	DRAWING NO. 008-8001-01-0C	
SCALE NONE		SHEET 10 OF 10

VENDOR NOTE TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P I T PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	BOD NO.	REVISIONS	DATE	APPROVED
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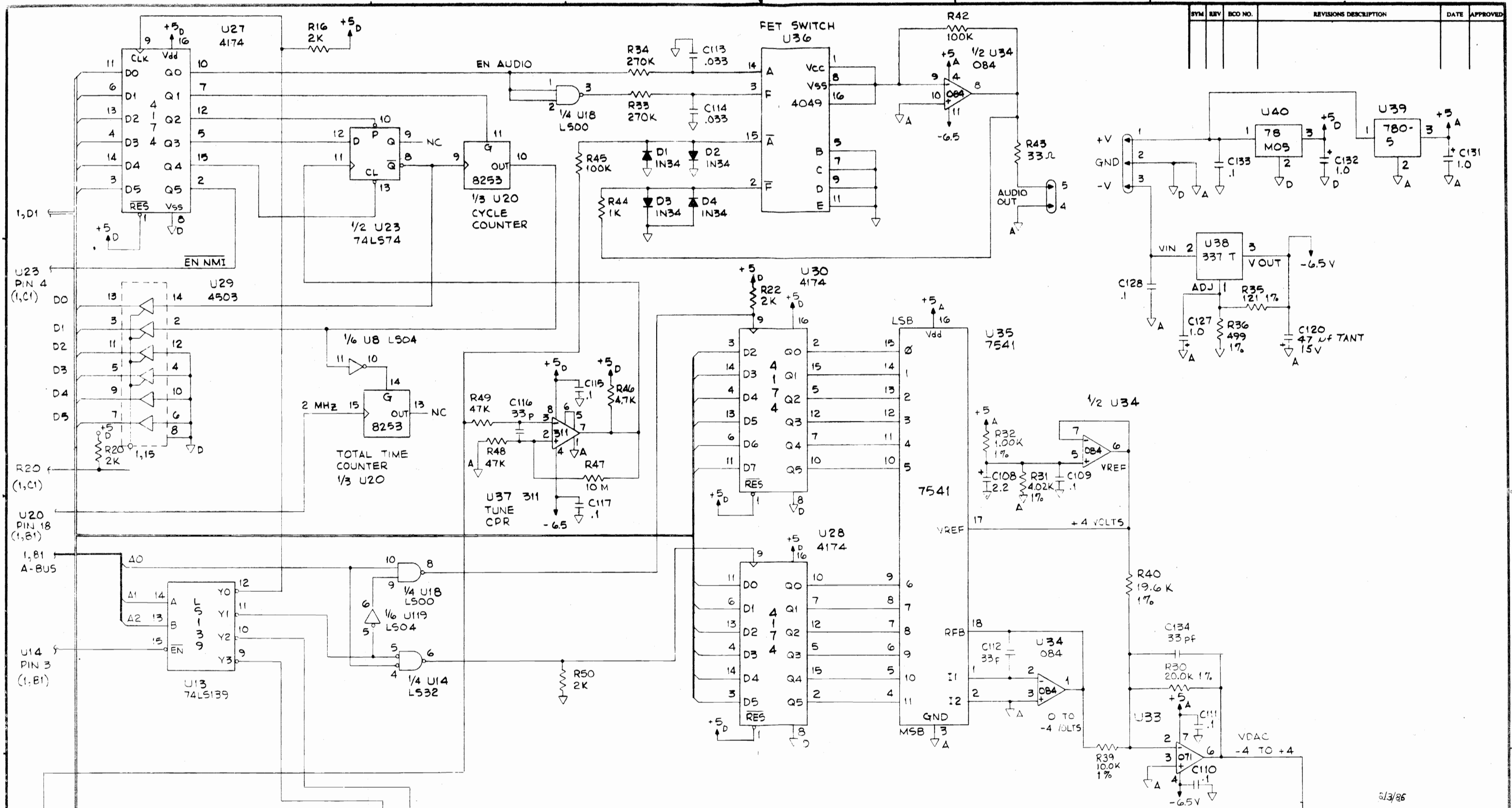


4-12  
LAST USED REFERENCE DESIGNATORS: R52, C134, U40, D5, XTAL-1, P1  
NOTES - UNLESS OTHERWISE SPECIFIED:

RELEASING BY: WES 3/3/86 MO51-OOC52-A016					
ITEM		DESCRIPTION/MATERIAL		QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°					
DASH NO.		NEXT ASSY NO.		USED ON	
MATERIAL		CHECKED		ENGINEER	
FINISH		MFG ENGINEER		PROJECT ENGINEER	
DRAWING NO. 008-8002-01 SCALE NONE SHEET 1 OF 3					



SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



5/3/86 RELEASED BY: WES MO51-00C52-A018

ITEM	DESCRIPTION/MATERIAL	QTY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES - = 1°

SURFACE FINISH: X = .1, XX = .05, XXX = .010

USED ON

MATERIAL

FINISH

DO NOT SCALE DRAWING

DRAWN BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED \_\_\_\_\_

ENGINEER \_\_\_\_\_

MFG ENGINEER \_\_\_\_\_

PROJECT ENGINEER \_\_\_\_\_

**Bally**  
**SENTE**  
1289 Anvilwood Ave. Sunnyvale, CA 94089

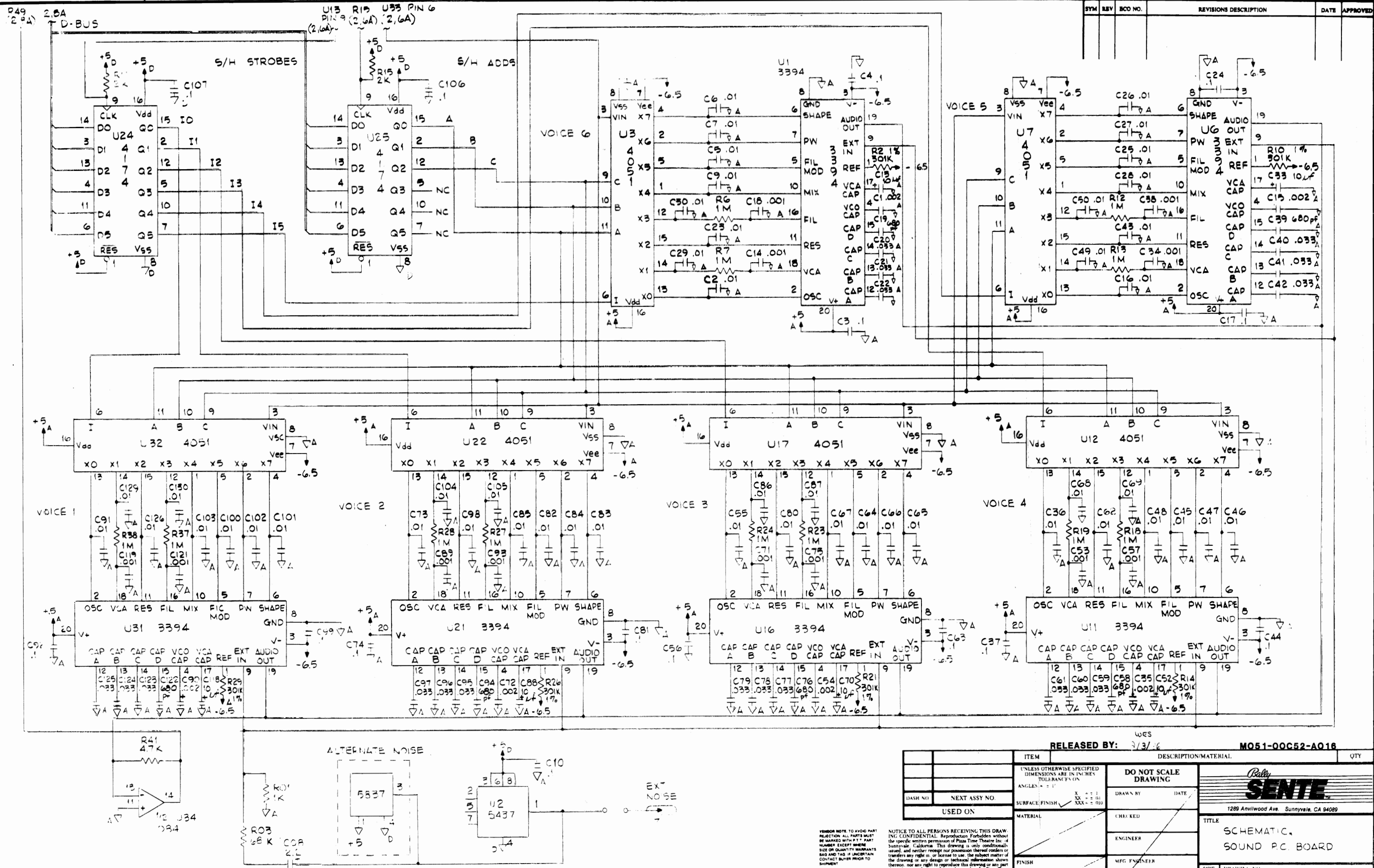
TITLE  
**SCHEMATIC, 6VB4-13**  
SOUND P.C. BOARD

SIZE **D** DRAWING NO  
008-8002-01

SCALE NONE SHEET 2 OF 3

R41 (3, D8)  
3, D8  
D-BUS

U24 PIN 9 (3, D6)  
R15 (3, D6)  
U3 PIN 3 (3, D6)



SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED

RELEASED BY: 3/3/16 WES MO51-00C52-A016

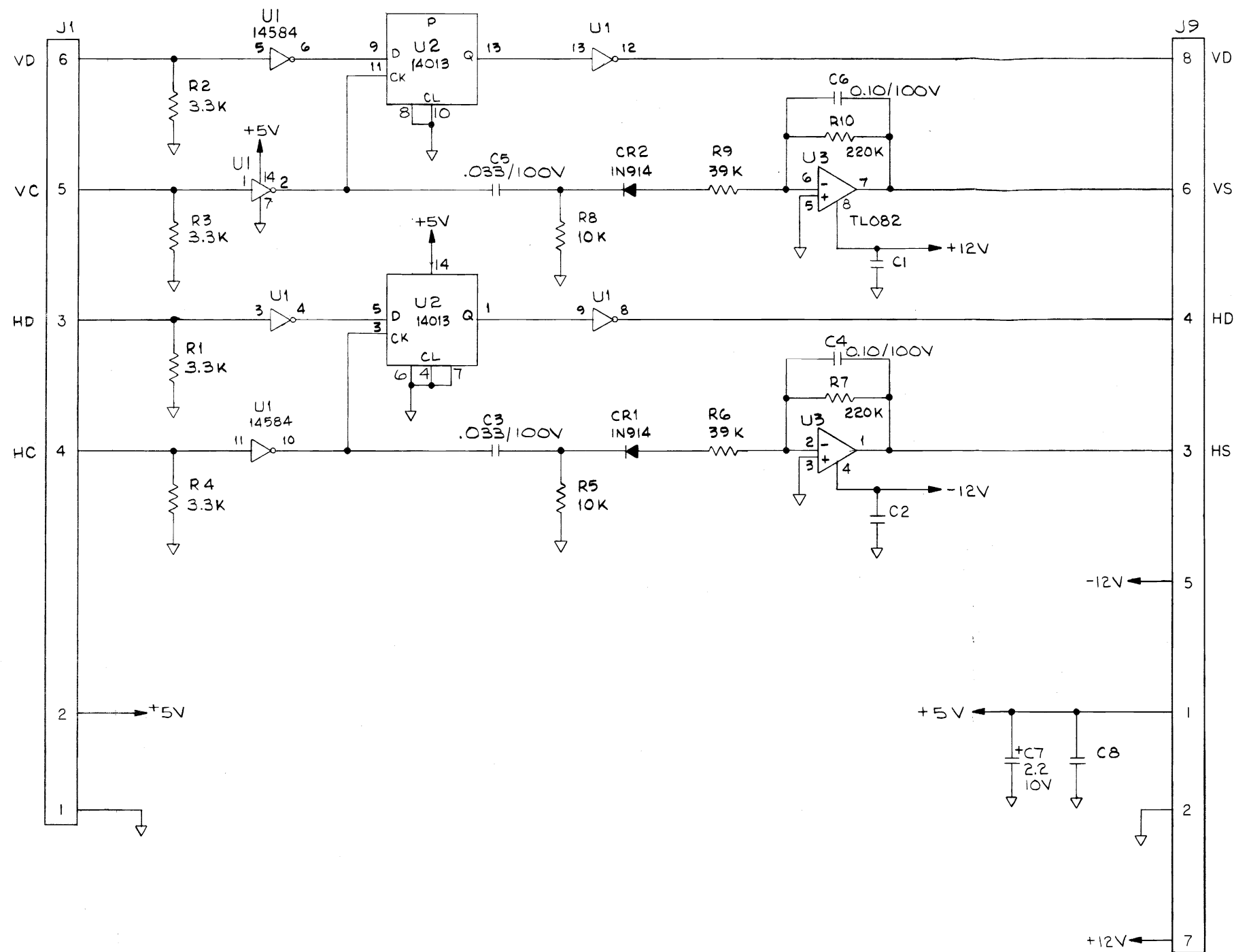
ITEM	DESCRIPTION/MATERIAL	QTY
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = 1°	
	DO NOT SCALE DRAWING	
	DRAWN BY	DATE
	CHECKED	
	ENGINEER	
	MFG ENGINEER	
	PROJECT ENGINEER	
	TITLE	
	1289 Anvilwood Ave. Sunnyvale, CA 94089	
	SCHEMATIC, SOUND PC BOARD	
	SIZE D	DRAWING NO. 005-0002-01
	SCALE NONE	SHEET 3 OF 3

VEHICLE NOTE TO AVOID PART REJECTION ALL PARTS MUST BE MARKED WITH P/T PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN CONTACT SILVER PRIOR TO SHIPMENT

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
1	1		PROTOTYPE		<i>[Signature]</i>
A	1892		PRODUCTION RELEASE	11/3/83	<i>[Signature]</i>
A1	1964		R1-R4 WAS 2.2K ; R1-R4 IS 3.3K	2/21/84	<i>[Signature]</i>



NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL CAPACITORS ARE IN MICROFARADS, 0.1/50V.
2. ALL RESISTORS ARE IN OHMS, 1/4 W, 5%.
3. LAST REFERENCE DESIGNATOR USED:  
R10, C8, CR2, U3, J2.

RELEASED BY: *RLW* 10/3/85 M051-00B18-A008

ITEM	DESCRIPTION/MATERIAL	QTY
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1° SURFACE FINISH ✓ X = ± .1 XX = ± .03 XXX = ± .010	
DASH NO.	NEXT ASSY NO.	
USED ON		
MATERIAL	FINISH	

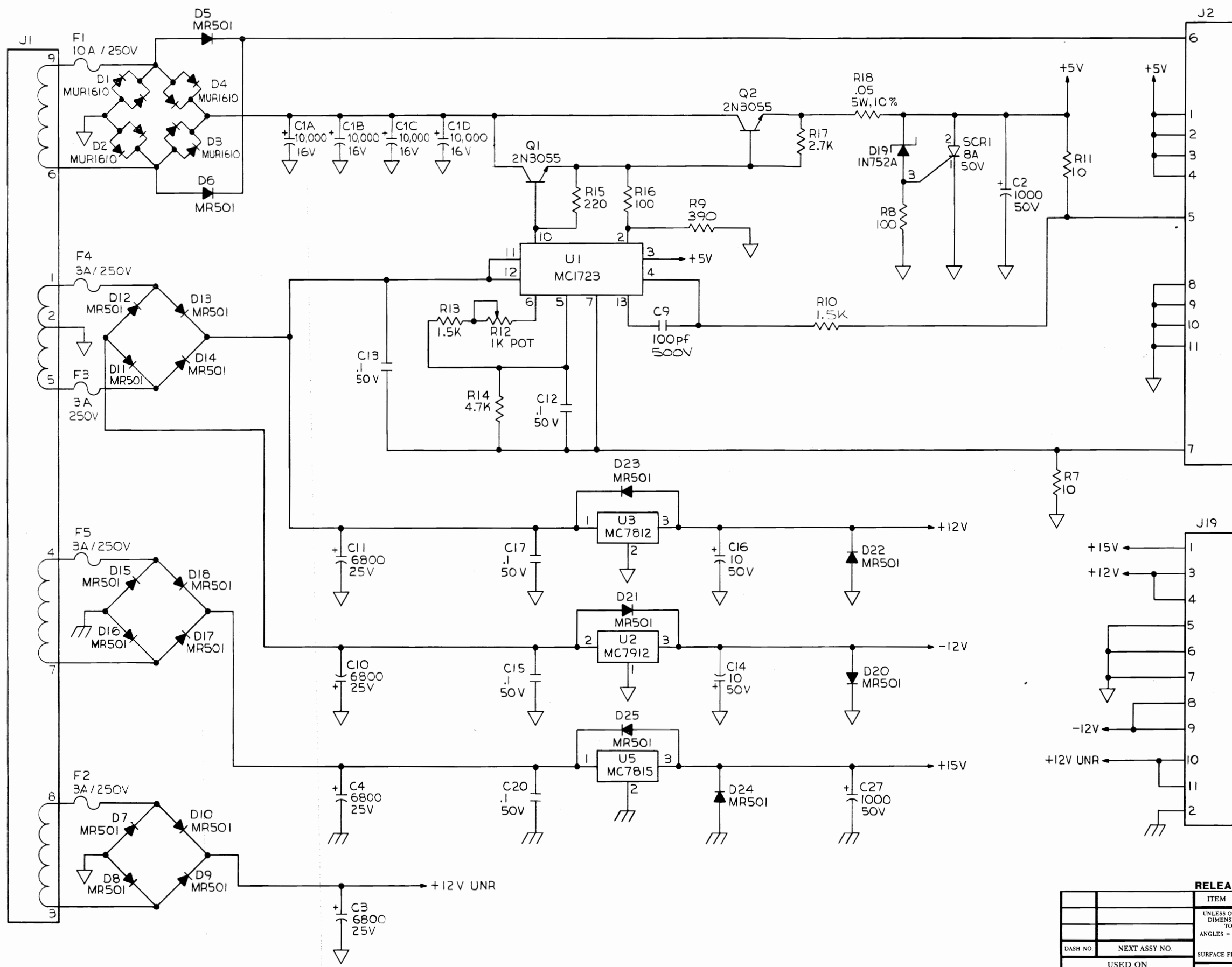
DO NOT SCALE DRAWING	DRAWN BY: <i>L. Forte</i> DATE: 11/3/83
CHECKED: <i>L. Forte</i> 11/3/83	ENGINEER: <i>[Signature]</i> 11/3/83
MFG ENGINEER: <i>[Signature]</i> 11/29/83	PROJECT ENGINEER

1289 Armitage Ave. Sunnyvale, CA 94089	
TITLE: PCB SCHEMATIC, TRACKBALL, CONV	
SIZE: 4-15	DRAWING NO. D 008-8004-10-00A
SCALE: NONE	SHEET 1 OF 1

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN. CONTACT BUYER PRIOR TO SHIPMENT.

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A	1984	PRODUCTION RELEASE		
B	1998	RELEASED REDESIGNED PCB		
01	2001	Changed RG	9/3/01	7/5



- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%.
  2. ALL CAPACITORS ARE IN MICROFARADS.
  3. LAST REFERENCE DESIGNATORS USED: R25, C27, D25, U6, Q2, F5, J19, SCRI.
  4. HEAT SINK ATTACHED TO AUDIO GROUND.
  5. = AUDIO GND  
 = GND

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SHOWN OTHERWISE. SEE OR QUANTITY WARRANTS BAG AND TAG IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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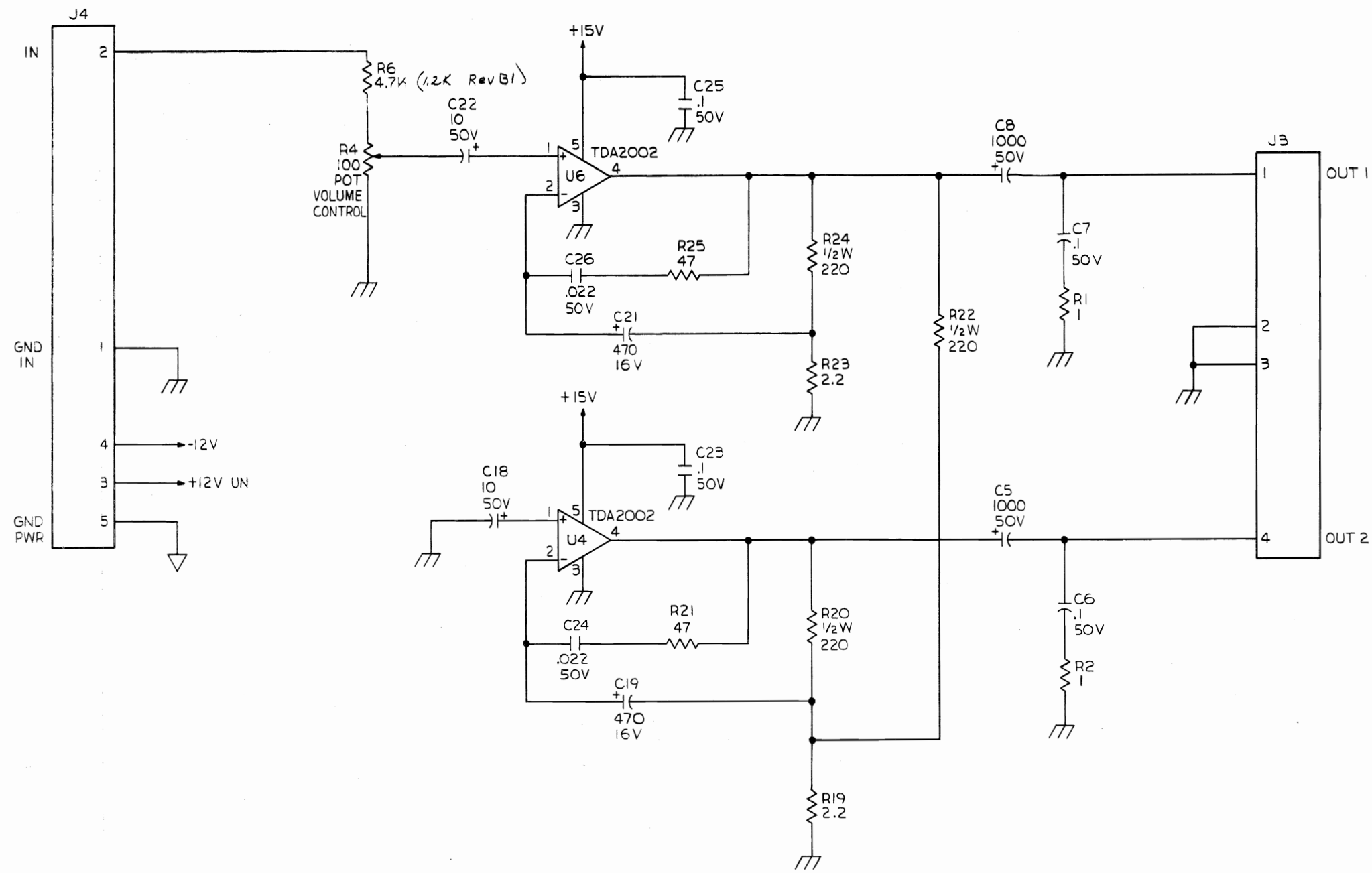
RELEASED BY: WES 2/3/86		MO51-OOC52-B018	
ITEM	DESCRIPTION/MATERIAL	QTY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:		DO NOT SCALE DRAWING	
ANGLES = ± 1°		DRAWN BY DATE	
DASH NO.	NEXT ASSY NO.	L. PERCIVAL 2/22/84	
USED ON		CHECKED L. FORTE 2/29/84	
MATERIAL		ENGINEER	
FINISH		MFG. ENGINEER	
		PROJECT ENGINEER	
SIZE	DRAWING NO.	REV	
D	008-8009-10-0B	B	
SCALE	NONE	SHEET	1 OF 2



1289 Anvilwood Ave. Sunnyvale, CA 94089

TITLE SCHEMATIC, LINEAR POWER SUPPLY

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



**RELEASED BY:** WES 2/3/86 **M051-OOC52-B018**

ITEM	DESCRIPTION/MATERIAL	QTY

**DO NOT SCALE DRAWING**

DRAWN BY: L. PERCIVAL DATE: 2/3/84

CHECKED: \_\_\_\_\_

ENGINEER: \_\_\_\_\_

MFG ENGINEER: \_\_\_\_\_

PROJECT ENGINEER: \_\_\_\_\_

**Bally SENTE**  
1289 Anvilwood Ave. Sunnyvale, CA 94089

TITLE: SCHEMATIC, LINEAR POWER SUPPLY **4-17**

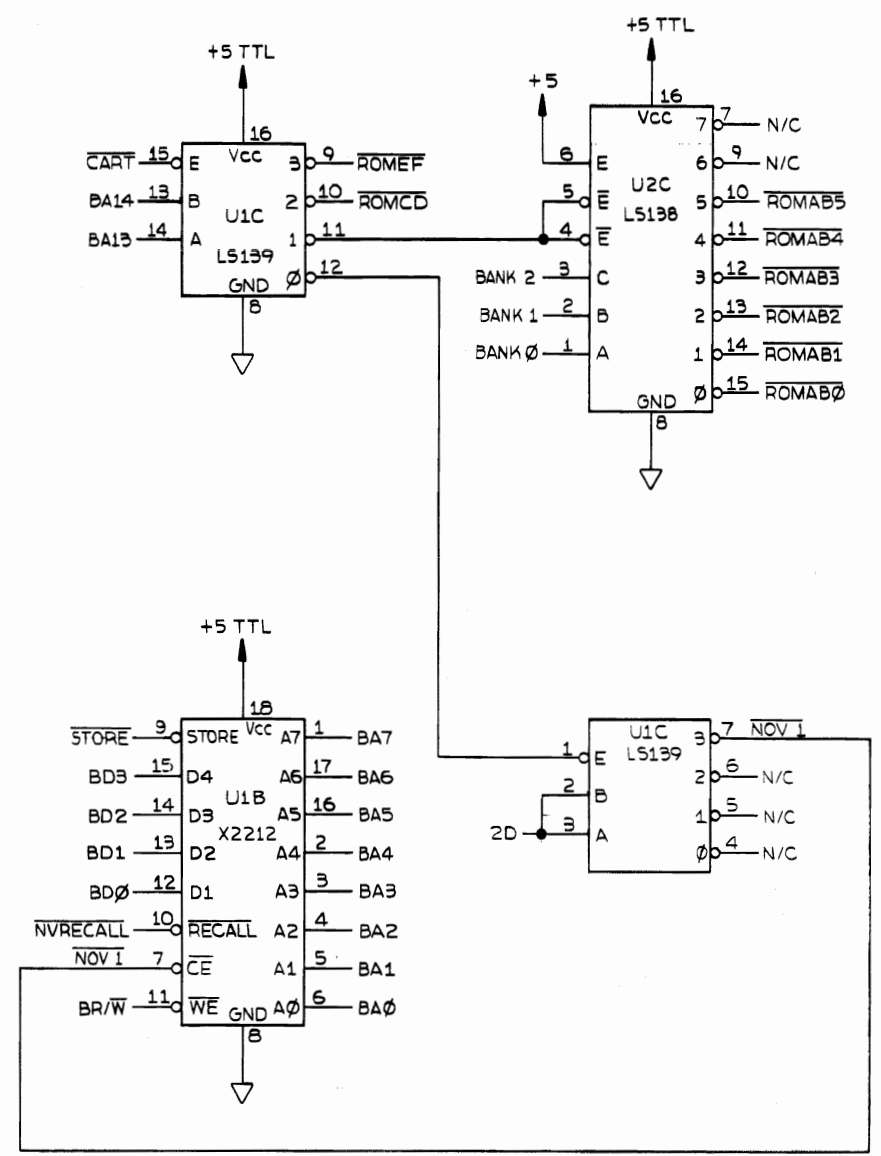
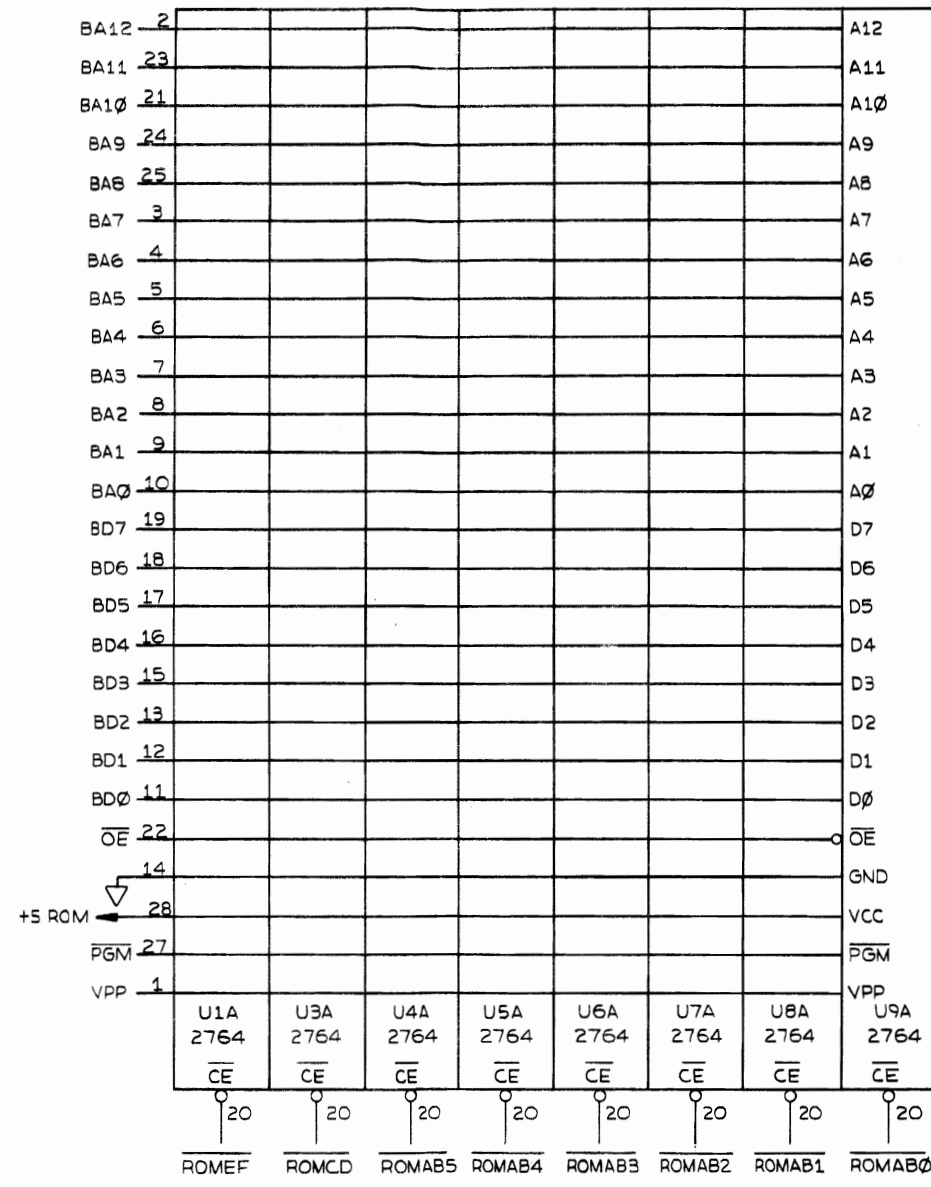
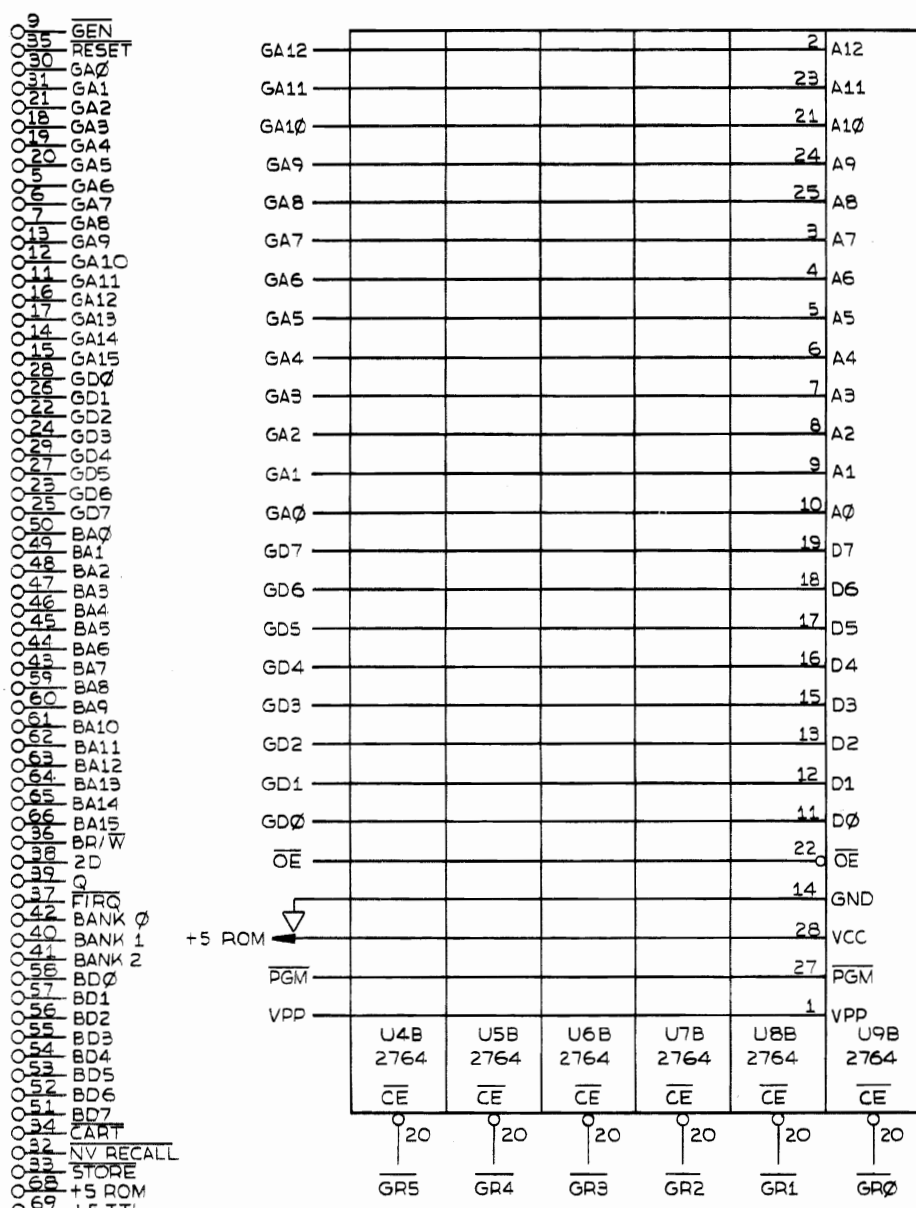
SIZE: D DRAWING NO. 008-8009-10-OB REV B

SCALE: NONE SHEET 2 OF 2

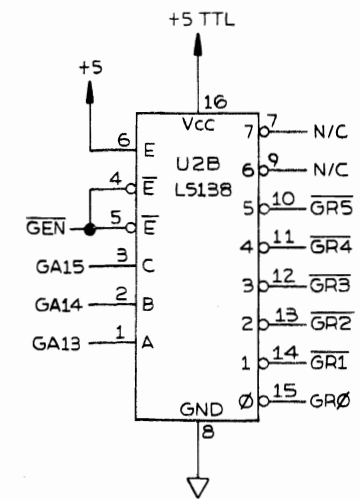
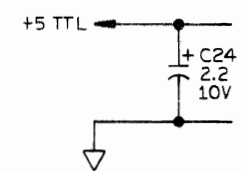
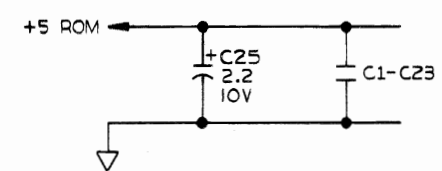
**VENDOR NOTE:** TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH PART NUMBER, EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG. IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

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SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
	C	1989	ADDED U8B, U9B, U8A, U9A, U1C, U2C, DELETED U3B	4/15/84	H/S



- 00 GEN
- 01 RESET
- 02 GA0
- 03 GA1
- 04 GA2
- 05 GA3
- 06 GA4
- 07 GA5
- 08 GA6
- 09 GA7
- 10 GA8
- 11 GA9
- 12 GA10
- 13 GA11
- 14 GA12
- 15 GA13
- 16 GA14
- 17 GA15
- 18 GD0
- 19 GD1
- 20 GD2
- 21 GD3
- 22 GD4
- 23 GD5
- 24 GD6
- 25 GD7
- 26 BA0
- 27 BA1
- 28 BA2
- 29 BA3
- 30 BA4
- 31 BA5
- 32 BA6
- 33 BA7
- 34 BA8
- 35 BA9
- 36 BA10
- 37 BA11
- 38 BA12
- 39 BA13
- 40 BA14
- 41 BA15
- 42 BR/W
- 43 2D
- 44 OE
- 45 GND
- 46 FIRQ
- 47 BANK 0
- 48 BANK 1
- 49 BANK 2
- 50 BD0
- 51 BD1
- 52 BD2
- 53 BD3
- 54 BD4
- 55 BD5
- 56 BD6
- 57 BD7
- 58 CART
- 59 NV RECALL
- 60 STORE
- 61 +5 ROM
- 62 +5 TTL
- 63 +5 ROM
- 64 +12
- 65 -12
- 66 -5
- 67 GND
- 68 OE
- 69 VPP
- 70 PGM



NOTES: UNLESS OTHERWISE SPECIFIED  
1. ALL CAPACITORS ARE IN MICROFARADS, .1/50V.

RELEASED BY: WES 4/15/84 M051-00C47-A024

ITEM	DESCRIPTION/MATERIAL	QTY
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:	
	ANGLES = ± 1°	
	SURFACE FINISH: X = ± .1, XX = ± .03, XXX = ± .010	
DASH NO.	NEXT ASSY NO.	USED ON
MATERIAL		FINISH

DO NOT SCALE DRAWING

DRAWN BY: L. PERCIVAL 5/23/84  
DATE: 5/23/84

CHECKED: L. FORTE 4/20/84  
ENGINEER:

MFG ENGINEER  
PROJECT ENGINEER

TITLE: PCB SCHEMATIC, CARTRIDGE, SAC-I

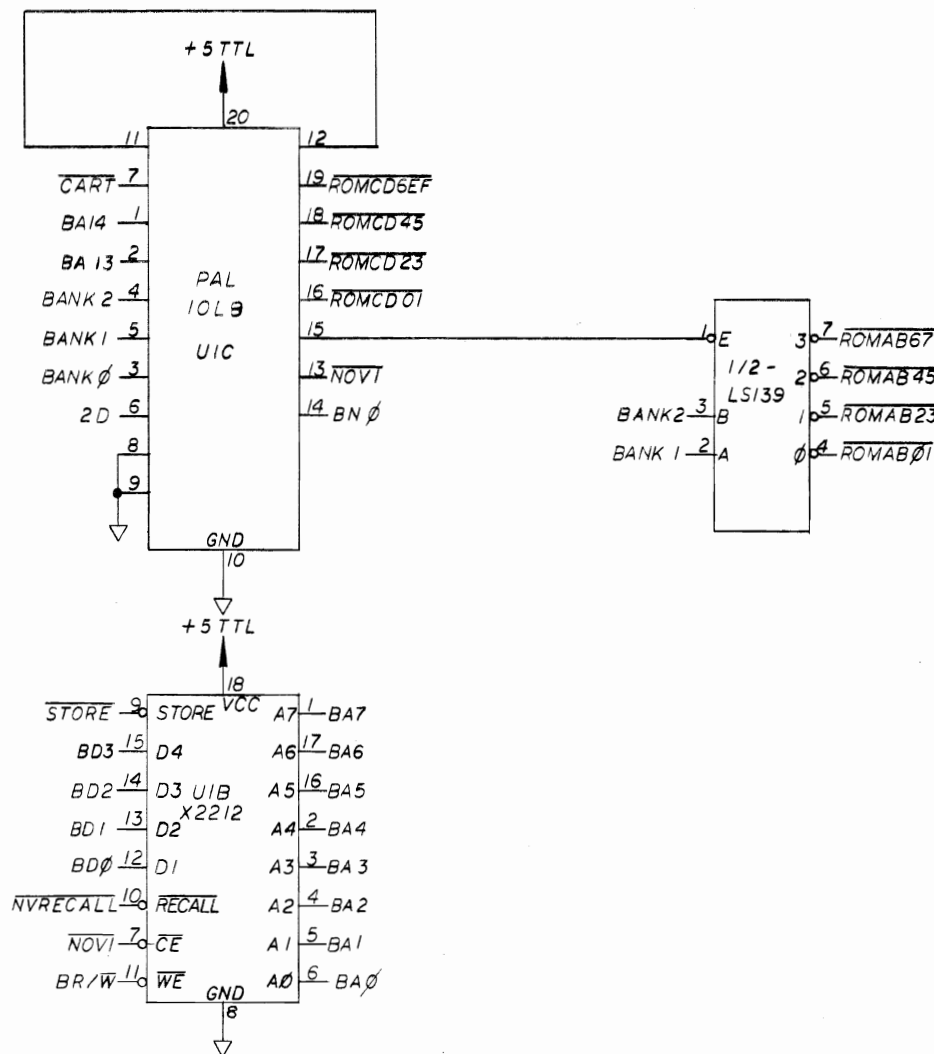
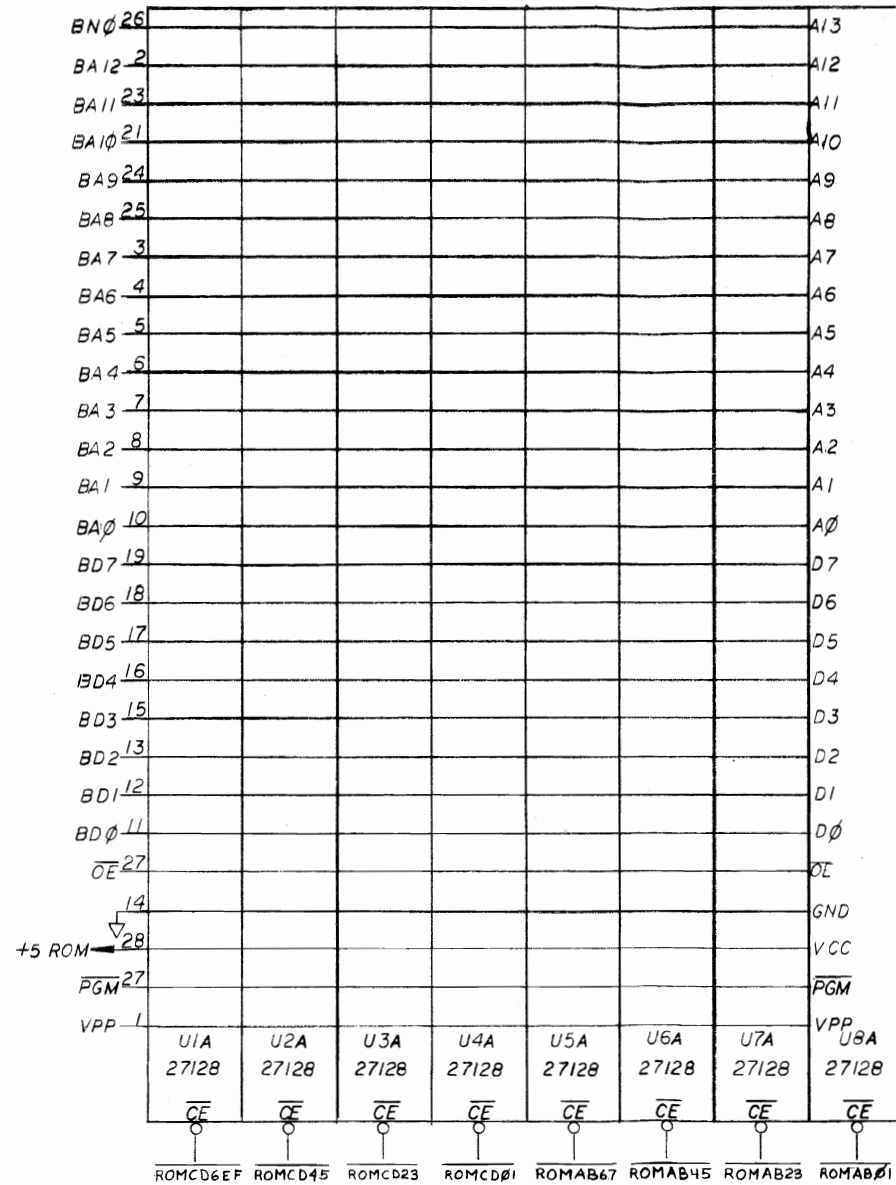
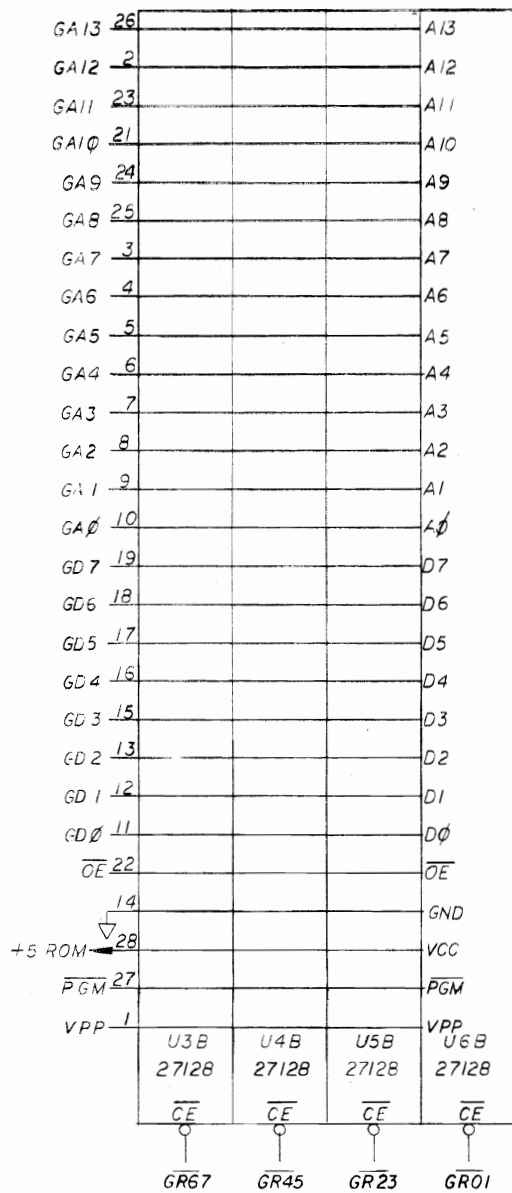
SIZE: D DRAWING NO: 008-8003-10-OC REV: C  
SCALE: NONE SHEET: 1 OF: 1

VENDOR NOTE: TO AVOID PART REJECTION, ALL PARTS MUST BE MARKED WITH PART NUMBER EXCEPT WHERE SIZE OR QUANTITY WARRANTS BAG AND TAG, IF UNCERTAIN, CONTACT BUYER PRIOR TO SHIPMENT.

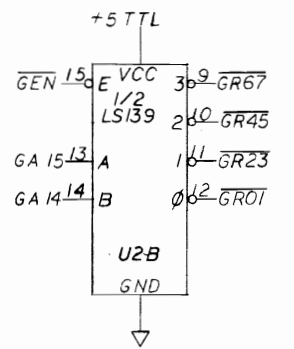
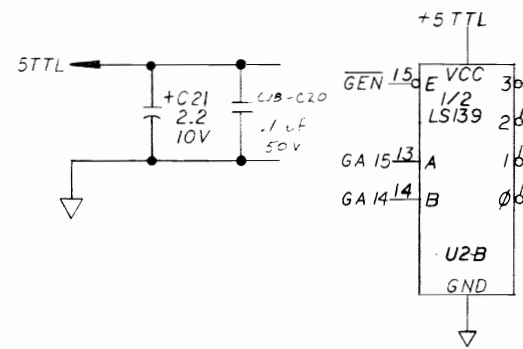
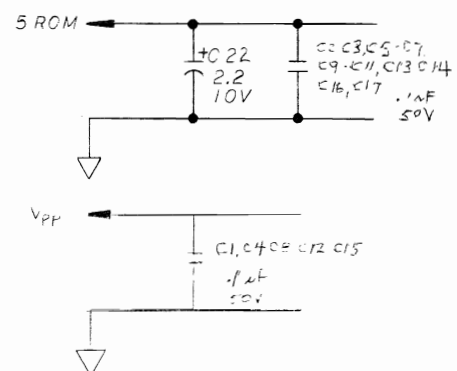
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REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
A	2047	PRODUCTION RELEASE	3/6/85	

- 9 GEN
- 35 RESET
- 30 GA0
- 31 GA1
- 21 GA2
- 18 GA3
- 19 GA4
- 20 GA5
- 5 GA6
- 7 GA7
- 13 GA8
- 13 GA9
- 12 GA10
- 11 GA11
- 16 GA12
- 17 GA13
- 14 GA14
- 15 GA15
- 28 GD0
- 26 GD1
- 22 GD2
- 24 GD3
- 29 GD4
- 27 GD5
- 23 GD6
- 25 GD7
- 50 BA0
- 49 BA1
- 48 BA2
- 47 BA3
- 46 BA4
- 45 BA5
- 44 BA6
- 43 BA7
- 59 BA8
- 60 BA9
- 61 BA10
- 62 BA11
- 63 BA12
- 64 BA13
- 65 BA14
- 66 BA15
- 36 BR/W
- 38 2D
- 39 Q
- 42 FIRQ
- 40 BANK0
- 41 BANK1
- 58 BD0
- 57 BD1
- 56 BD2
- 55 BD3
- 54 BD4
- 53 BD5
- 52 BD6
- 51 BD7
- 34 CART
- 32 NVRECALL
- 33 STORE
- 68 +5 ROM
- 69 +5 TTL
- 70 +5 ROM
- 2 +12
- 67 -12
- 1 -5
- 4 GND
- 72
- 10 VPP
- 8 PGM



NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. ALL CAPACITORS ARE IN MICROFARADS, 1/50V.



A082-91798-A000  
M051-OOC47-A018

RELEASED BY: WES

ITEM	QTY	DESCRIPTION / MATERIAL	P/N REF
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: ANGLES = ± 1°			
DASH NO.		NEXT ASSY NO.	APPLICATION
MATERIAL		FINISH	

DO NOT SCALE DRAWING	
DRAWN BY E. STRATMANN	DATE 2-26-85
CHECKED	ENGINEER
MFG. ENGINEER	PROJECT ENGINEER

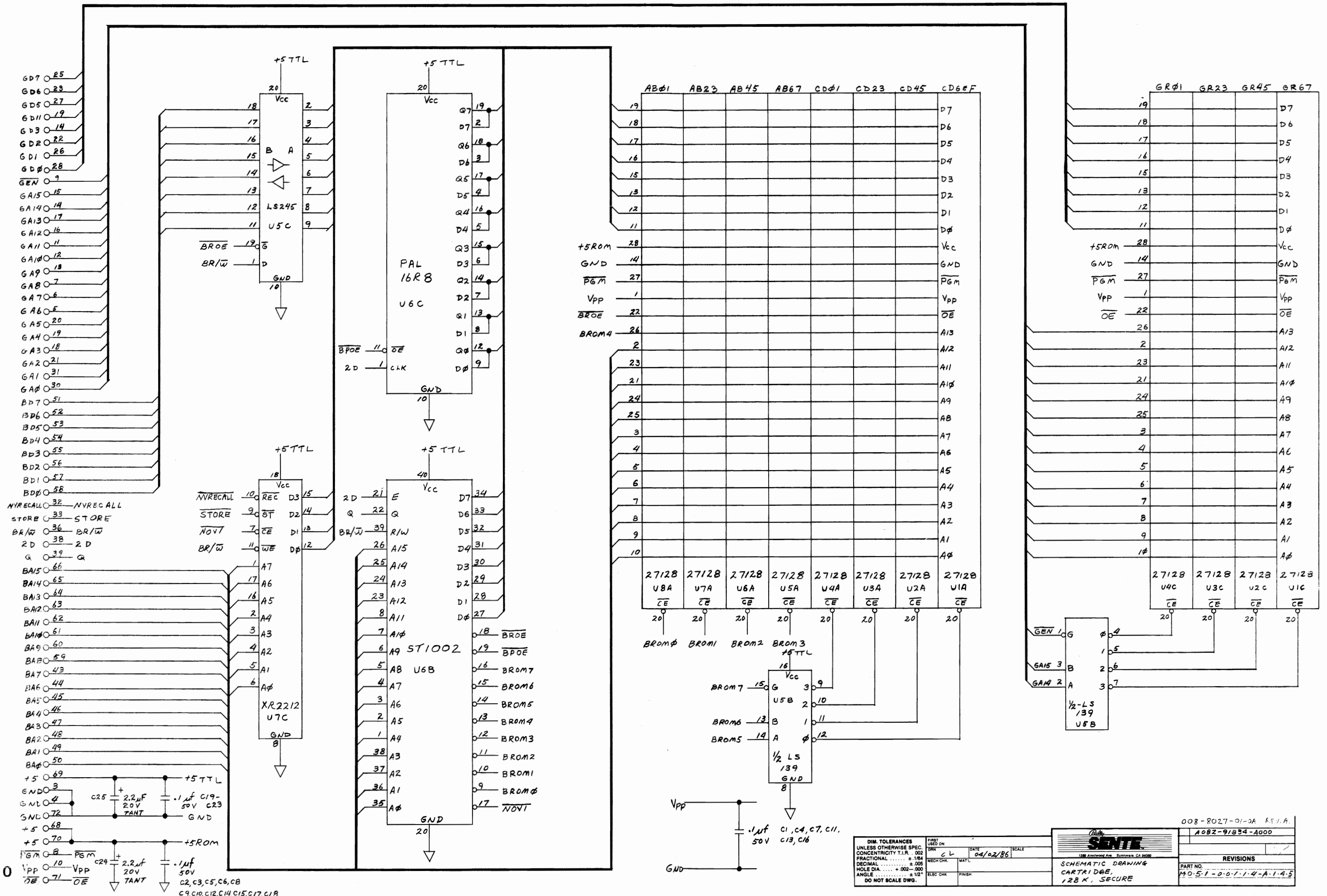
**Bally SENTE**  
1289 Amilwood Ave. Sunnyvale, CA 94089

TITLE  
**PCB SCHEMATIC**  
128K CARTRIDGE, SAC-I

SIZE	DRAWING NO.	REV.
D	008-8025-01	A

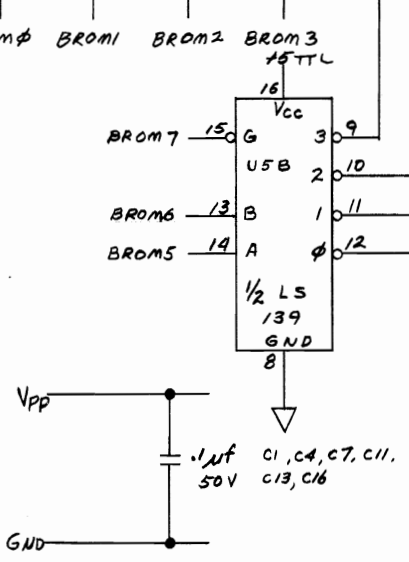
SCALE NONE SHEET 1 4-19

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AB01	AB23	AB45	AB67	CD01	CD23	CD45	CD6EF
							D7
							D6
							D5
							D4
							D3
							D2
							D1
							D0
							Vcc
							GND
							PGM
							Vpp
							OE
							A13
							A12
							A11
							A10
							A9
							A8
							A7
							A6
							A5
							A4
							A3
							A2
							A1
							A0
27128	27128	27128	27128	27128	27128	27128	27128
U8A	U7A	U6A	U5A	U4A	U3A	U2A	U1A
CE	CE	CE	CE	CE	CE	CE	CE

GR01	GR23	GR45	GR67
			D7
			D6
			D5
			D4
			D3
			D2
			D1
			D0
			Vcc
			GND
			PGM
			Vpp
			OE
			A13
			A12
			A11
			A10
			A9
			A8
			A7
			A6
			A5
			A4
			A3
			A2
			A1
			A0
27128	27128	27128	27128
U4C	U3C	U2C	U1C
CE	CE	CE	CE



008-8027-01-0A REV. A

1082-91834-A000

REVISIONS

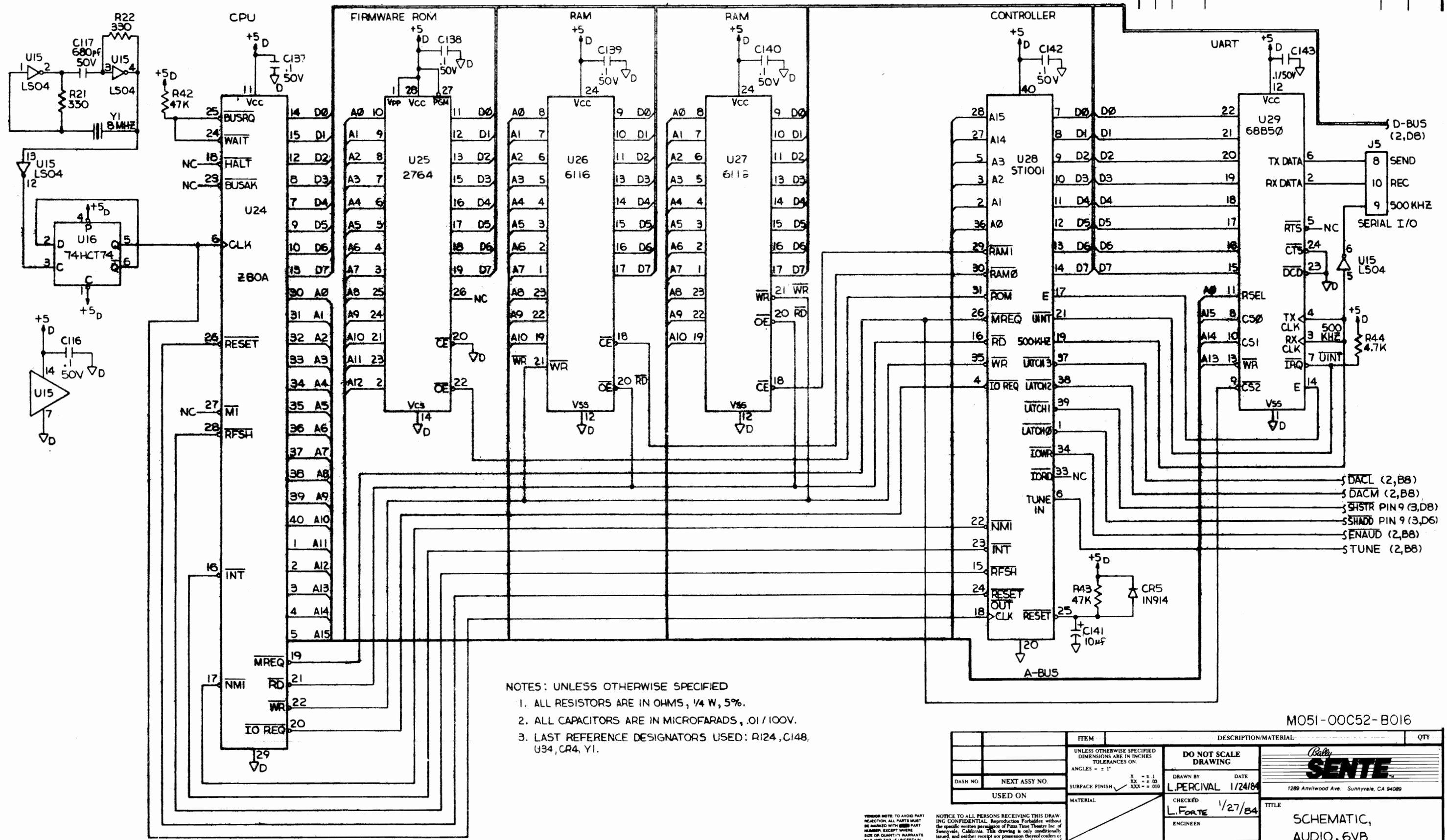
PART NO. 140-51-0-0-1-4-A-1-4-5

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002	FIRST USED ON	DATE	SCALE
FRACTIONAL . . . . . ± .004	DRN	04/02/86	
DECIMAL . . . . . ± .005	MECH CHK		
HOLE DIA. . . . . ± .002-.000	MATL		
ANGLE . . . . . ± 1/2°	ELEC CHK		
DO NOT SCALE DWG.	FINISH		

SCHEMATIC DRAWING  
CARTRIDGE,  
128 K, SECURE



SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
B			PCB REDESIGNED FOR ST1001 CHIP		
B1	1988		ADDED C149	1/1/88	



- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 1/4 W, 5%.
  2. ALL CAPACITORS ARE IN MICROFARADS, .01 / 100V.
  3. LAST REFERENCE DESIGNATORS USED: R124, C148, U34, CR4, Y1.

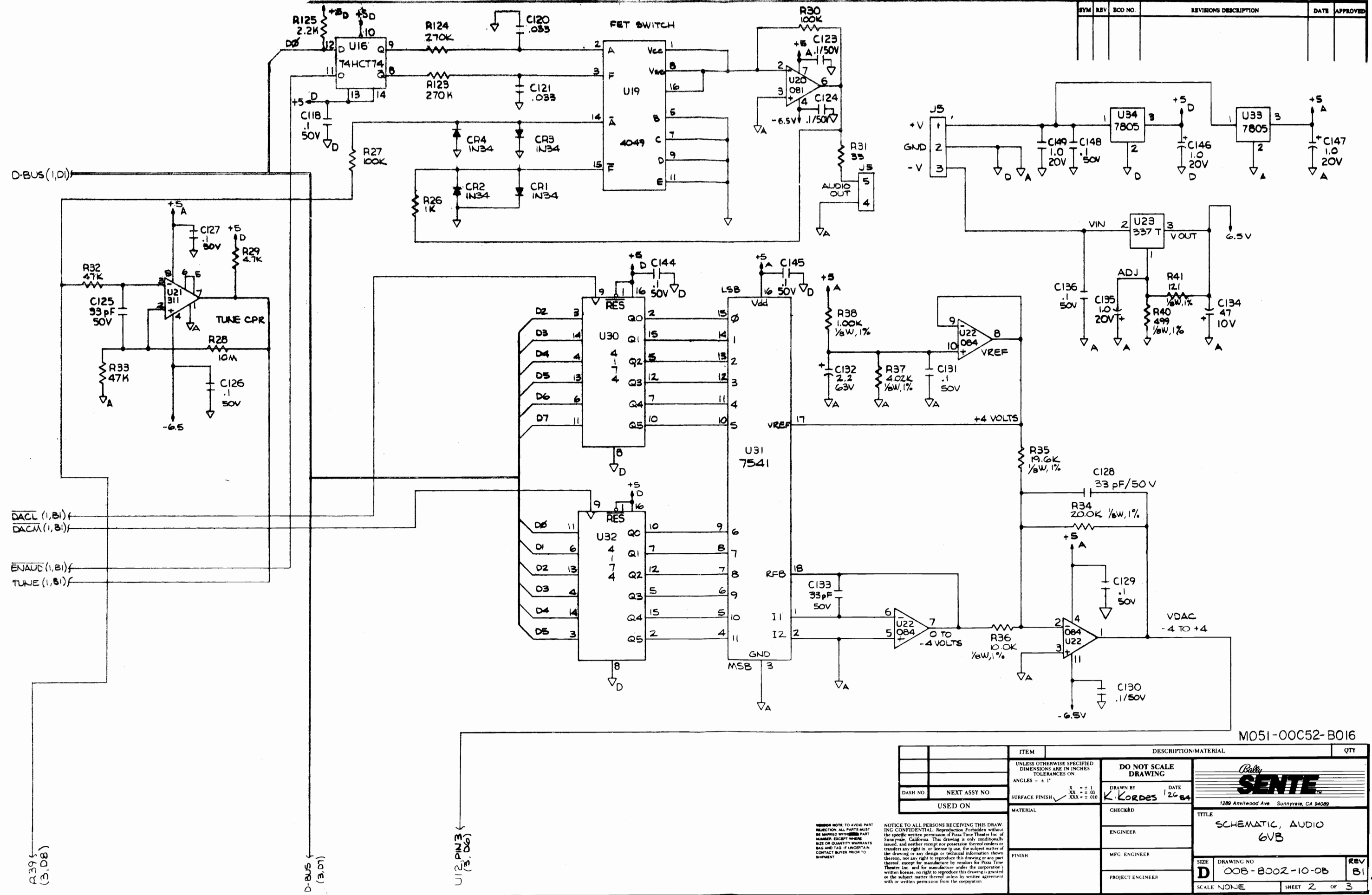
M051-00C52-B016

ITEM		DESCRIPTION/MATERIAL		QTY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:				
ANGLES = ± 1°				
SURFACE FINISH: X = ± .1, XX = ± .05, XXX = ± .010				
DASH NO.	NEXT ASSY NO.	DO NOT SCALE DRAWING		
USED ON		DRAWN BY	DATE	
		L. PERCIVAL	1/24/84	
		CHECKED		
		L. FORTE	1/27/84	
		ENGINEER		
		MFG ENGINEER		
		PROJECT ENGINEER		
TITLE				
SCHEMATIC, AUDIO, 6VB				
SIZE	DRAWING NO.	REV		
D	008-8002-10-0B	B1		
SCALE	NONE	SHEET	1 OF 3	

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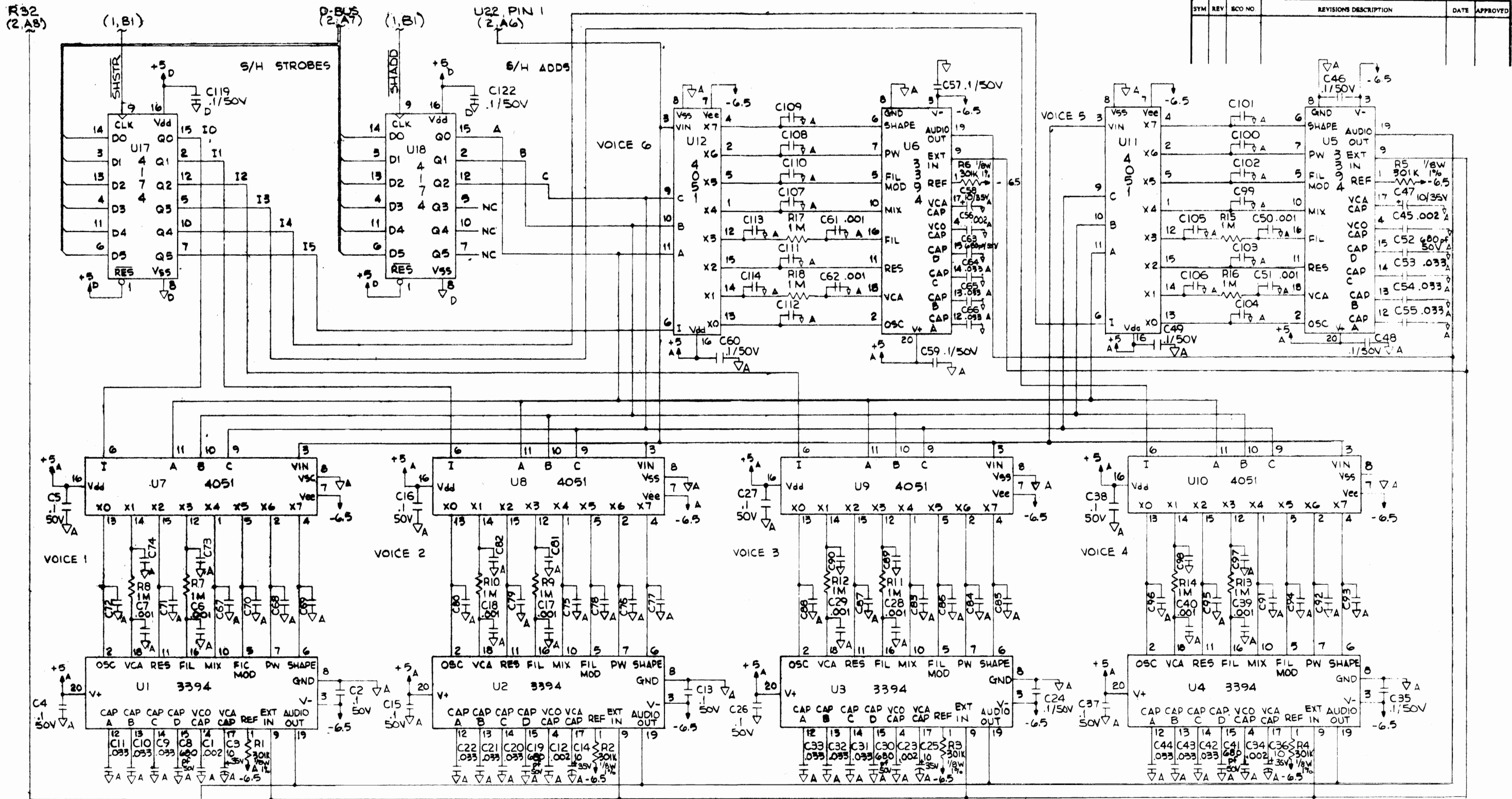
SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED



M051-00C52-B016

ITEM		DESCRIPTION/MATERIAL		QTY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = ± 1°				
DASH NO.	NEXT ASSY NO.	DO NOT SCALE DRAWING		DATE
USED ON		DRAWN BY		120 84
		CHECKED		
		ENGINEER		
		MFG ENGINEER		
		PROJECT ENGINEER		
		TITLE		
		SCHEMATIC, AUDIO		
		6VB		
SIZE	DRAWING NO.	REV		
D	00B-8002-10-0B	B1		
SCALE NONE		SHEET 2 OF 3		

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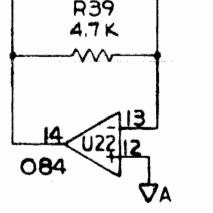
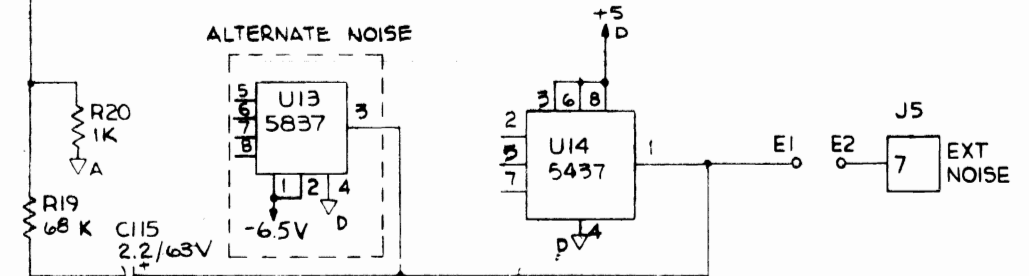


SYM	REV	ECO NO	REVISIONS DESCRIPTION	DATE	APPROVED

M051-00C52-B016

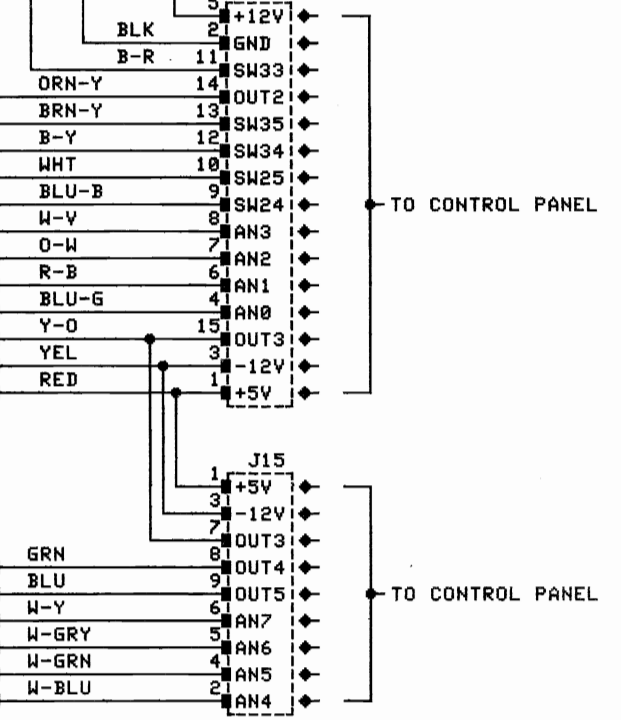
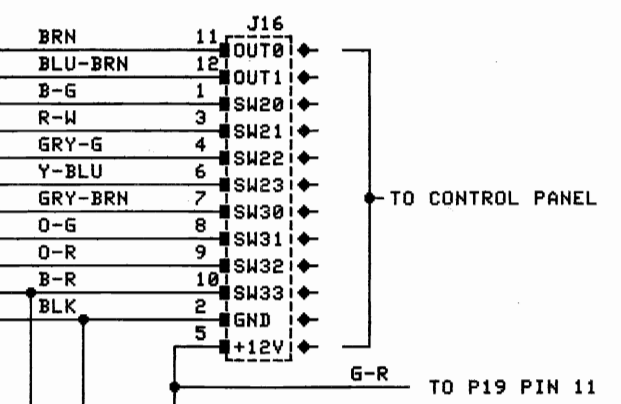
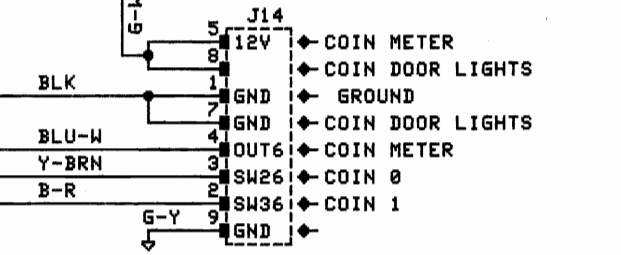
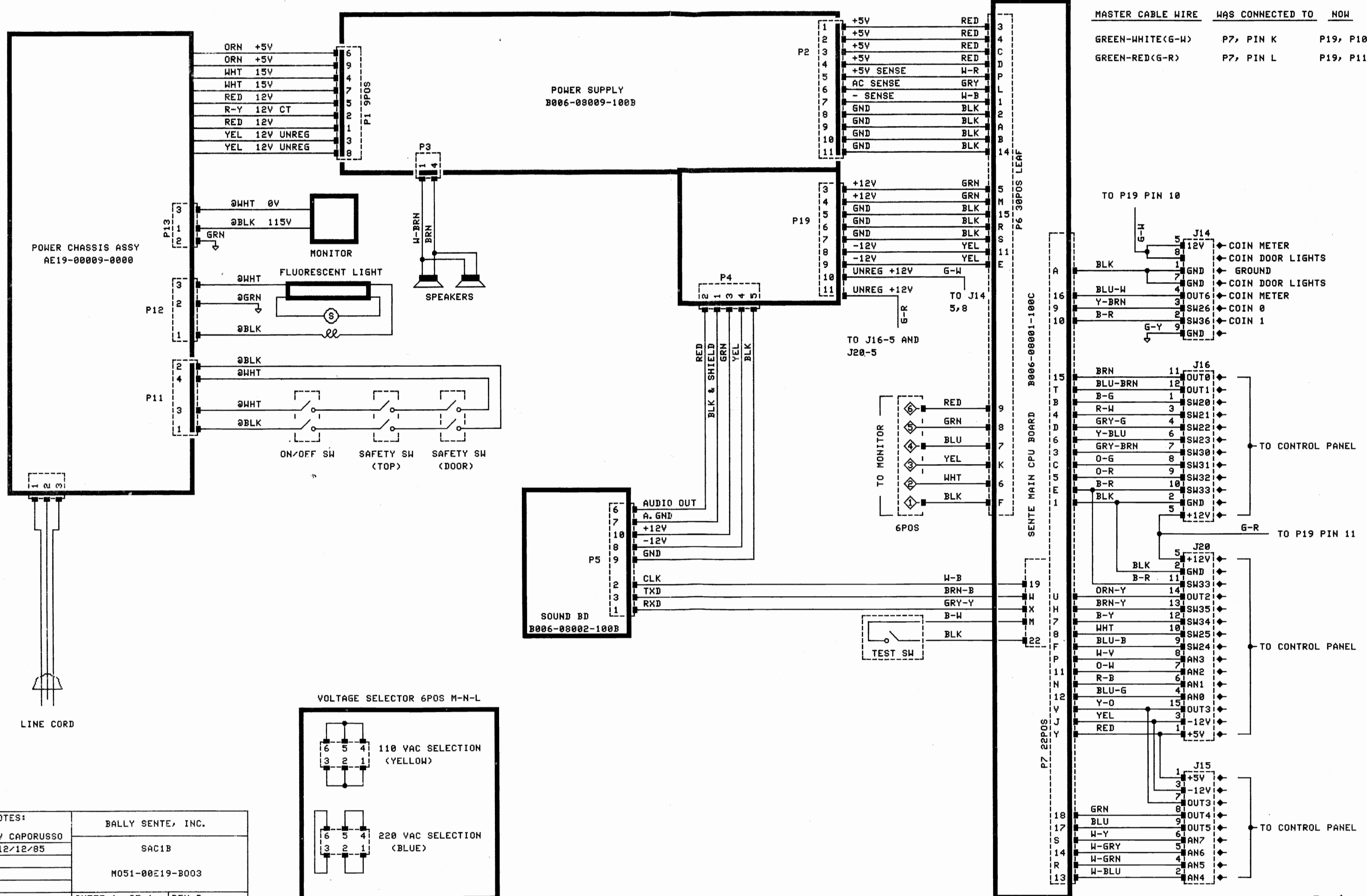
ITEM		DESCRIPTION/MATERIAL		QTY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES - 1°		DO NOT SCALE DRAWING		
DASH NO	NEXT ASSY NO	SURFACE FINISH	DRAWN BY	DATE
USED ON		MATERIAL	CHECKED	ENGINEER
FINISH		MFG. ENGINEER		PROJECT ENGINEER
TITLE		SIZE		REV
SCHEMATIC, AUDIO, 6VB		D		008-8002-10-03 B1
SCALE NONE		SHEET 3 OF 3		

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REV. D

MASTER CABLE WIRE	WAS CONNECTED TO	NOW
GREEN-WHITE(G-W)	P7, PIN K	P19, P10
GREEN-RED(G-R)	P7, PIN L	P19, P11



NOTES:

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12/12/85	SAC1B
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	SHEET 1 OF 1
	REV D

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