

16-3036-101
December 15, 1988



Service Manual

Programmed Chip Summary

(Continued from Inside-Front Cover)

IC	DESCRIPTION	TYPE	BOARD LOC.	PART NO.
Image ROM	ROM	27512	ROM Board U55	A-5343-3036-43
Image ROM	ROM	27512	ROM Board U56	A-5343-3036-44
Image ROM	ROM	27512	ROM Board U57	A-5343-3036-45
Image ROM	ROM	27512	ROM Board U58	A-5343-3036-46
Program ROM	ROM	27512	ROM Board U59	A-5343-3036-11
Program ROM	ROM	27512	ROM Board U60	A-5343-3036-12
Image ROM	ROM	27512	ROM Board U61	A-5343-3036-47
Image ROM	ROM	27512	ROM Board U62	A-5343-3036-48
Image ROM	ROM	27512	ROM Board U63	A-5343-3036-49
Image ROM	ROM	27512	ROM Board U64	A-5343-3036-50
Image ROM	ROM	27512	ROM Board U65	A-5343-3036-51
Image ROM	ROM	27512	ROM Board U66	A-5343-3036-52
Image ROM	ROM	27512	ROM Board U67	A-5343-3036-53
Image ROM	ROM	27512	ROM Board U68	A-5343-3036-54
Image ROM	ROM	27512	ROM Board U69	A-5343-3036-55
Image ROM	ROM	27512	ROM Board U70	A-5343-3036-56
Image ROM	ROM	27512	ROM Board U71	A-5343-3036-57
Image ROM	ROM	27512	ROM Board U72	A-5343-3036-58
Image ROM	ROM	27512	ROM Board U73	A-5343-3036-59
Image ROM	ROM	27512	ROM Board U74	A-5343-3036-60
Image ROM	ROM	27512	ROM Board U75	A-5343-3036-61
Image ROM	ROM	27512	ROM Board U76	A-5343-3036-62
Program ROM	ROM	27512	ROM Board U77	A-5343-3036-13
Program ROM	ROM	27512	ROM Board U78	A-5343-3036-14
Image ROM	ROM	27512	ROM Board U79	A-5343-3036-63
Image ROM	ROM	27512	ROM Board U80	A-5343-3036-64
Image ROM	ROM	27512	ROM Board U81	A-5343-3036-65
Image ROM	ROM	27512	ROM Board U82	A-5343-3036-66
Image ROM	ROM	27512	ROM Board U83	A-5343-3036-67
Image ROM	ROM	27512	ROM Board U84	A-5343-3036-68
Image ROM	ROM	27512	ROM Board U85	A-5343-3036-69
Image ROM	ROM	27512	ROM Board U86	A-5343-3036-70
Image ROM	ROM	27512	ROM Board U87	A-5343-3036-71
Image ROM	ROM	27512	ROM Board U88	A-5343-3036-72
Image ROM	ROM	27512	ROM Board U89	A-5343-3036-73
Image ROM	ROM	27512	ROM Board U90	A-5343-3036-74
Image ROM	ROM	27512	ROM Board U91	A-5343-3036-75
Image ROM	ROM	27512	ROM Board U92	A-5343-3036-76
Image ROM	ROM	27512	ROM Board U93	A-5343-3036-77
Image ROM	ROM	27512	ROM Board U94	A-5343-3036-78

Service Manual

Programmed Chip Summary

(Continued on Inside-Back Cover)

IC	DESCRIPTION	TYPE	BOARD LOC.	PART NO.
CRAM Controller	PLD	EP153A	CPU Board U28	A-5346-3036-1
Local Ctlr	PLD	EP153A	CPU Board U78	A-5346-3036-2
Video RAM Ctlr	PLD	EP153A	CPU Board U79	A-5346-3036-3
Address Decoder	PLD	EP153A	CPU Board U80	A-5346-3036-4
Image ROM Ctlr	PLD	EP153A	CPU Board U83	A-5346-3036-5
Video RAM Seq.	PLD	EP600	CPU Board U12	A-5346-3036-6
Autoerase Ctlr	PLD	EP600	CPU Board U20	A-5346-3036-7
Program ROM	ROM	27512	ROM Board U23	A-5343-3036-7
Program ROM	ROM	27512	ROM Board U24	A-5343-3036-8
Image ROM	ROM	27512	ROM Board U25	A-5343-3036-15
Image ROM	ROM	27512	ROM Board U26	A-5343-3036-16
Image ROM	ROM	27512	ROM Board U27	A-5343-3036-17
Image ROM	ROM	27512	ROM Board U28	A-5343-3036-18
Image ROM	ROM	27512	ROM Board U29	A-5343-3036-19
Image ROM	ROM	27512	ROM Board U30	A-5343-3036-20
Image ROM	ROM	27512	ROM Board U31	A-5343-3036-21
Image ROM	ROM	27512	ROM Board U32	A-5343-3036-22
Image ROM	ROM	27512	ROM Board U33	A-5343-3036-23
Image ROM	ROM	27512	ROM Board U34	A-5343-3036-24
Image ROM	ROM	27512	ROM Board U35	A-5343-3036-25
Image ROM	ROM	27512	ROM Board U36	A-5343-3036-26
Image ROM	ROM	27512	ROM Board U37	A-5343-3036-27
Image ROM	ROM	27512	ROM Board U38	A-5343-3036-28
Image ROM	ROM	27512	ROM Board U39	A-5343-3036-29
Image ROM	ROM	27512	ROM Board U40	A-5343-3036-30
Program ROM	ROM	27512	ROM Board U41	A-5343-3036-9
Program ROM	ROM	27512	ROM Board U42	A-5343-3036-10
Image ROM	ROM	27512	ROM Board U43	A-5343-3036-31
Image ROM	ROM	27512	ROM Board U44	A-5343-3036-32
Image ROM	ROM	27512	ROM Board U45	A-5343-3036-33
Image ROM	ROM	27512	ROM Board U46	A-5343-3036-34
Image ROM	ROM	27512	ROM Board U47	A-5343-3036-35
Image ROM	ROM	27512	ROM Board U48	A-5343-3036-36
Image ROM	ROM	27512	ROM Board U49	A-5343-3036-37
Image ROM	ROM	27512	ROM Board U50	A-5343-3036-38
Image ROM	ROM	27512	ROM Board U51	A-5343-3036-39
Image ROM	ROM	27512	ROM Board U52	A-5343-3036-40
Image ROM	ROM	27512	ROM Board U53	A-5343-3036-41
Image ROM	ROM	27512	ROM Board U54	A-5343-3036-42



SERVICE MANUAL

- operation
- adjustment
- unique parts
- bookkeeping
- diagnostics

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Programmed Chips on the Sound Board

IC	DESCRIPTION	TYPE	BOARD LOC.	PART NO.
Sound ROM	ROM	27512	Sound Board U3	Not Used
Sound ROM	ROM	27512	Sound Board U4	A-5343-3036-1
Sound ROM	ROM	27512	Sound Board U5	A-5343-3036-2
Sound ROM	ROM	27512	Sound Board U35	A-5343-3036-3
Sound ROM	ROM	27512	Sound Board U36	A-5343-3036-4
Sound ROM	ROM	27512	Sound Board U37	A-5343-3036-5
Sound ROM	ROM	27512	Sound Board U38	A-5343-3036-6



Jumper Table

CPU Board	Connected	Not Used
	W3 W4 W6	W1 W2 W5
	W9 W10 W11 W14	W7 W8 W12 W13
ROM Board	1/2 3/4 5/6 7/8 9/10 11/12 13/14 R1	(None)
CPU Board	W3 W4 W6 W9 W10 W11 W14	W1 W2 W5 W7 W8 W12 W13
Sound Board	W1 W9 W4 W15 W5 W17 W7 W18 W8 W20	W2 W13 W3 W14 W6 W16 W10 W19 W11 W21 W12



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Notes...



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Chapter 1. Operating Procedures

Warnings and Notices
Examine Your Game
Control Locations
Power Turn-On

Game Operation
Player Panel (*Illustration*)
Game Adjustments, Bookkeeping, Diagnostics
Main Test Menu (*Illustration*)

Typical Audits Screen, Page 1 (*Illustration*)

Typical Audits Screen, Page 2 (*Illustration*)

Typical Game Adjustments Screen
(*Illustration*)

Pricing Table



Warnings and Notices

WARNING

FOR SAFETY AND RELIABILITY, substitute parts or modifications are not recommended.

USE OF NON-WILLIAMS PARTS or circuit modifications may cause injuries or equipment damage.

SUBSTITUTE PARTS OR MODIFICATIONS may void FCC Type Acceptance.

SINCE THIS GAME IS PROTECTED by Federal copyright, trademark and patent laws. Unauthorized software or hardware modifications may be illegal under Federal law.

THIS "MODIFICATION" PRINCIPLE ALSO APPLIES to unauthorized facsimiles of **WILLIAMS** logos, designs, publications and assemblies. Moreover, facsimiles of **WILLIAMS** equipment (*or any feature thereof*) may be illegal under Federal law. Whether or not such facsimiles are manufactured with **WILLIAMS** components, this rule applies.

WARNING

This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions 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

The logo consists of the word "WILLIAMS" in a stylized, bold, black font. The letters are thick and have a slightly irregular, hand-drawn appearance. The 'W' and 'I' are particularly prominent.

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.

WARNING

FCC STICKER. Check the back of your game for an FCC sticker. When **WILLIAMS** ships a game, the game has been found to comply with FCC Rules. *The sticker is proof.* If the sticker is missing, *legal repercussions to the owner and distributor of the game* may result. If your game (manufactured after December 1982) has no FCC sticker, call **WILLIAMS** for advice. Or write us a note on your game-registration card. *Be sure the card bears your game's serial number.*

WARNING

THREE-WIRE PLUG. Prevent shock hazard and assure proper game operation! Only plug this game into a properly grounded outlet. **DO NOT** use a "cheater" plug to defeat the power cord's ground pin. **DO NOT** cut off the ground pin.

RF-INTERFERENCE NOTICE

YOUR GAME'S CABLE-HARNESSES PLACEMENT and ground-strap routing are very important. They are designed to keep RF radiation and conduction within levels accepted by FCC Regulations.

MAINTAIN THESE LEVELS. Servicing may require that you disconnect harnesses or ground straps. When you're finished, reposition and reconnect them as they were.

Examine Your Game

- **INSPECT THE OUTSIDE** of the carton or game cabinet for shipping damage.

The logo for Williams, featuring the word "WILLIAMS" in a stylized, bold, black font with a white outline.

- **UNLOCK AND OPEN** the bottom-rear door. Now check circuitry.
- **ARE CONNECTORS SECURELY ATTACHED?** Reconnect any found loose. *Don't force connectors! They're keyed and only fit one way.*
- **ARE PLUG-IN CHIPS FIRMLY SEATED** in their sockets?
- **UNWRAP THE POWER CORD** coiled inside the cabinet. *Don't plug it in yet!*
- **SCRUTINIZE MAJOR SUBASSEMBLIES**, such as the monitor, player panel, transformer chassis and power supply. Make sure they're securely mounted.
- **UNDO THE CONTROL-PANEL LATCHES.** You can reach these from the coin door by extending your arm upward and to either side. Now check connectors and circuitry as above.

Control Locations

THE ON-OFF SWITCH is above the back (*monitor*) door. Standing before the game, you'll find the switch at the game's top-left corner.

POWER INTERLOCK SWITCH. Your game has two power-interlock switches. These are located at the back of the game, behind the top and middle panels. Imagine that you're standing behind the game. An interlock is in the upper-right corner of each panel. Each interlock is a spring-loaded DPDT switch. It turns off the game when you remove the panel. For servicing purposes, pull the switch out and the game will power up.

THE VOLUME CONTROL is inside the coin door and to your right.



THREE DIAGNOSTIC SWITCHES are mounted together on a bracket behind the coin door. *These switches are useful for many purposes: Accessing Diagnostic Mode Tests, reading the bookkeeping totals or making game adjustments.* See relevant discussions later in this chapter.

THE MEMORY-PROTECT INTERLOCK SWITCH is behind the coin door. This switch must be open when you clear bookkeeping totals or make game adjustments. It automatically opens when the coin door is open. .

THE CPU-BOARD RESET SWITCH is on the CPU Board near the +5VDC indicator LED.

Power Turn-On

WHEN THE GAME IS FIRST TURNED ON general illumination should light. In a correctly running game, tests will be followed by the message "INITIAL CHECKS INDICATE: THIS GAME IS BITCHIN'." If failure messages come up on the screen instead, refer to **Built-In Test Procedures**.

DEMAGNETIZE THE GAME with a television degaussing coil. Besides the monitor, remember to degauss large steel parts (for example, the backdoor hinge). Do this whenever you move the game, and also as a regular, monthly procedure. Otherwise residual magnetism may cause color impurities that adversely affect your collections.

The logo for NARC (National Amusement and Recreational Code) is displayed in a stylized, bold, black font. The letters are thick and slightly irregular, giving it a hand-drawn or industrial feel.

Game Operation

GAME START

INSERT COINS. The game allocates an adjustable number of credits per coin. This number appears on the CRT. For example, assume that your settings specify one credit for a quarter (*U.S. factory pricing*). A player deposits a quarter and presses 1-PLAYER START. On its screen, the game posts one credit. Then a one-player game begins.

Using player-2 controls for a one-player game is also possible: With one credit displayed, press 2-PLAYER START.

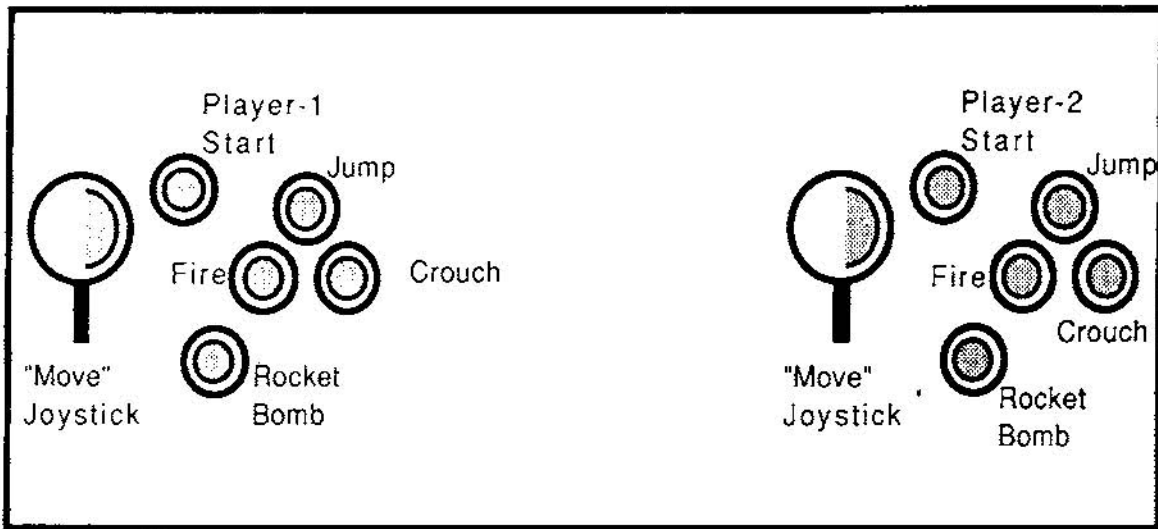
For a two-player game, at least two credits must be displayed. To initiate this two-player game, press the 2-PLAYER START button.

PLAYER CONTROLS

On its player panel, your **NARC™** game has four pushbuttons and a joystick. Players can...

- **FIRE** at evil pushers with the machine pistol.
- **PRESS ROCKET BOMB!** Eliminate several pushers in one blast!
- **JUMP** over broken sidewalks and other obstacles!
- **CROUCH** to duck bullets and garbage cans!
- **MOVE** in eight directions with the joystick.

The logo for the game NARC, featuring the letters 'NARC' in a bold, stylized, slightly slanted font.



Player Panel

GAMEPLAY

THE CITY'S OVERRUN! Slashers! Gangsters! Pimps! The punks are everywhere! The scum of the earth! And only the player can restore law and order! Trigger finger spraying hot metal before him... **ROCKET BOMB** at the ready... The player is a macho urban guerilla, defending our city from the ultimate urban scourge! This is his neighborhood too. He's committed. He says **NO** to inner city decadence. He carries a badge and a moral code. And he backs them both with screaming lead.

FEARLESS, ALOOF... He blazes away with his machine pistol. Then he launches a devastating **ROCKET BOMB** to trap several baddies in simultaneous ambush! With **JUMP** and **SQUAT** buttons, he dodges bullets, dynamite and other missiles. But the lurking Loaf, death-dealing Dumpster Man, patronizing Pimp and horrible Hypoman are everywhere. And these mangy marauders stop at nothing. This is their turf. So they'll hurl more bombs and deal more

NARC

corruption. Because they're forever preparing another rendezvous with death. Here's a list of the nefarious gangmembers...

- Loaf
- Gangster
- Pimp
- Hypoman
- Psychotic
- Slasher
- Dumpster Man
- Mr. Big (*Public Enemy Number 1*)

THIS JOB DEMANDS GRITTY DETERMINATION, FAST THINKING! The city is a *jungle*. Pushers may lurk in manholes... They may dart by in a heavily armed, pink Cadillac... Or they might even buzz the player with their preemptive pushercopter! But the player laughs at danger. He scores bonus points by seizing contraband (*evidence!*) hidden in the Cadillac. And by busting these parasites on society. Then he blows that manhole. And he downs that pushercopter. Because no pimp is too high... And no gangster's too low to eat hot justice!

ENTER BUILDINGS. The player must seek out and investigate gang strongholds. When enemies dart out of a tenement, the player must enter. If psycho fiends slither in the subway, the player relentlessly pursues them. Not bullets, not bombs, not even mad dogs can deter him. For our hero's sworn duty is to case the hideouts and seize the evidence. Then he can bust another offender!

THE PLAYER STARTS WITH 100 ENERGY UNITS. Busts and evidence win points. For every 25,000 points earned, the player receives 20 energy units. But there's a penalty whenever our hero's hit or if an innocent bystander's injured. Here are some of the major penalties...

- Hit by hypo, player loses 16 energy units

The logo for NARC (New York Area Rapid Control) is displayed in a stylized, bold, black font. The letters are thick and blocky, with a slightly irregular, hand-drawn appearance. The 'N' and 'A' are particularly prominent, with the 'A' having a wide base and a sharp peak. The 'R' and 'C' are also thick and blocky, with the 'C' having a slightly open bottom. The overall style is reminiscent of a stencil or a heavy marker.

- Attacked by Slasher, player sacrifices 10 energy units
- Struck by a bullet, player's penalized five units

THE BIG TARGET. Ultimately the player pursues Public Enemy Number One, Mr. Big. Mr. Big is the shimmering, super slug king of the sleazy, slimy underworld empire. His glitzy, cosmopolitan crib is brimming with evidence. And he's the inevitable prospect for a megabust. But he's wily. He's quick. And he's amply equipped with the latest Hyper-Crimewave Technology. But the player must not permit him to escape! The dragnet must not fail!

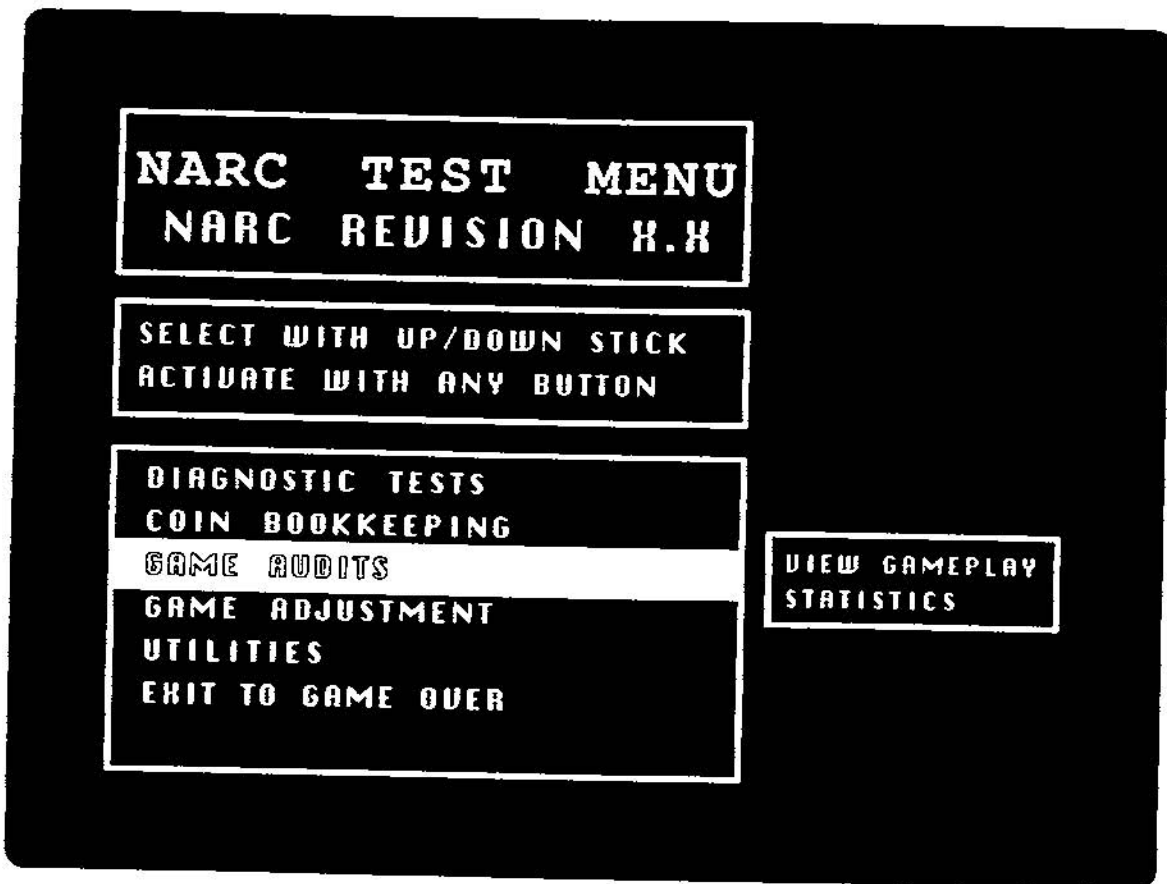
Game Adjustments, Bookkeeping, Diagnostics

MENU CONCEPT. For your convenience, game adjustment, bookkeeping, audit totals and diagnostics are *menu-driven* features. Each *menu* is a list of several choices that you may act upon as desired.

LEVELS OF MENUS. Your game has several levels of menus. That is, one menu selection will send the game to another menu. The menus are arranged in outline fashion. That is, a menu of general options selects menus of more specific options.

PRESS ADVANCE. Adjustments, bookkeeping and diagnostics are available from the main test menu. Enter the main test menu by pressing the ADVANCE button inside the coin door. ADVANCE is mounted on a bracket bolted to the inside of the door. Besides initiating diagnostics and other modes, ADVANCE permits you to browse through and alter menus. When you press ADVANCE, the game steps through the options of one menu.





Main Test Menu

Normally you may exit the menu you're inspecting and return to the previous menu. In fact, "RETURN TO MAIN MENU" and "EXIT TO GAME OVER" are typical menu options. Suppose that you select "RETURN TO MAIN MENU": *The game returns to the option where it was before on the previous menu.*

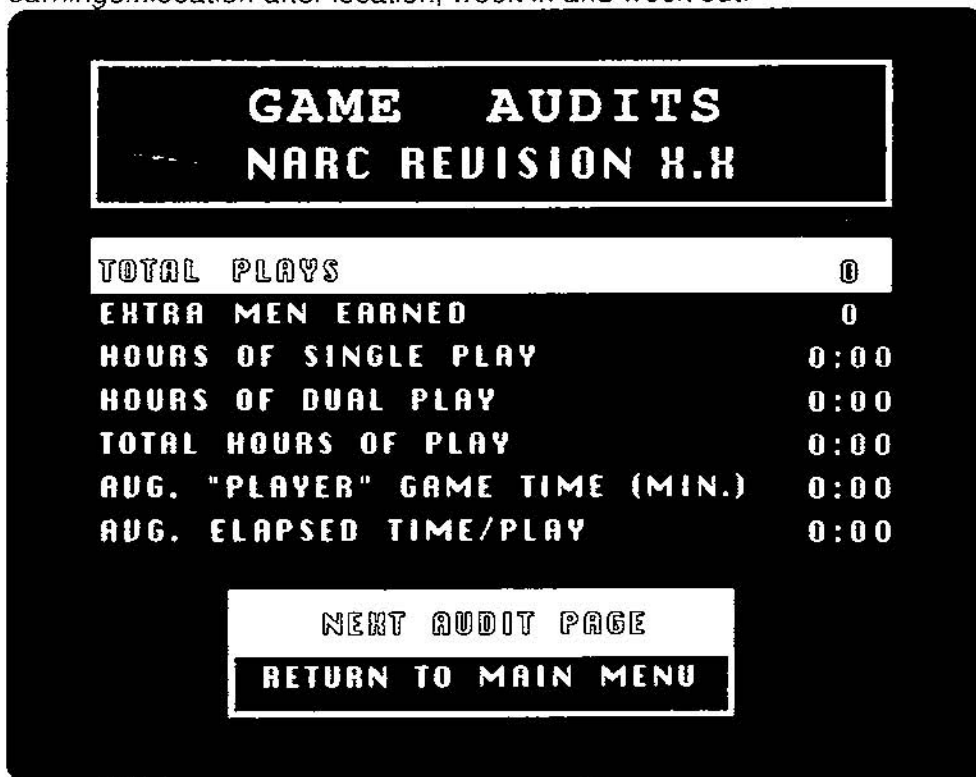
Pressing and holding ADVANCE also causes the game to exit from a menu.

The logo for the game "NARC", featuring the word "NARC" in a stylized, bold, italicized font.

However when you press and hold ADVANCE, the game exits to the next lower option on the previous menu. This capability of the ADVANCE button allows you to access menu features even when player panel controls malfunction.

GAME AUDITS

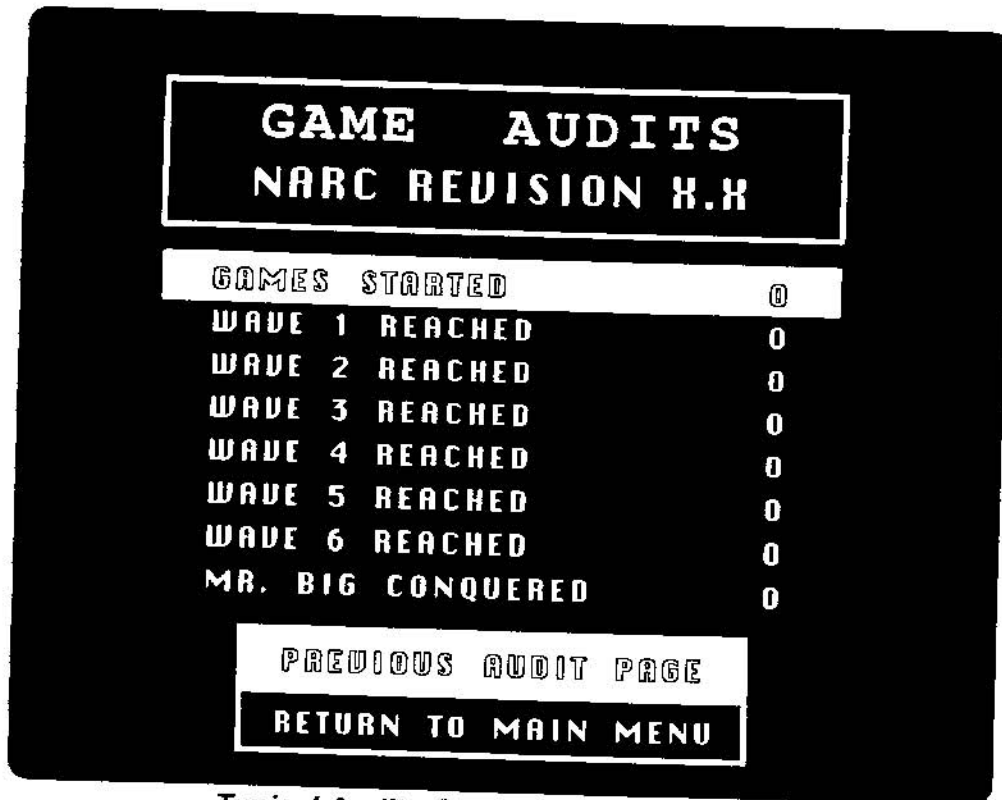
GAME AUDITS SHOW YOU AT A GLANCE if game settings are bringing you a satisfactory return on your investment! *Only games by WILLIAMS ELECTRONICS have this menu-driven feature.* Think of it as a unique way to keep your **NARC** game the *leader of the pack when it comes to earnings...*location after location, week in and week out!



Typical Audits Screen, Page 1

NARC

ENTERING AUDIT MODE. Open the coin door and press **ADVANCE**. You'll see the main test menu on the CRT screen. Use either joystick to highlight **GAME AUDITS**. Now select **GAME AUDITS** by pressing *any* player panel button.



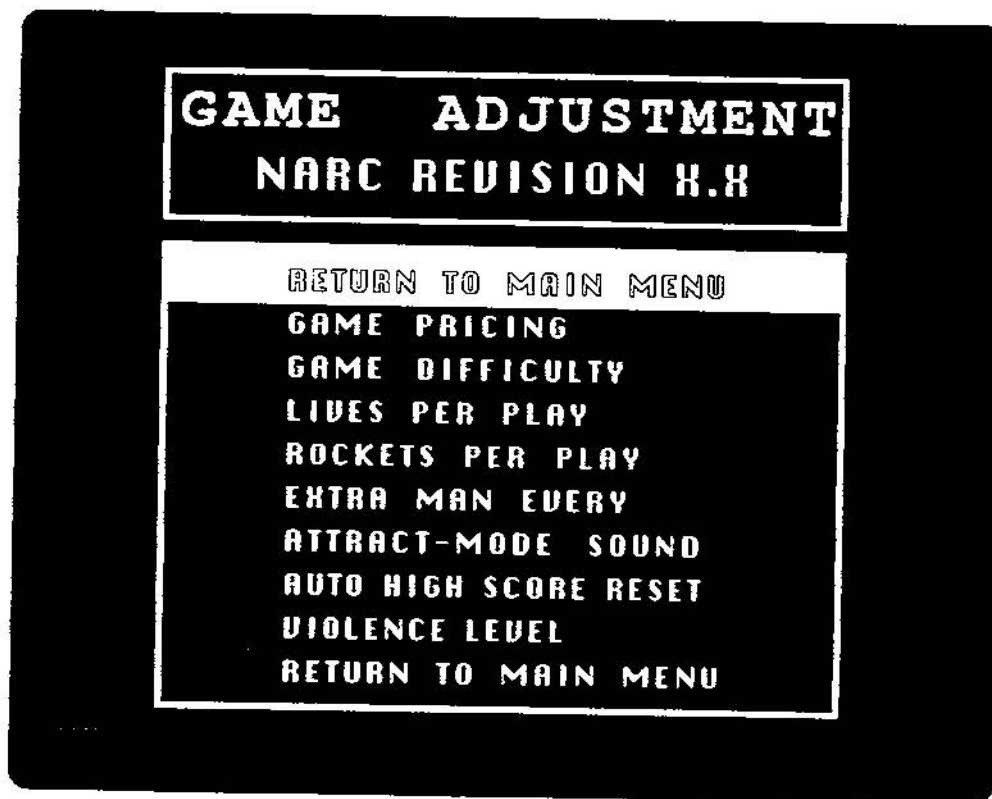
Typical Audits Screen, Page 2

The first **GAME AUDITS** page will appear. Total plays and the number of extra men that players earned are provided here. The remaining entries on this

NARC

page relate aspects of gameplay to time. The second audit page relates how many times players achieved each wave. (difficulty level). Now let's examine two audit entries...

AVERAGE TIME PER CREDIT: TWO MINUTES. Your most important figure on the first AUDITS page is AVG. PLAYER GAME TIME (MIN.). You'll want to pay special attention to this figure every day for this reason: Thorough field and factory research has shown that *two-minute games both satisfy players and also keep the quarters flowing.*



Typical Game Adjustments Screen

The logo for NARC, featuring the letters "NARC" in a stylized, bold, italicized font.

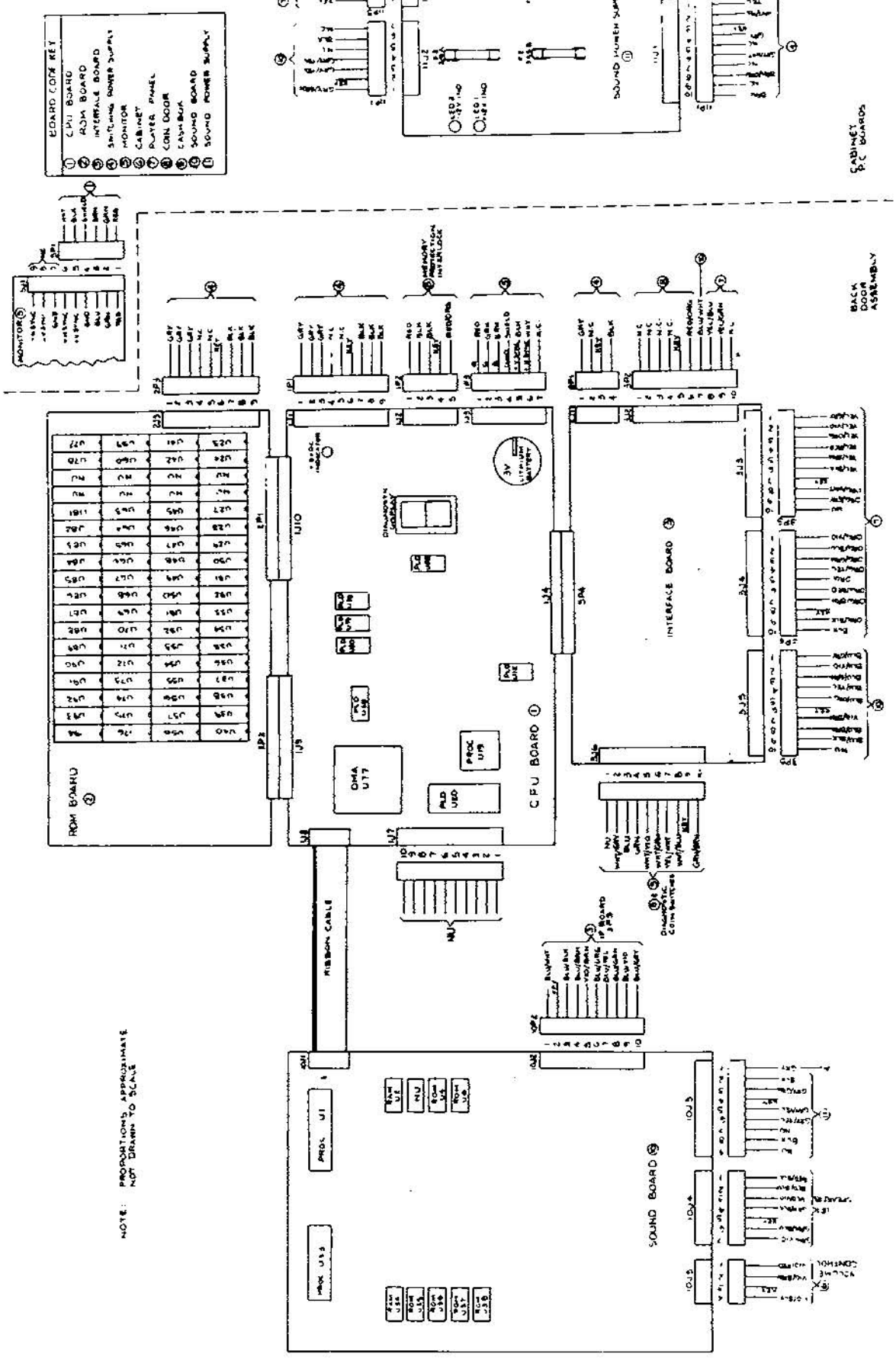
If games aren't running about two minutes long, then collections probably aren't at their peak. You'll want to tailor your game to your game-playing public. It's easy, and we'll talk about that subject in a moment. Meanwhile, another very useful figure is AVG. ELAPSED TIME/PLAY. This number tells you approximately how long your game must operate before earning a quarter.

Here are some tailoring suggestions...

EXCLUSIVE GAME ADJUSTMENTS

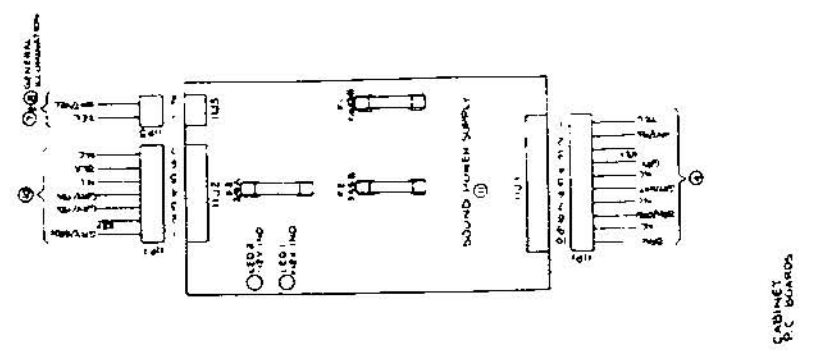
1. Press ADVANCE to enter the main test menu *(described earlier)*.
2. Using either joystick, move the selection arrow down to GAME ADJUSTMENT.
3. To select GAME ADJUSTMENT, press any player panel button. Now you'll see the adjustment screen.
4. Use either joystick to highlight the feature you desire to adjust.
5. To select that feature, press any player panel button.
6. Use either joystick to alter the value of an adjustment.
(The joystick causes YES-NO settings to toggle between YES and NO.)
7. To return to Game-Over Mode, follow menu selections on your screen.



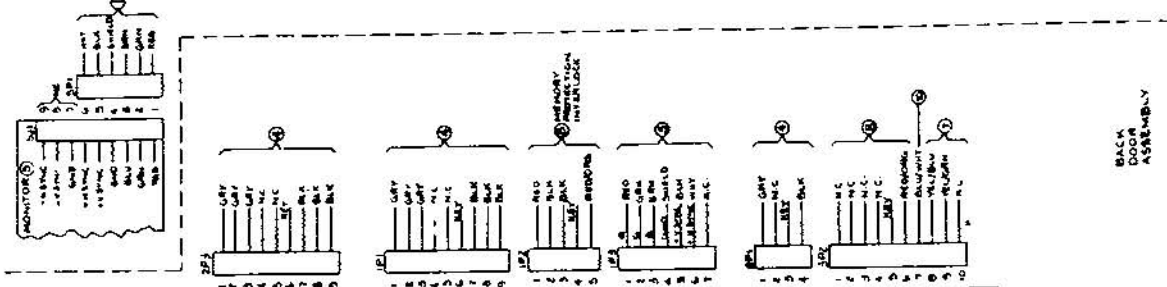


NOTE: PROPORTIONS, APPROXIMATE
NOT DRAWN TO SCALE

- BOARD CODE KEY
- ① CPU BOARD
 - ② ROM BOARD
 - ③ INTERFACE BOARD
 - ④ SWITCHING POWER SUPPLY
 - ⑤ MONITOR
 - ⑥ CABINET
 - ⑦ PLAYER PANEL
 - ⑧ CONN. DOOR
 - ⑨ CASH BOX
 - ⑩ SOUND BOARD
 - ⑪ SOUND POWER SUPPLY

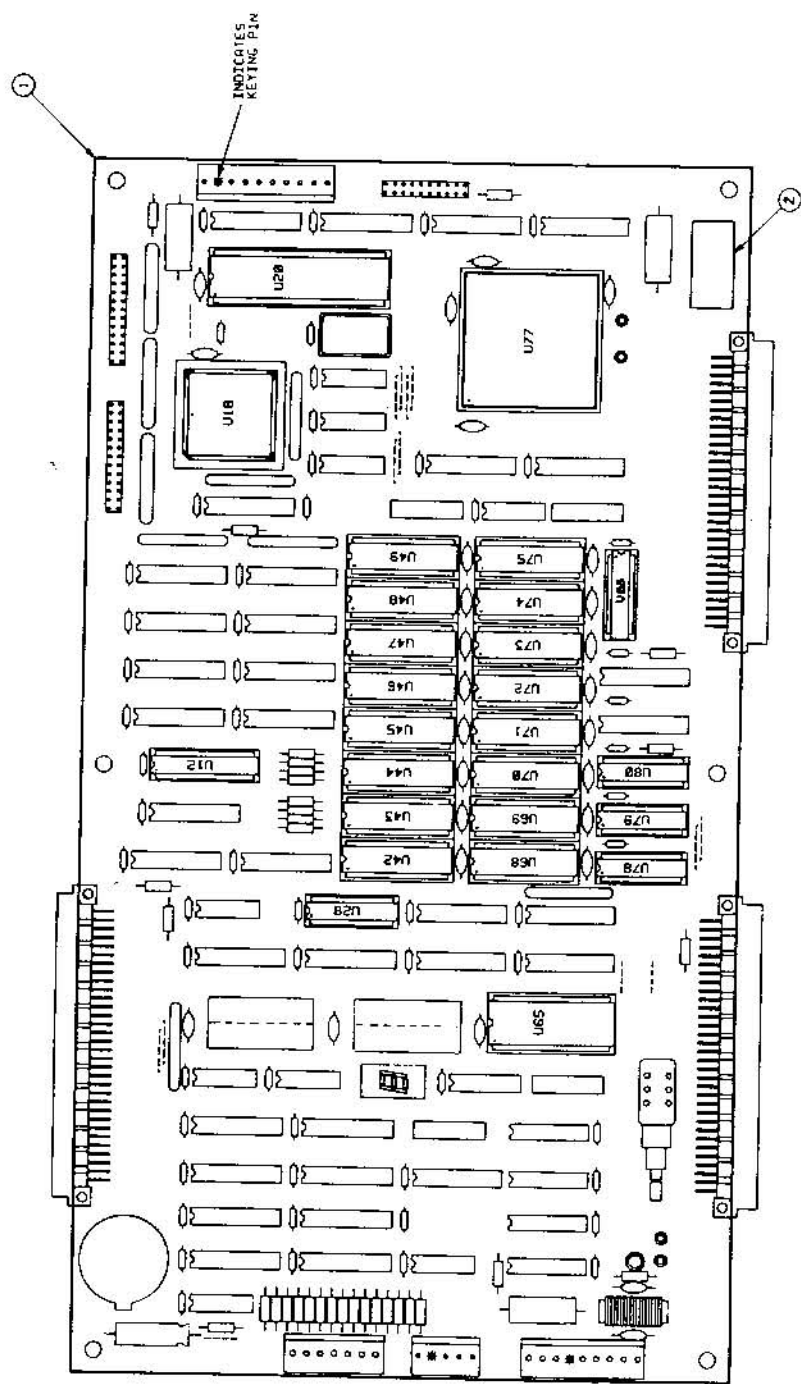


CABINET S/C BOARDS



BACK ASSEMBLY

REV	DESCRIPTION OF CHANGE	DATE	BY
A	NEW PART RELEASE	3/1/88	P.R. 88
	SEE SMT 2 OF 2	1/12/88	1/2/88



NOTE: FOR SCHEMATIC, REFER TO DRAWING NO. 16-9817.

ITEM	PART NUMBER	DESCRIPTION	QTY
1	U18	IC18	1
2	U28	IC28	1
3	U77	IC77	1
4	U43	IC43	1
5	U44	IC44	1
6	U45	IC45	1
7	U46	IC46	1
8	U47	IC47	1
9	U48	IC48	1
10	U49	IC49	1
11	U71	IC71	1
12	U72	IC72	1
13	U73	IC73	1
14	U74	IC74	1
15	U75	IC75	1
16	U76	IC76	1
17	U77	IC77	1
18	U78	IC78	1
19	U79	IC79	1
20	U80	IC80	1
21	U81	IC81	1
22	U82	IC82	1
23	U83	IC83	1
24	U84	IC84	1
25	U85	IC85	1
26	U86	IC86	1
27	U87	IC87	1
28	U88	IC88	1
29	U21	IC21	1
30	U22	IC22	1
31	U23	IC23	1
32	U24	IC24	1
33	U25	IC25	1
34	U26	IC26	1
35	U27	IC27	1
36	U29	IC29	1
37	U30	IC30	1
38	U31	IC31	1
39	U32	IC32	1
40	U33	IC33	1
41	U34	IC34	1
42	U35	IC35	1
43	U36	IC36	1
44	U37	IC37	1
45	U38	IC38	1
46	U39	IC39	1
47	U40	IC40	1
48	U41	IC41	1
49	U42	IC42	1
50	U50	IC50	1
51	U51	IC51	1
52	U52	IC52	1
53	U53	IC53	1
54	U54	IC54	1
55	U55	IC55	1
56	U56	IC56	1
57	U57	IC57	1
58	U58	IC58	1
59	U59	IC59	1
60	U60	IC60	1
61	U61	IC61	1
62	U62	IC62	1
63	U63	IC63	1
64	U64	IC64	1
65	U65	IC65	1
66	U66	IC66	1
67	U67	IC67	1
68	U68	IC68	1
69	U69	IC69	1
70	U70	IC70	1
71	U99	IC99	1
72	U100	IC100	1

ITEM	PART NUMBER	DESCRIPTION	QTY
1	U18	IC18	1
2	U28	IC28	1
3	U77	IC77	1
4	U43	IC43	1
5	U44	IC44	1
6	U45	IC45	1
7	U46	IC46	1
8	U47	IC47	1
9	U48	IC48	1
10	U49	IC49	1
11	U71	IC71	1
12	U72	IC72	1
13	U73	IC73	1
14	U74	IC74	1
15	U75	IC75	1
16	U76	IC76	1
17	U77	IC77	1
18	U78	IC78	1
19	U79	IC79	1
20	U80	IC80	1
21	U81	IC81	1
22	U82	IC82	1
23	U83	IC83	1
24	U84	IC84	1
25	U85	IC85	1
26	U86	IC86	1
27	U87	IC87	1
28	U88	IC88	1
29	U21	IC21	1
30	U22	IC22	1
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33	U25	IC25	1
34	U26	IC26	1
35	U27	IC27	1
36	U29	IC29	1
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41	U34	IC34	1
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64	U64	IC64	1
65	U65	IC65	1
66	U66	IC66	1
67	U67	IC67	1
68	U68	IC68	1
69	U69	IC69	1
70	U70	IC70	1
71	U99	IC99	1
72	U100	IC100	1

WILLIAMS ELECTRONICS, INC.
 200 N. CALIFORNIA AVE
 CUCUMBER CITY, NC 28001
 SYS-Z CPU PCB ASSEMBLY
 C-11879-1

C-11879-1

GAME NAME	3036
ASSY. NO.	C-11879-3036
8	A-5346-3036-7
9	A-5346-3036-6
10	A-5346-3036-5
11	A-5346-3036-4
12	A-5346-3036-3
13	A-5346-3036-2
14	A-5346-3036-1
JUMPERS REMOVED	NONE

ITEM NUMBERS

ITEM	PART NO.	DESCRIPTION	QTY
10	SEE CHART	IC, PLD-IMAGE RDM CNTL	1
9	SEE CHART	IC, PLD-VIDEO RAM SEG.	1
8	SEE CHART	IC, PLD-AUTOERASE CNTL	1
7	5340-12019-00	IC, RAM/S 5564 8K x 8	1
6	5340-12219-00	IC, RAM/V 4461 24K x 4	1
5			
4	3400-12220-00	IC, TMS34010 G.S.P.	1
3	5410-12239-00	IC, CUSTOM ASIC	1
2	16-8850-218	LABEL, PCB IDENT.	1
1	C-11879	SYS-2 CPU PCB SUB-ASSEMBLY	1

BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY
20			
19			
18			
17			
16			
15	5320-11056-00	BATTERY - LITHIUM 3V BUTTON	1
14	SEE CHART	IC, PLD-COLOR RAM CNTL	1
13	SEE CHART	IC, PLD-LOCAL CONTROL	1
12	SEE CHART	IC, PLD-VIDEO RAM CNTL	1
11	SEE CHART	IC, PLD-ADDRESS DECODE	1

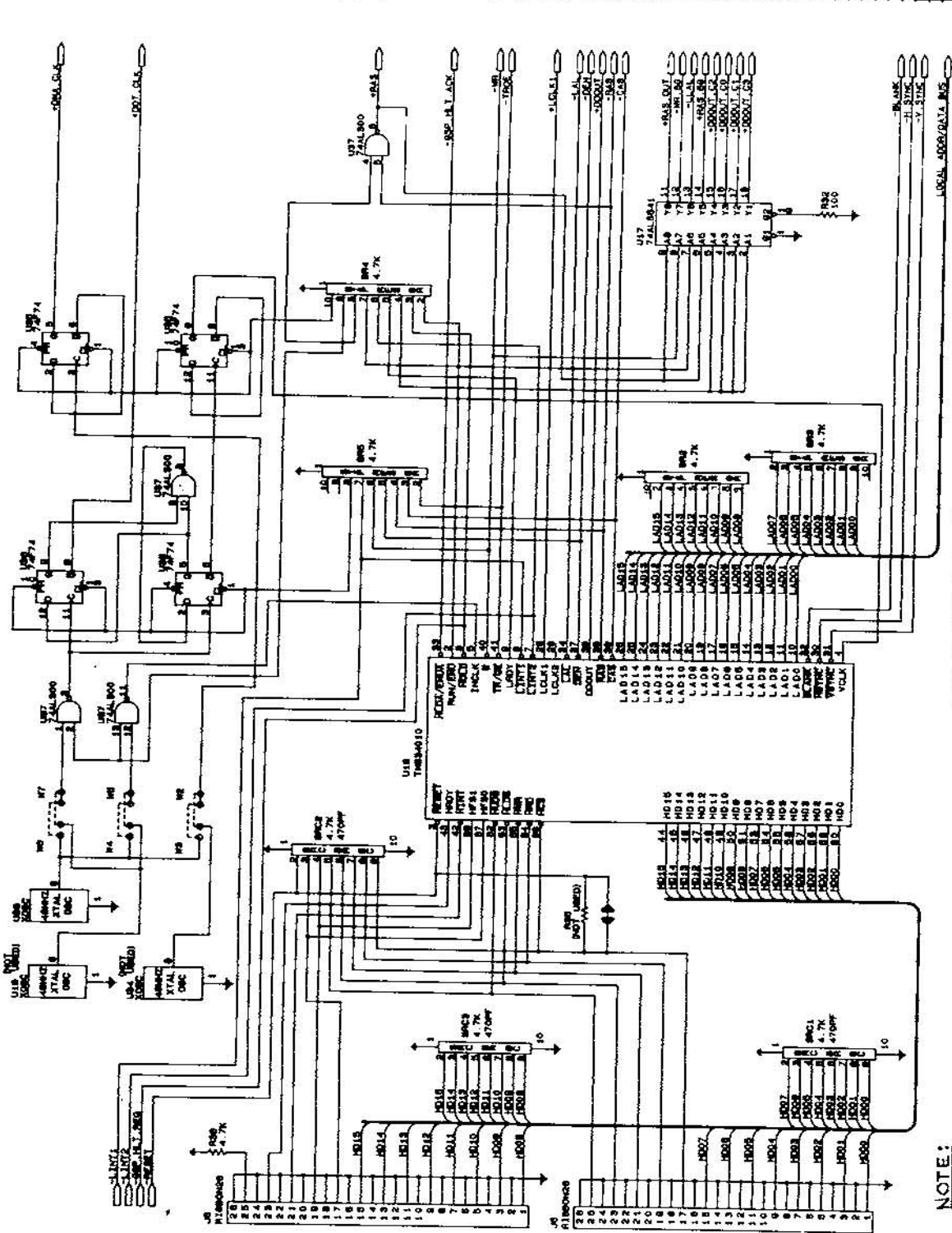
BILL OF MATERIALS

NOTE: FOR SCHEMATIC, REFER TO DRAWING NO. 16-9917.

WILLIAMS ELECTRONICS, INC.
 3030 CALIFORNIA AVE. CHICAGO, ILL. 60641
 NAME: SYS-2 CPU PCB ASSEMBLY
 SCALE: 1/8" = 1" PART NO: C-11879 REV: A

DO NOT SCALE FROM THIS DRAWING TO WORK TO DIMENSIONS
 DATE: 4/25/88
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVAL: [Signature]
 DATE: 5/1/88
 PROJECT NO: 16-9917
 PART PROJECT NO: 16-9917-001
 MATERIAL: D-18114

REV.	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	1/10/58
A	See COVER SMT	1/12/58

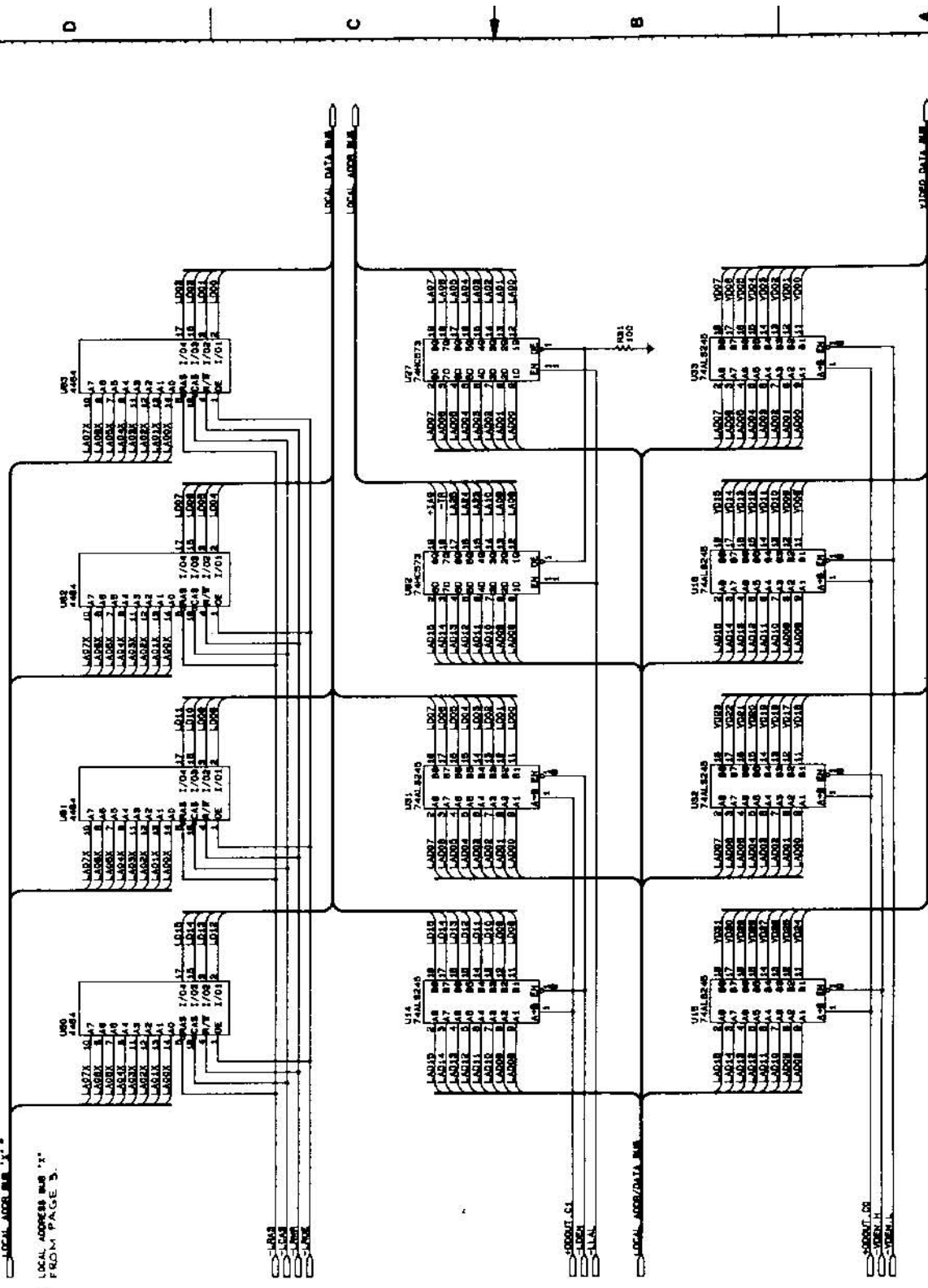


NOTE:
BUS 0 SIGNAL LABELS DESIGNATED WITH AN 'X' SUFFIX ARE FORMED FROM ROOT SIGNALS DRIVEN THROUGH SERIES RESISTORS.

16-9017	16-9017	16-9017	16-9017																														
1	2	3	4																														
<table border="1"> <tr> <th>ITEM</th> <th>PART NUMBER</th> <th>DESCRIPTION</th> <th>QTY</th> <th>UNIT</th> </tr> <tr> <td>1</td> <td>DO NOT SCALE</td> <td>RESERVE NUMBER, BEAM SHARP CORNER & EDGES</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>WORM TO</td> <td>TOLERANCE</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>DISK DRIVE</td> <td>VALUES OTHERWISE SPECIFIED</td> <td>1/24</td> <td></td> </tr> <tr> <td>4</td> <td>SHIPPING</td> <td>ORIGINAL</td> <td>1</td> <td></td> </tr> <tr> <td>5</td> <td>FUNCTIONAL</td> <td>MATERIAL</td> <td>1</td> <td></td> </tr> </table>				ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	1	DO NOT SCALE	RESERVE NUMBER, BEAM SHARP CORNER & EDGES			2	WORM TO	TOLERANCE			3	DISK DRIVE	VALUES OTHERWISE SPECIFIED	1/24		4	SHIPPING	ORIGINAL	1		5	FUNCTIONAL	MATERIAL	1	
ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT																													
1	DO NOT SCALE	RESERVE NUMBER, BEAM SHARP CORNER & EDGES																															
2	WORM TO	TOLERANCE																															
3	DISK DRIVE	VALUES OTHERWISE SPECIFIED	1/24																														
4	SHIPPING	ORIGINAL	1																														
5	FUNCTIONAL	MATERIAL	1																														
<p>WILLIAMS ELECTRONICS, INC. 3000 N. CALIFORNIA AVE. MOUNTAIN VIEW, CALIF. 92540</p>																																	
<p>SY-2 CPU BOARD SCHEMATIC</p>																																	
<p>REV. 1/10/58 PART NO. 16-9017</p>																																	

REV.	DESCRIPTION OF CHANGE	DATE
A	NEW PART RELEASE	11/01
B	SEE COVER SHEET	1/13/54

* NOTE: LOCAL ADDRESS MAP "1" FROM PAGE 3.



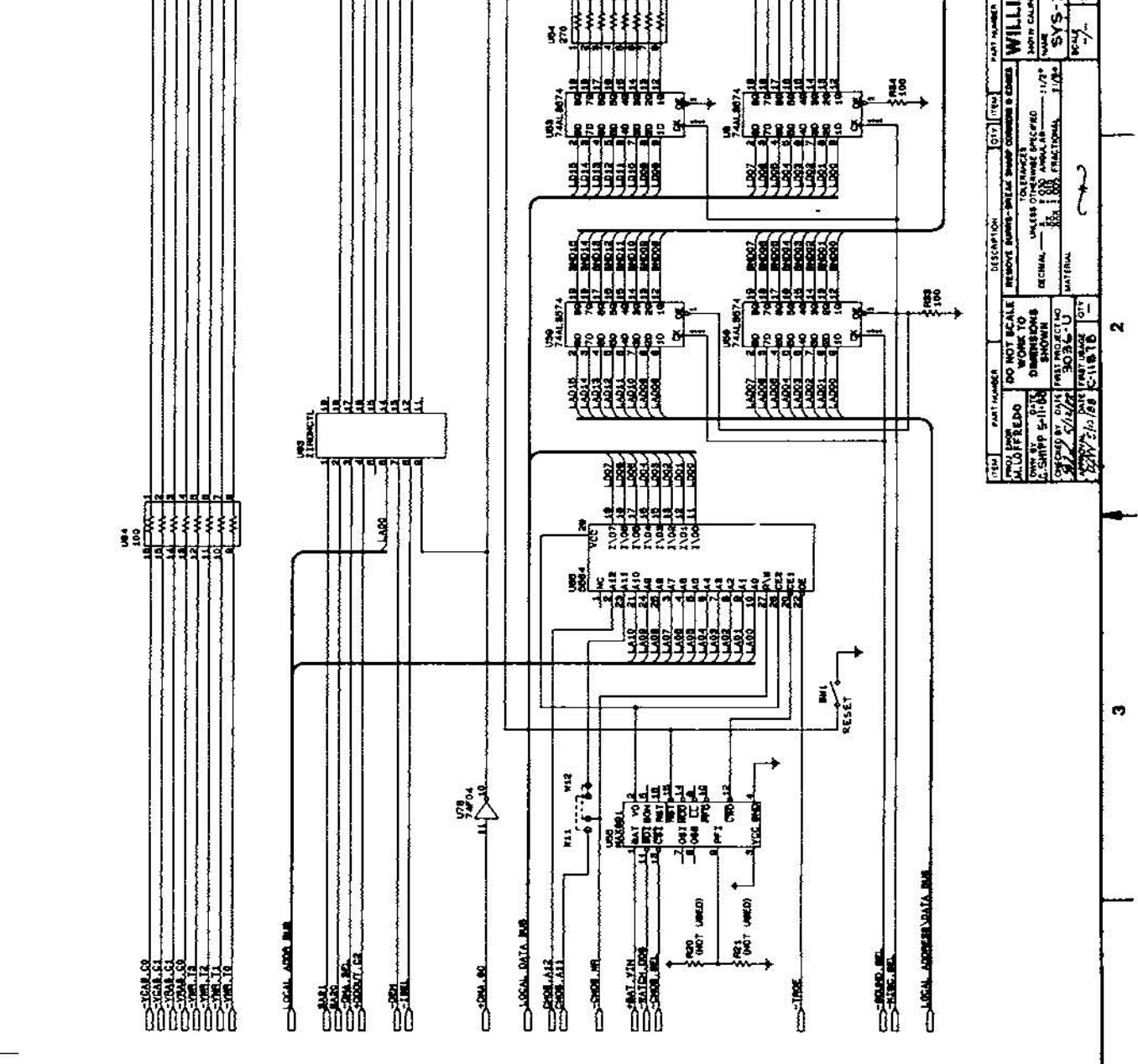
ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ. ENGR.	M. LOFFREDO	DO NOT SCALE		REMOVE BURNS - RELEASE SHARP CORNERS & LINES			
DRW. BY	D. J. SHIFF	WORK TO DIMENSIONS SHOWN		TOLERANCES UNLESS OTHERWISE SPECIFIED			
CHECKED BY	J. J. SHIFF			DECIMAL - 1/16" UNLESS INDICATED			
DATE	11/13/54			FIN. 1/32" FUNCTIONAL 1/64"			
APPROVED BY	J. J. SHIFF			MATERIAL			
SCALE	1/2" = 1"			16-9017			

WILLIAMS ELECTRONICS, INC.
 JOHN C. WILLIAMS
 CHICAGO, ILL.

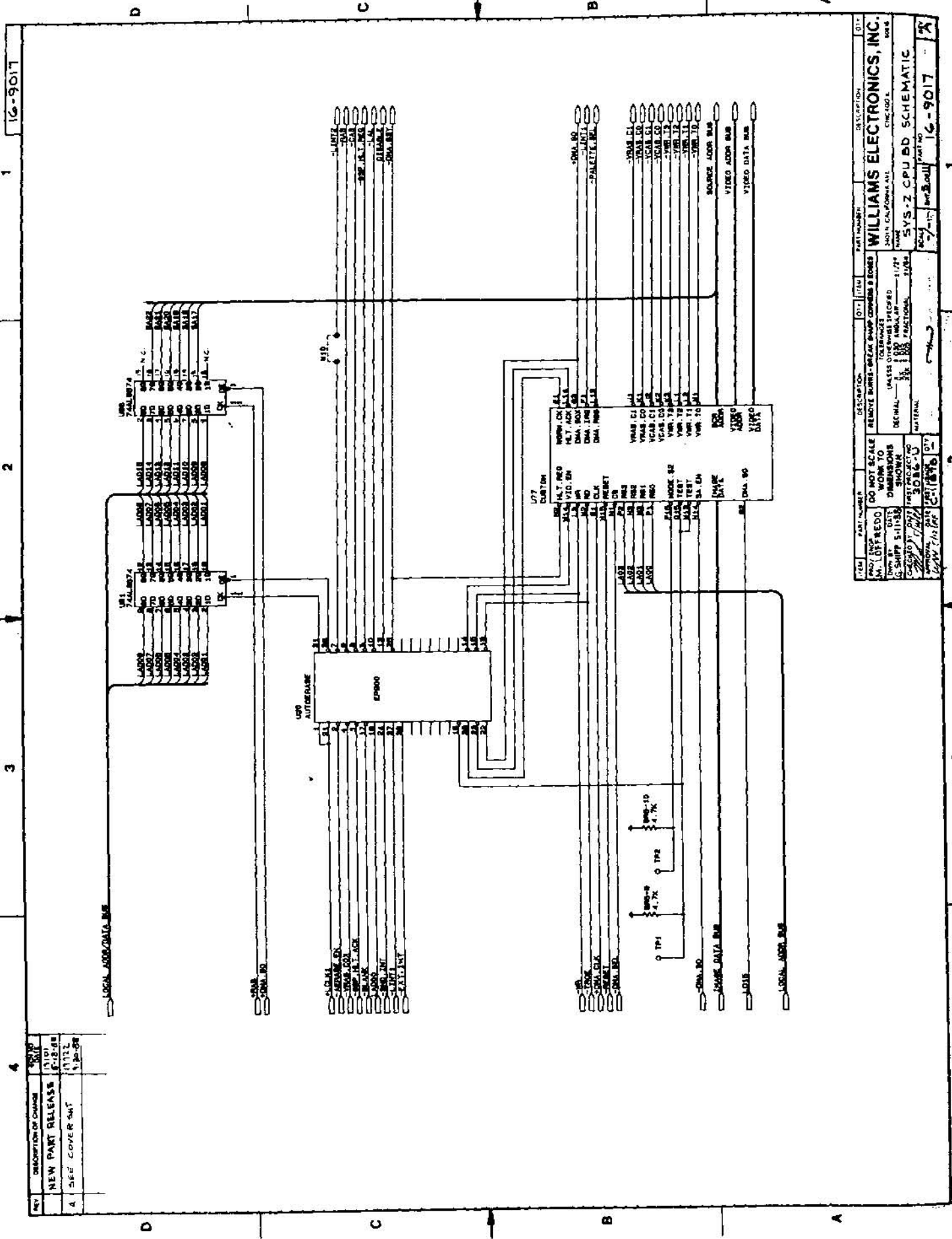
SYS-Z CPU BD SCHEMATIC
 SCALE: 1/2" = 1"
 PART NO: 16-9017

1 2 3 4

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	1-17-66
2	A SEE COVER SHT	1-17-66



REV	PART NUMBER	DESCRIPTION	QTY	UNIT	DESCRIPTION	QTY
1	DO NOT SCALE WORK TO DIMENSIONS UNLESS SPECIFIED OTHERWISE	REMOVE NUMBER-BEARING COVER & COVERS			WILLIAMS ELECTRONICS, INC.	
2	DO NOT SCALE WORK TO DIMENSIONS UNLESS SPECIFIED OTHERWISE				16-9017	
3	DO NOT SCALE WORK TO DIMENSIONS UNLESS SPECIFIED OTHERWISE				16-9017	
4	DO NOT SCALE WORK TO DIMENSIONS UNLESS SPECIFIED OTHERWISE				16-9017	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UIC	REVISION
16-9017	16-9017	REMOVE BURR-BEARING FROM CONDUCTIVE TUBES			01
WILLIAMS ELECTRONICS, INC. 1401 N. CALIFORNIA CHICAGO, ILL. 60642					
SYS-2 CPU BD SCHEMATIC					
DATE 7-17-69 BY [Signature]					

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	8-18-69
2	SEE COVER SHEET	11-12-69

16-9017

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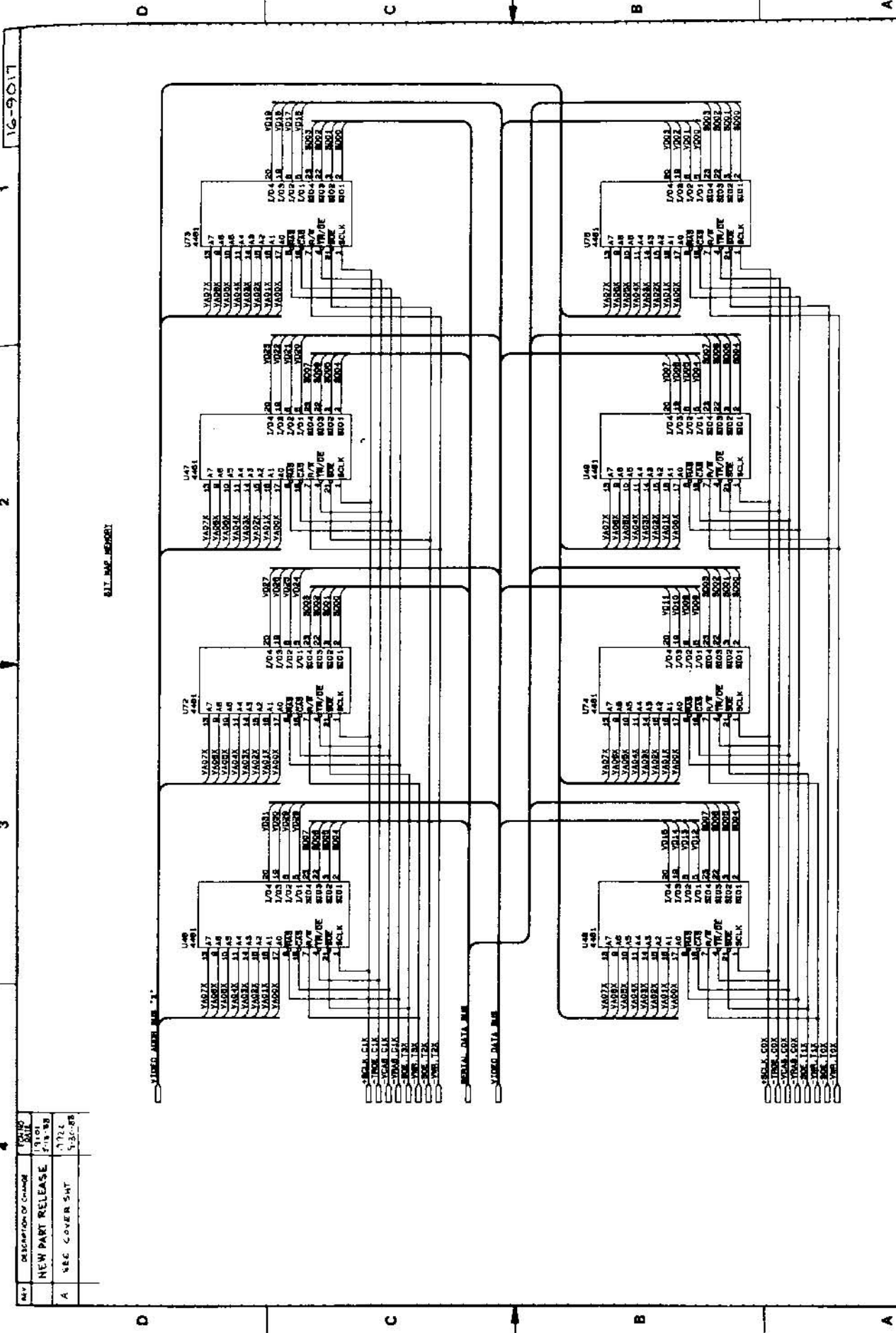
4

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2

3

4



ALL DIMENSIONS

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	7-18-78
A	SEC COVER SMT	5-30-78

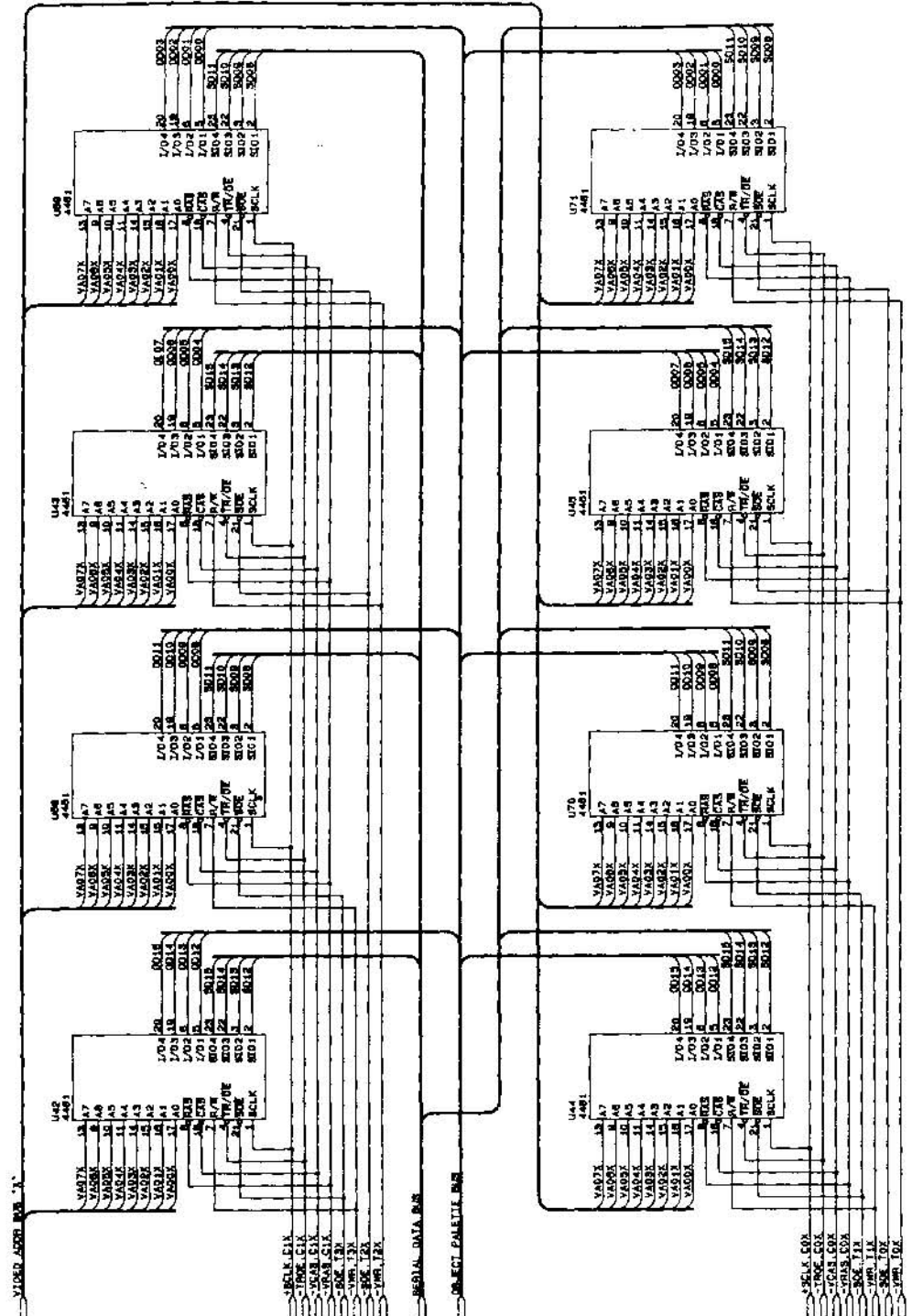
ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	PART NUMBER	QTY	UNIT
PROJ ENG	M. LOFF	REMOVE SURFACE MOUNT COMPONENTS					
CHECKED BY	DATE	DATE	DATE	DATE	DATE	DATE	DATE
5/2/82	5/2/82	5/2/82	5/2/82	5/2/82	5/2/82	5/2/82	5/2/82

WILLIAMS ELECTRONICS, INC.
 3401 N. CALIFORNIA AVE
 CHICAGO, ILL. 60641
 PHONE 312-462-1000
 FAX 312-462-1001
 TELETYPE 312-462-1002

SYN-Z CPU BD SCHEMATIC
 PART NO. 16-9017
 REV. A

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	12/12/58
A	SEC COVER SMT	1/30/59

OBJECT PALETTE MOUNT



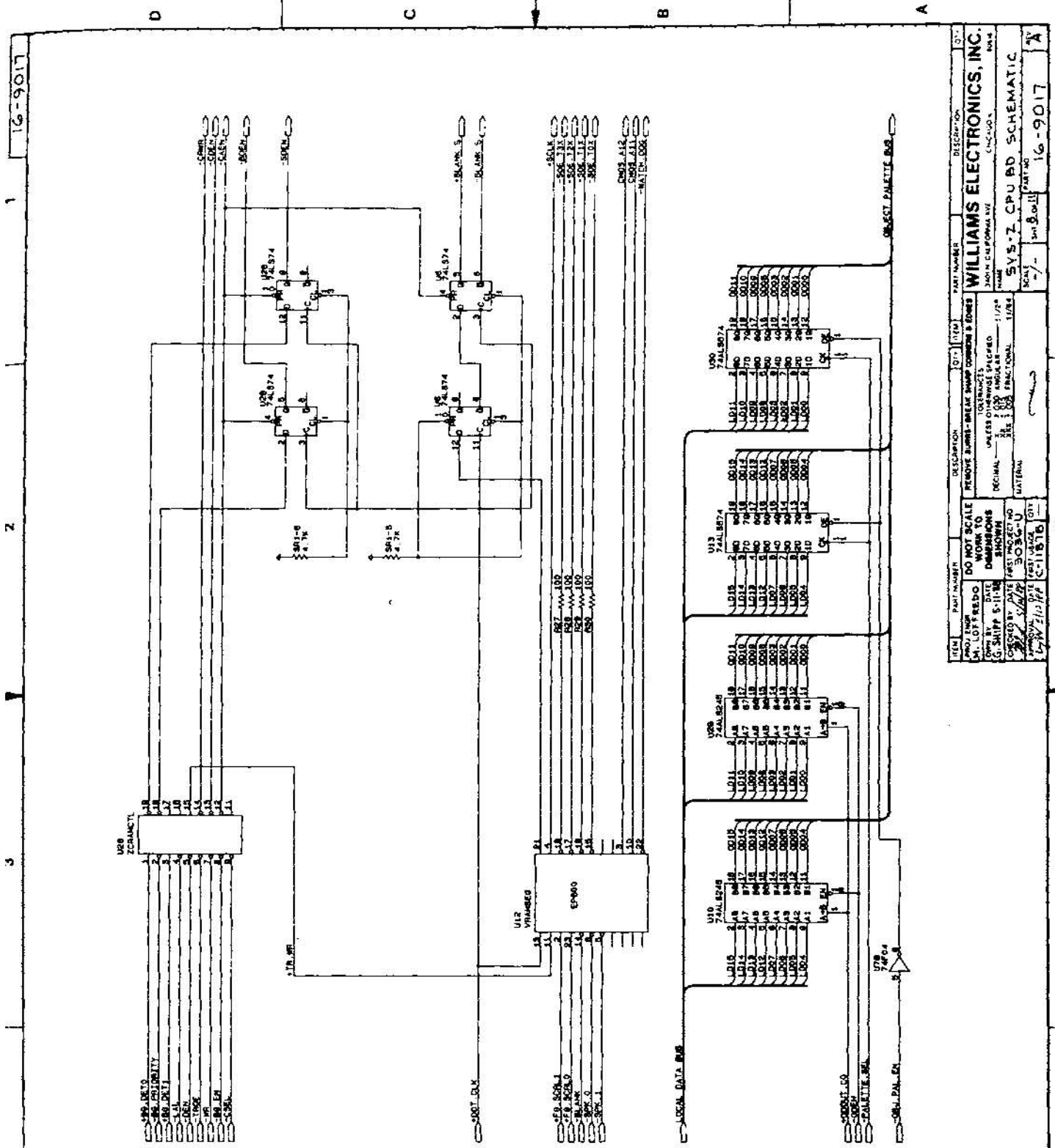
REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	12/12/58
A	SEC COVER SMT	1/30/59

ITEM	PART NUMBER	DESCRIPTION	QTY	REVISION
1	U44 4481	REMOVE NUMS - BEAK SHARP CORNERS		
2	U76 7481	TOLERANCES		
3	U71 7481	UNLESS OTHERWISE SPECIFIED		

DECIMAL 1/100 FRACTIONAL 1/100
 MAT'L 1/100 FRACTIONAL 1/100
 1/100 FRACTIONAL 1/100
 1/100 FRACTIONAL 1/100

WILLIAMS ELECTRONICS, INC.	DEPARTMENT	
16-9017	PART NO	
16-9017	PART NO	

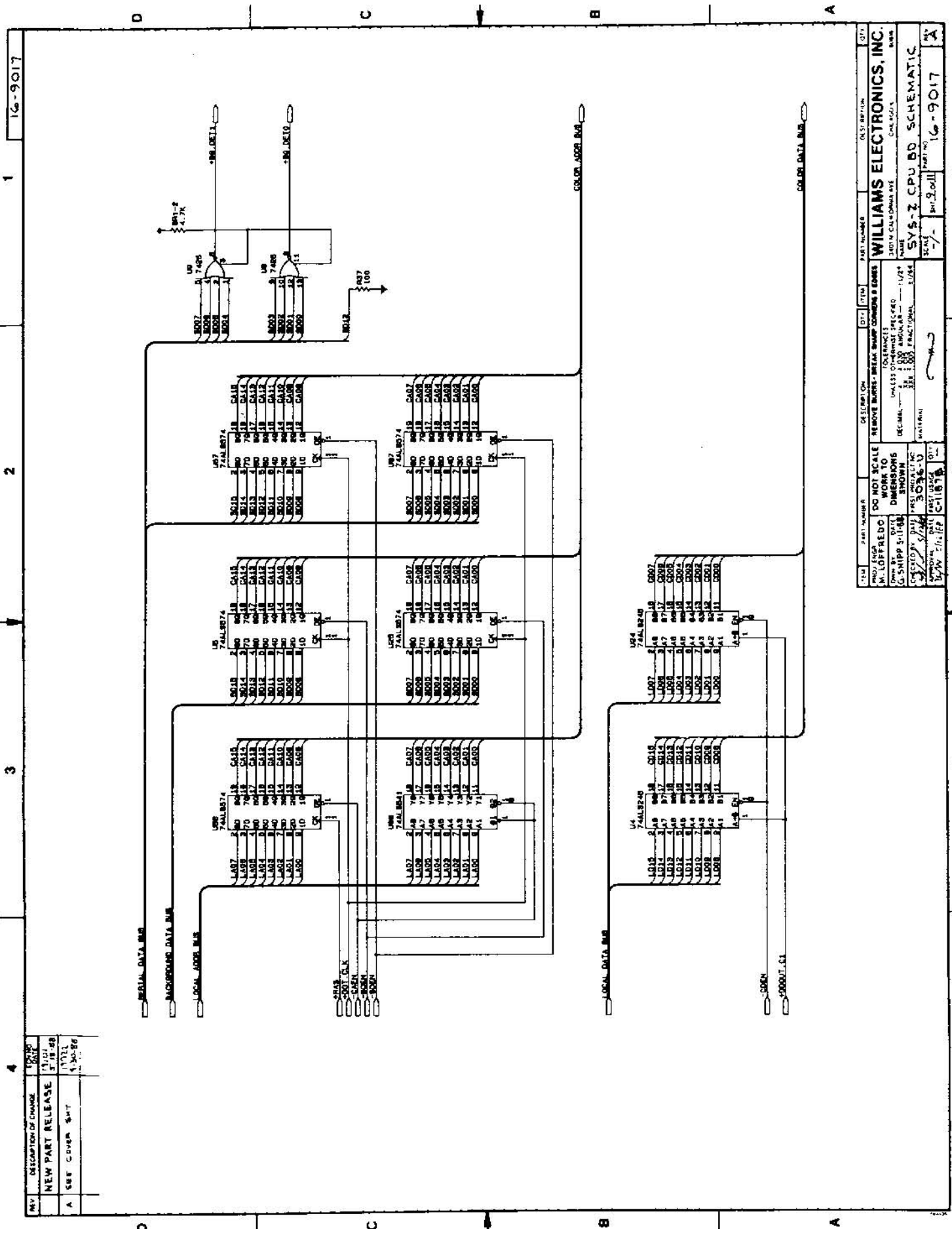
REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	1971-08
A	see COMEP hnt	1971-08-08



ITEM	PART NUMBER	DESCRIPTION	QTY	UOM	PART NUMBER	DESCRIPTION
PROJ	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
M. LOTT	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
G. SHIPP	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DATE	1971-08-08	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DESIGNED BY	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
APPROVED BY	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DATE	1971-08-08	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
PROJECT NO	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
REV	DESCRIPTION	DATE	QTY	UOM	REV	DESCRIPTION
1	NEW PART RELEASE	1971-08	1	EA	1	NEW PART RELEASE
A	see COMEP hnt	1971-08-08	1	EA	A	see COMEP hnt

ITEM	PART NUMBER	DESCRIPTION	QTY	UOM	PART NUMBER	DESCRIPTION
PROJ	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
M. LOTT	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
G. SHIPP	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DATE	1971-08-08	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DESIGNED BY	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
APPROVED BY	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
DATE	1971-08-08	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
PROJECT NO	16-9017	NEW PART RELEASE	1	EA	16-9017	NEW PART RELEASE
REV	DESCRIPTION	DATE	QTY	UOM	REV	DESCRIPTION
1	NEW PART RELEASE	1971-08	1	EA	1	NEW PART RELEASE
A	see COMEP hnt	1971-08-08	1	EA	A	see COMEP hnt

WILLIAMS ELECTRONICS, INC.
 JOHN C. WILLIAMS, INC.
 555-7 CPU BD SCHEMATIC
 16-9017



16-9017

1

2

3

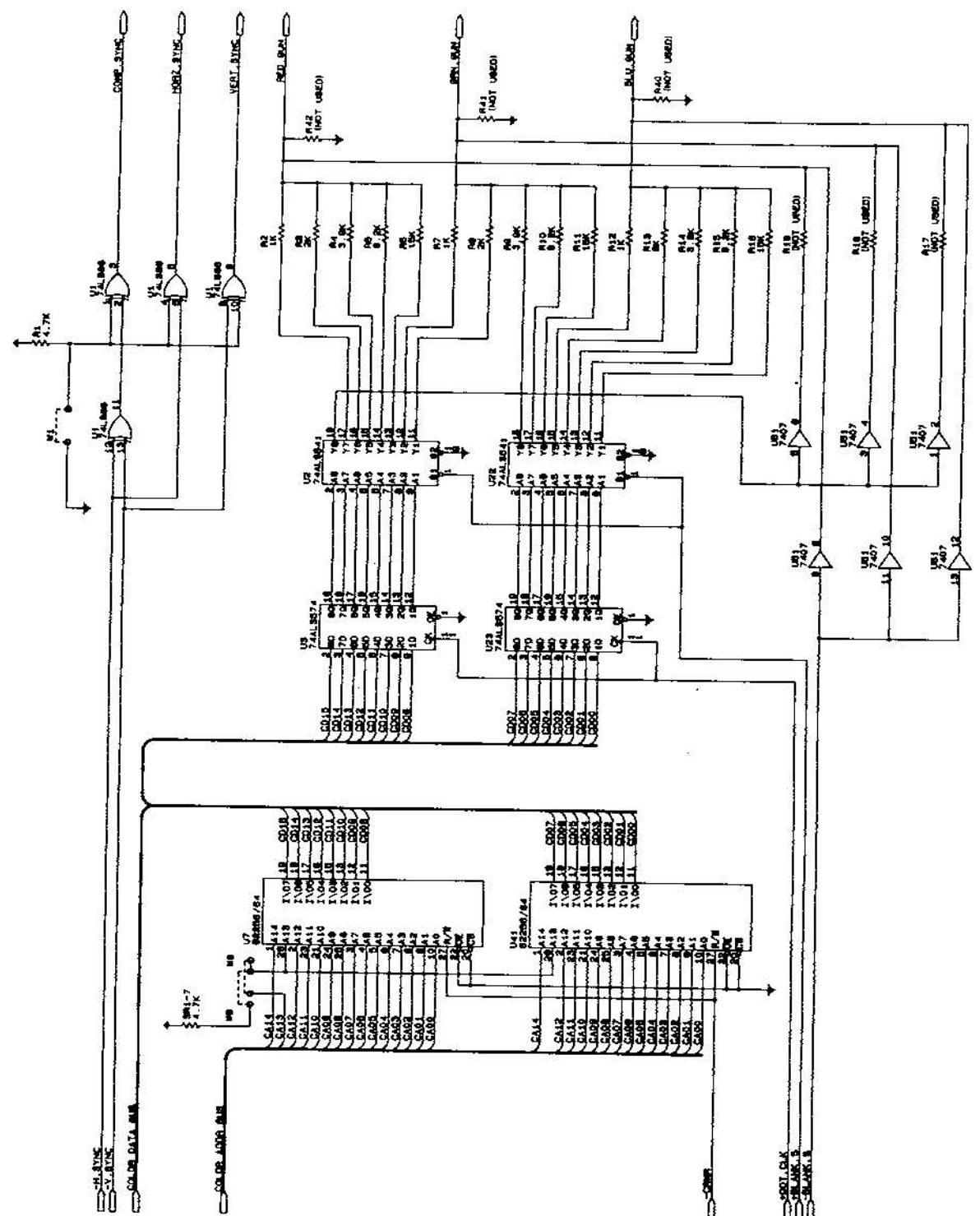
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REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	3/18/88
A	SEE COVER SHEET	3/30/88

FILE NO	16-9017	REV	1
DATE	3/18/88	DESIGNER	WILLIAMS ELECTRONICS, INC.
BY	G. SNIPP	CHECKED	WILLIAMS ELECTRONICS, INC.
DATE	3/30/88	DATE	3/18/88
DESCRIPTION	REMOVE BURRS-BREAK SWAP COMPONENTS & SOLDER TO PREVENT DAMAGE TO UNLESS OTHERWISE SPECIFIED	QUANTITY	1.00
FRAC	1.00	FRAC	1.00
UNIT	3036-U	UNIT	16-9017
DATE	3/18/88	DATE	3/18/88
BY	G. SNIPP	BY	G. SNIPP
DATE	3/30/88	DATE	3/30/88
BY	G. SNIPP	BY	G. SNIPP
DATE	3/30/88	DATE	3/30/88
BY	G. SNIPP	DATE	3/30/88

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	3/18/88
A	SEE COVER SHEET	3/30/88

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	11/01/58
2	A. SEE COVER SHEET	11/13/58



16-9017

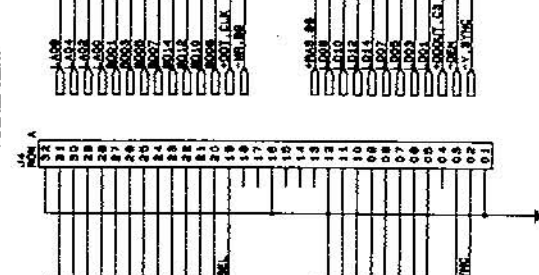
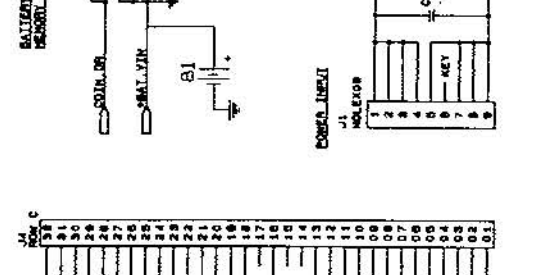
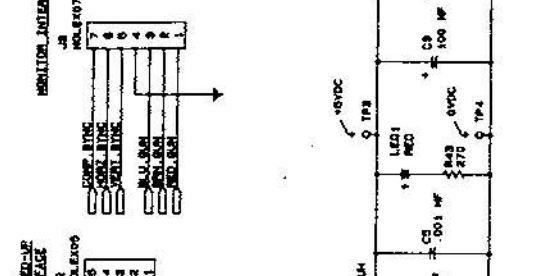
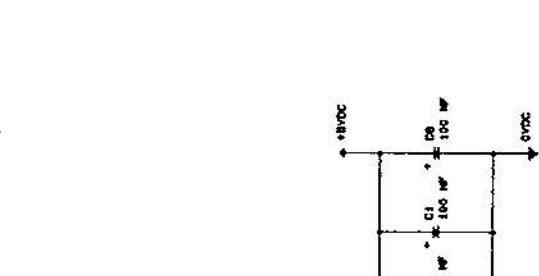
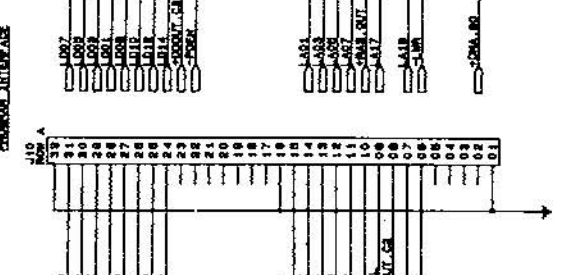
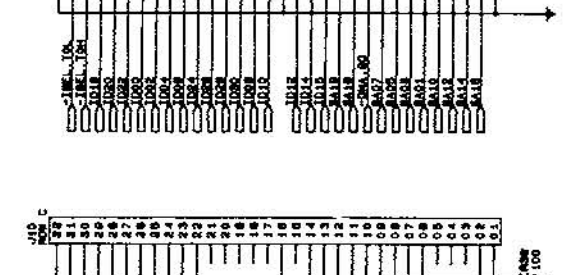
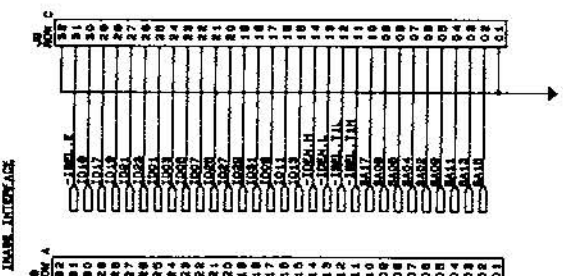
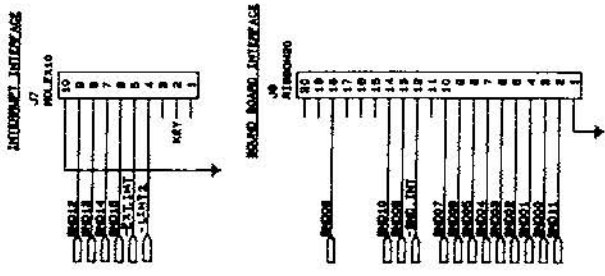
ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION
U1	74AL01	74AL01	1	U1	74AL01	74AL01
U2	74AL01	74AL01	1	U2	74AL01	74AL01
U3	74AL01	74AL01	1	U3	74AL01	74AL01
U4	74AL01	74AL01	1	U4	74AL01	74AL01

PROJ. NO.	16-9017	REVISIONS	1
DATE	11/01/58	DESCRIPTION	NEW PART RELEASE
DESIGNED BY	S. J. K. / J. K.	DRAWN BY	S. J. K.
CHECKED BY	J. K.	DATE	11/13/58

WILLIAMS ELECTRONICS, INC.	CHICAGO, ILL.
NAME	SY5-Z CPU BD SCHEMATIC
SCALE	1/1
PART NO.	16-9017

D C B A

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	11/01 5:18:22
A	SEE COVER SHT	11/01 5:30:00



ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT
1	16-9017	SYSTEM SCHEMATIC	1	PCB

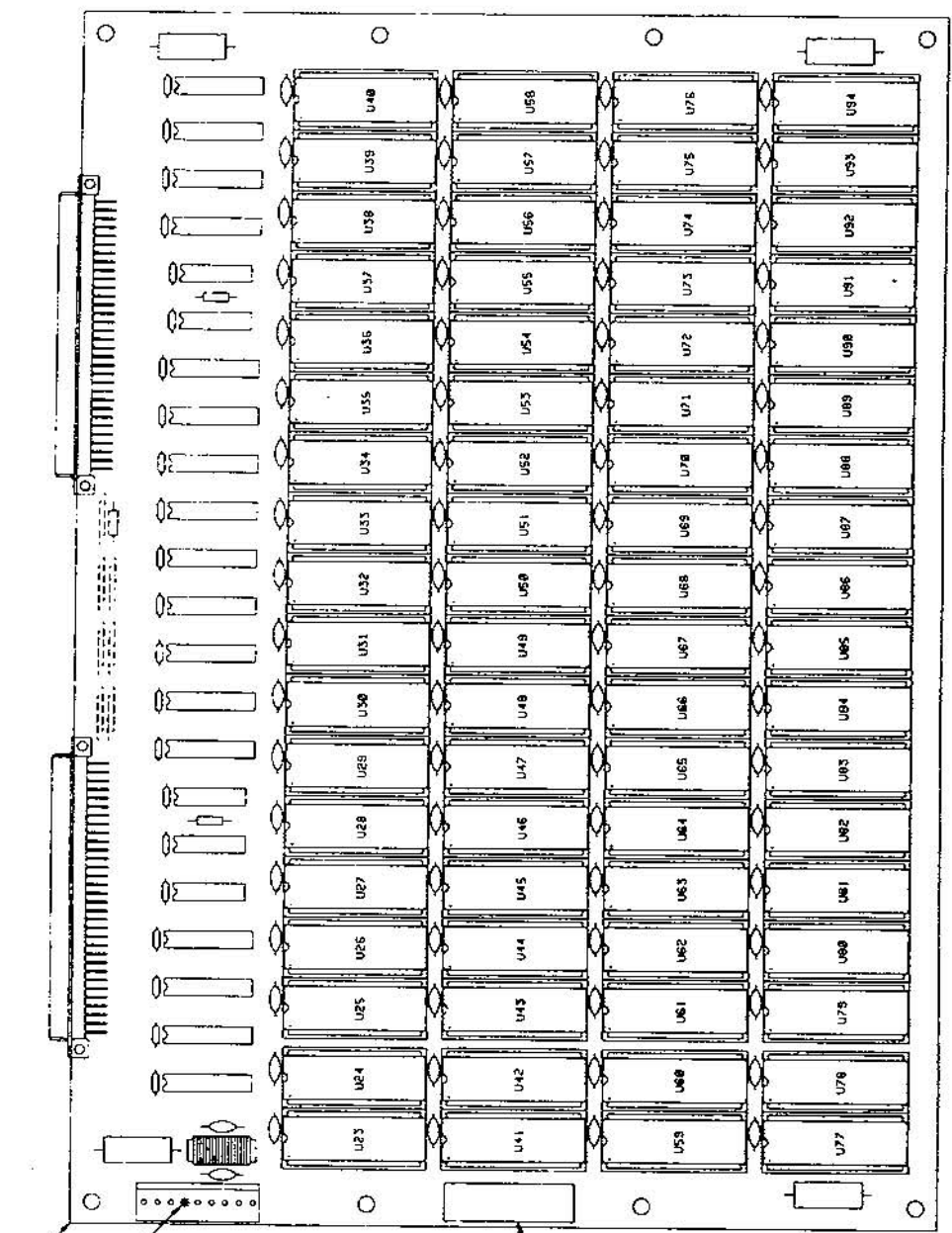
WILLIAMS ELECTRONICS, INC.
 3401 N. CALIFORNIA AVE.
 CHICAGO, ILL. 60641
 TEL: 312/341-1000
 FAX: 312/341-1001

DATE: 11/01
 BY: [Signature]
 CHECKED: [Signature]
 APPROVED: [Signature]

DO NOT SCALE UNLESS OTHERWISE SPECIFIED DIMENSIONS SHOWN UNLESS OTHERWISE SPECIFIED DECIMALS - 1/100 ANGULAR - 1/16 FRACTIONS - 1/16, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1	PART NUMBER: 16-9017 DESCRIPTION: SYSTEM SCHEMATIC QTY: 1 UNIT: PCB
---	--

DESCRIPTION OF CHANGE
NEW PART RELEASE
DATE 8/17/88
BY [Signature]

C-12260-



NOTES: 1. FOR SCHEMATIC, REFER TO DRAWING NO. 16-9041.
2. 28-PIN DEVICES (I.E. 27512 EPROMS) SHOULD BE BOTTOM JUSTIFIED IN SOCKETS.

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT
1	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
2	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
3	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
4	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
5	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
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71	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
72	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
73	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
74	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
75	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
76	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
77	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
78	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
79	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
80	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
81	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
82	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
83	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
84	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
85	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
86	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
87	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
88	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
89	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
90	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
91	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
92	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
93	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
94	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
95	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
96	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
97	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
98	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
99	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		
100	WILLIAMS ELECTRONICS, INC.	DESCRIPTION		

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C-12260-

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DESCRIPTION OF CHANGE
NEW PART RELEASE

GAME NAME	3036
ASSY. NO.	
U77	
U78	
U79	
U80	
U81	
U82	
U83	
U84	
U85	
U86	
U87	
U88	
U89	
U90	
U91	
U92	
U93	
U94	

GAME NAME	3036
ASSY. NO.	
U80	
U81	
U82	
U83	
U84	
U85	
U86	
U87	
U88	
U89	
U90	
U91	
U92	
U93	
U94	
U95	
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U139	
U140	
U141	
U142	
U143	
U144	
U145	
U146	
U147	
U148	
U149	
U150	

GAME NAME	3036
ASSY. NO.	
U23	
U24	
U25	
U26	
U27	
U28	
U29	
U30	
U31	
U32	
U33	
U34	
U35	
U36	
U37	
U38	
U39	
U40	
U41	
U42	
U43	
U44	
U45	
U46	
U47	
U48	
U49	
U50	

ITEM	PART NO	PART DESIGNATION	DESCRIPTION	QTY	UNIT
3		SEE CHART	SEE CHART		SEE CHART
2	18-880-210		LABEL, PCB IDENT	1	
1	C-12260	815-2 ROM 2 SUB-ASSY		1	

BILL OF MATERIALS

NOTE: FOR SCHEMATIC, REFER TO DRAWING NO 18-9041

DO NOT SCALE
UNLESS OTHERWISE SPECIFIED
DIMENSIONS SHOWN
FIRST PROJECT NO 5056-UI
DATE 7/18/88
10-18366 1

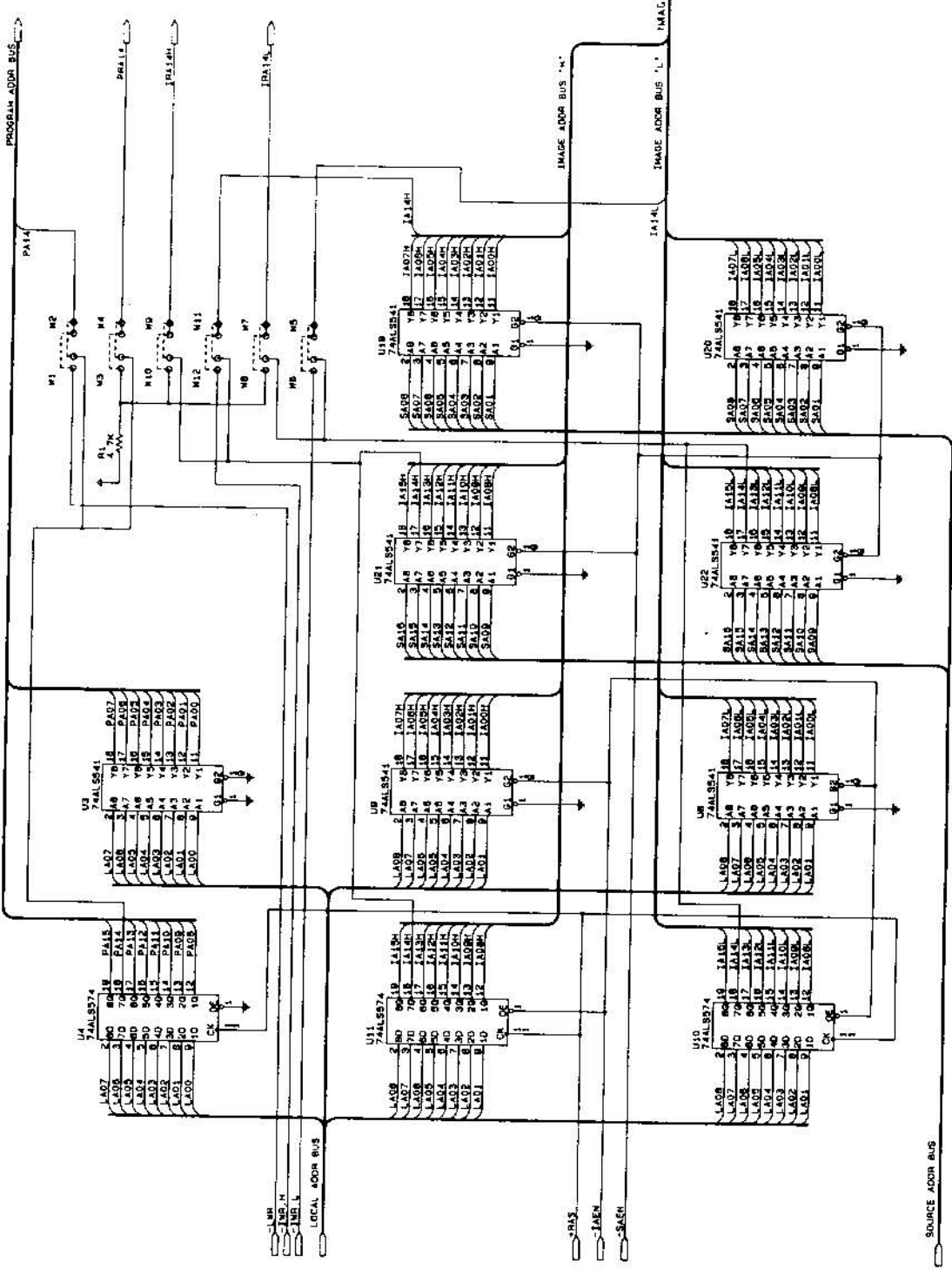
WILLIAMS ELECTRONICS, INC.
3401N CALIFORNIA AVE
CHICAGO, IL 60642

SYS-2 ROM-2 PCB ASSEMBLY

DATE 7/18/88
BY 1202
REV 1

16-9041

DESCRIPTION OF CHANGE
NEW PART RELEASE



REV.	DESCRIPTION OF CHANGE	DATE	BY	CHK'D BY	DATE
1	NEW PART RELEASE	11/14/74	W.S.P.		

REV.	DESCRIPTION OF CHANGE	DATE	BY	CHK'D BY	DATE
1	NEW PART RELEASE	11/14/74	W.S.P.		

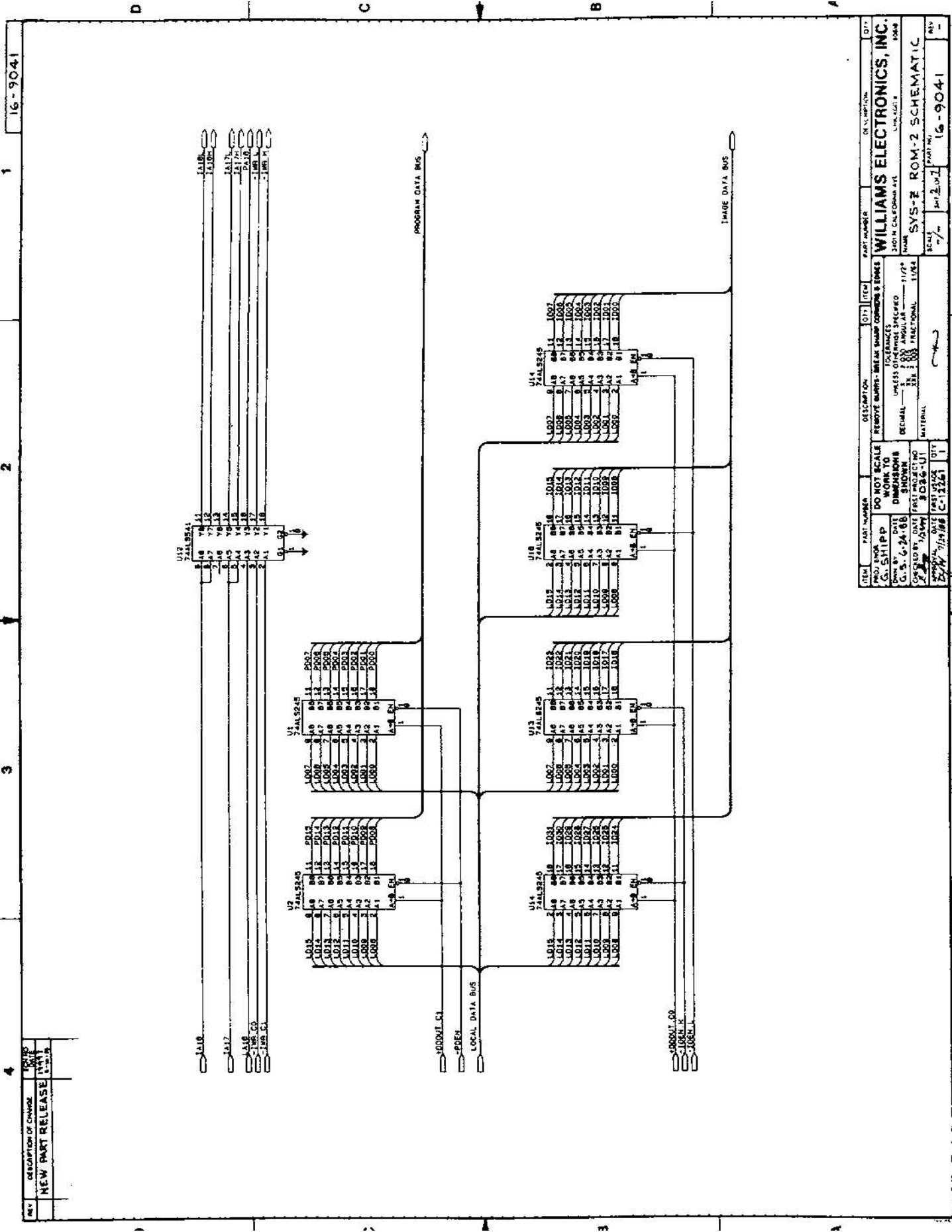
REV.	DESCRIPTION OF CHANGE	DATE	BY	CHK'D BY	DATE
1	NEW PART RELEASE	11/14/74	W.S.P.		

REV.	DESCRIPTION OF CHANGE	DATE	BY	CHK'D BY	DATE
1	NEW PART RELEASE	11/14/74	W.S.P.		

WILLIAMS ELECTRONICS, INC.
12000 WILLIAMS BLVD., CHICO, CALIF. 95926
TELEPHONE (916) 895-1100

SYNOPSIS: ROM-2 SCHEMATIC

REV. 1



16-9041

1

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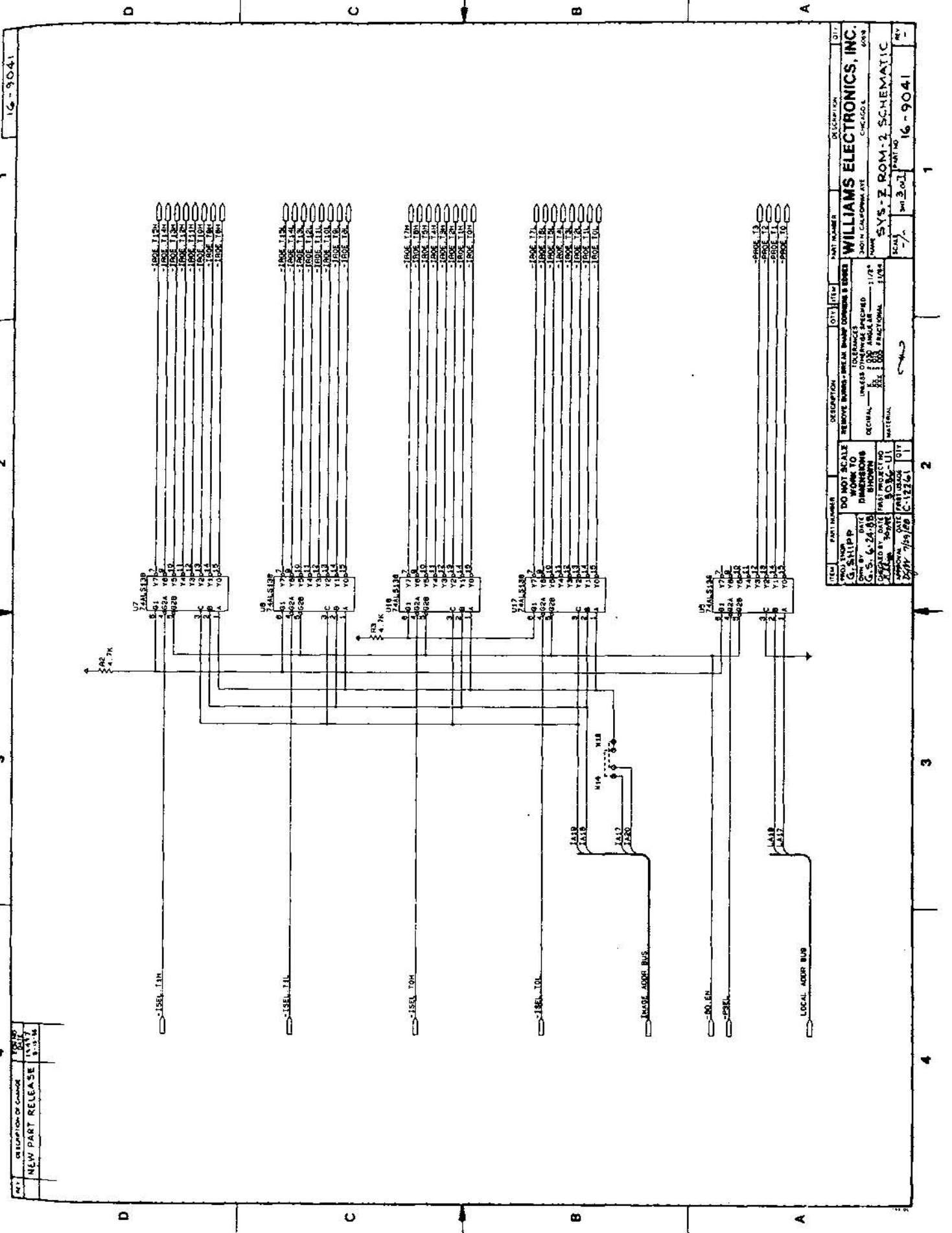
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NEW PART RELEASE

ITEM	PART NUMBER	DESCRIPTION	QTY	REP	DATE	BY
1	U12	74ALS245	1			
2	U13	74ALS245	1			
3	U14	74ALS245	1			
4	U15	74ALS245	1			
5	U16	74ALS245	1			
6	U17	74ALS245	1			
7	U18	74ALS245	1			
8	U19	74ALS245	1			
9	U20	74ALS245	1			
10	U21	74ALS245	1			
11	U22	74ALS245	1			
12	U23	74ALS245	1			
13	U24	74ALS245	1			
14	U25	74ALS245	1			
15	U26	74ALS245	1			
16	U27	74ALS245	1			
17	U28	74ALS245	1			
18	U29	74ALS245	1			
19	U30	74ALS245	1			
20	U31	74ALS245	1			
21	U32	74ALS245	1			
22	U33	74ALS245	1			
23	U34	74ALS245	1			
24	U35	74ALS245	1			
25	U36	74ALS245	1			
26	U37	74ALS245	1			
27	U38	74ALS245	1			
28	U39	74ALS245	1			
29	U40	74ALS245	1			
30	U41	74ALS245	1			
31	U42	74ALS245	1			
32	U43	74ALS245	1			
33	U44	74ALS245	1			
34	U45	74ALS245	1			
35	U46	74ALS245	1			
36	U47	74ALS245	1			
37	U48	74ALS245	1			
38	U49	74ALS245	1			
39	U50	74ALS245	1			
40	U51	74ALS245	1			
41	U52	74ALS245	1			
42	U53	74ALS245	1			
43	U54	74ALS245	1			
44	U55	74ALS245	1			
45	U56	74ALS245	1			
46	U57	74ALS245	1			
47	U58	74ALS245	1			
48	U59	74ALS245	1			
49	U60	74ALS245	1			
50	U61	74ALS245	1			
51	U62	74ALS245	1			
52	U63	74ALS245	1			
53	U64	74ALS245	1			
54	U65	74ALS245	1			
55	U66	74ALS245	1			
56	U67	74ALS245	1			
57	U68	74ALS245	1			
58	U69	74ALS245	1			
59	U70	74ALS245	1			
60	U71	74ALS245	1			
61	U72	74ALS245	1			
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63	U74	74ALS245	1			
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68	U79	74ALS245	1			
69	U80	74ALS245	1			
70	U81	74ALS245	1			
71	U82	74ALS245	1			
72	U83	74ALS245	1			
73	U84	74ALS245	1			
74	U85	74ALS245	1			
75	U86	74ALS245	1			
76	U87	74ALS245	1			
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83	U94	74ALS245	1			
84	U95	74ALS245	1			
85	U96	74ALS245	1			
86	U97	74ALS245	1			
87	U98	74ALS245	1			
88	U99	74ALS245	1			
89	U100	74ALS245	1			

WILLIAMS ELECTRONICS, INC.
 300 N. CALIFORNIA AVE
 LOS ANGELES, CALIF. 90017
 NAME: WILLIAMS ELECTRONICS, INC.
 TITLE: ROM-2 SCHEMATIC
 DATE: 1/2/80
 DRAWN BY: G. SHIPP
 CHECKED BY: G. SHIPP
 PROJECT NO: 16-9041
 PART NO: 16-9041
 QTY: 1



NEW PART RELEASE

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	PART NUMBER	DESCRIPTION
PROJ. TOP	G-5111P	DO NOT SCALE WORK TO DIMENSIONS UNLESS OTHERWISE SPECIFIED			WILLIAMS ELECTRONICS, INC.	
DATE	5-16-78	FRAT. PROJECT NO.			CHICAGO, ILL.	
APPROV. BY	7/27/78	DATE FIRST ISSUE	01		16-9041	

16-9041

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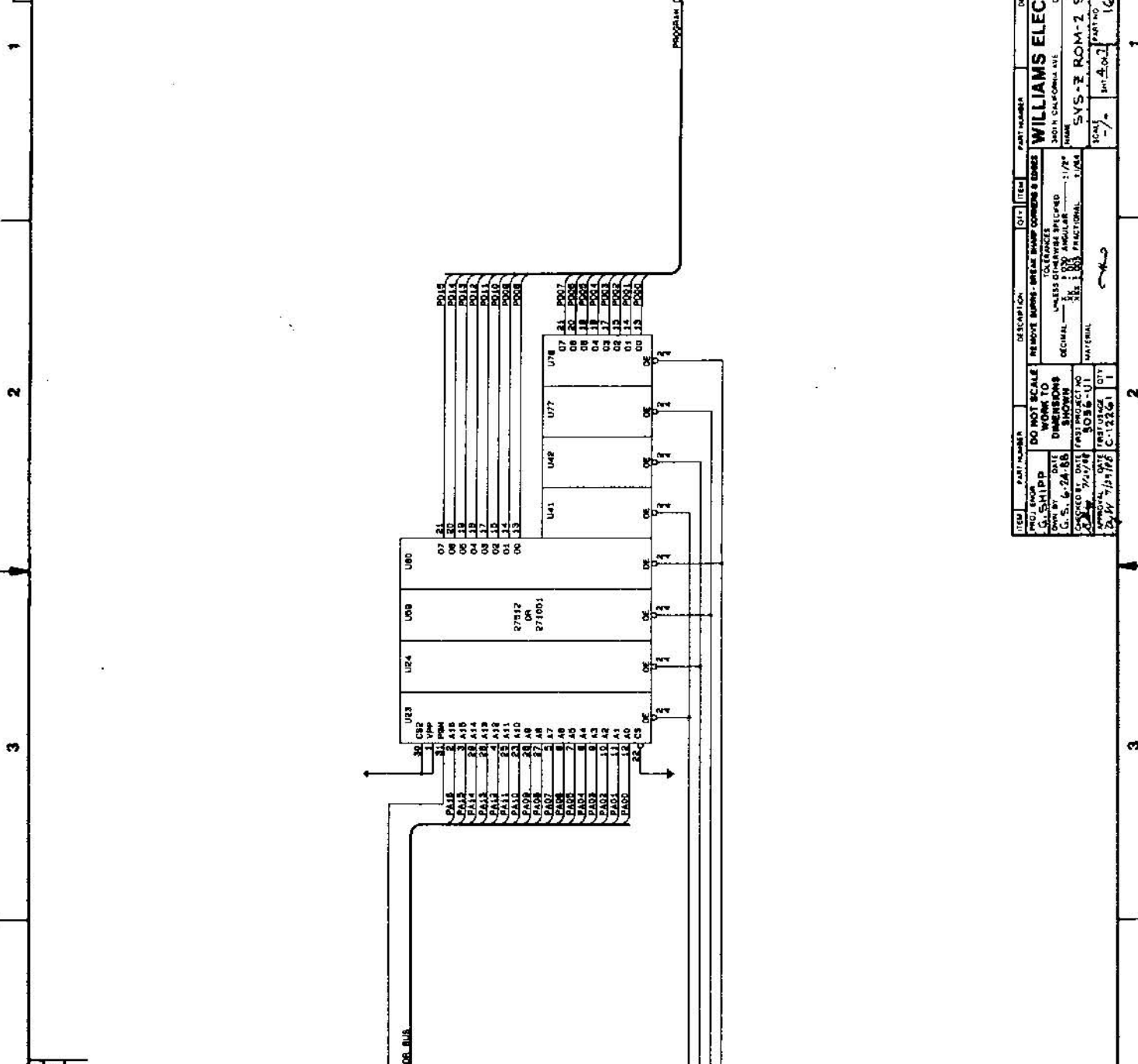
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16-9041

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ITEM	PART NUMBER	QTY	ITEM	DESCRIPTION	PART NUMBER	DESCRIPTION	QTY
PROJ. ENG.	G. SHIPP	DO NOT SCALE	REMOVE BURNS - BREAK BENCH CONNECTIONS & DIMENSIONS	WILLIAMS ELECTRONICS, INC.	CHICAGO, ILL.		
DATE	7/17/78	WORK TO	UNLESS OTHERWISE SPECIFIED	300 N. CALUMET ST.			
APPROVAL	7/17/78	DIMENSIONS	ORIGINAL	SYS-2 ROM-2 SCHEMATIC			
		FRAC. DECIMALS	3/16, 1/8, 1/4, 3/8, 1/2				
		RESISTANCE	100K - 1M				
		TEST USAGE	C-12261				
		QTY	1				
		REV					

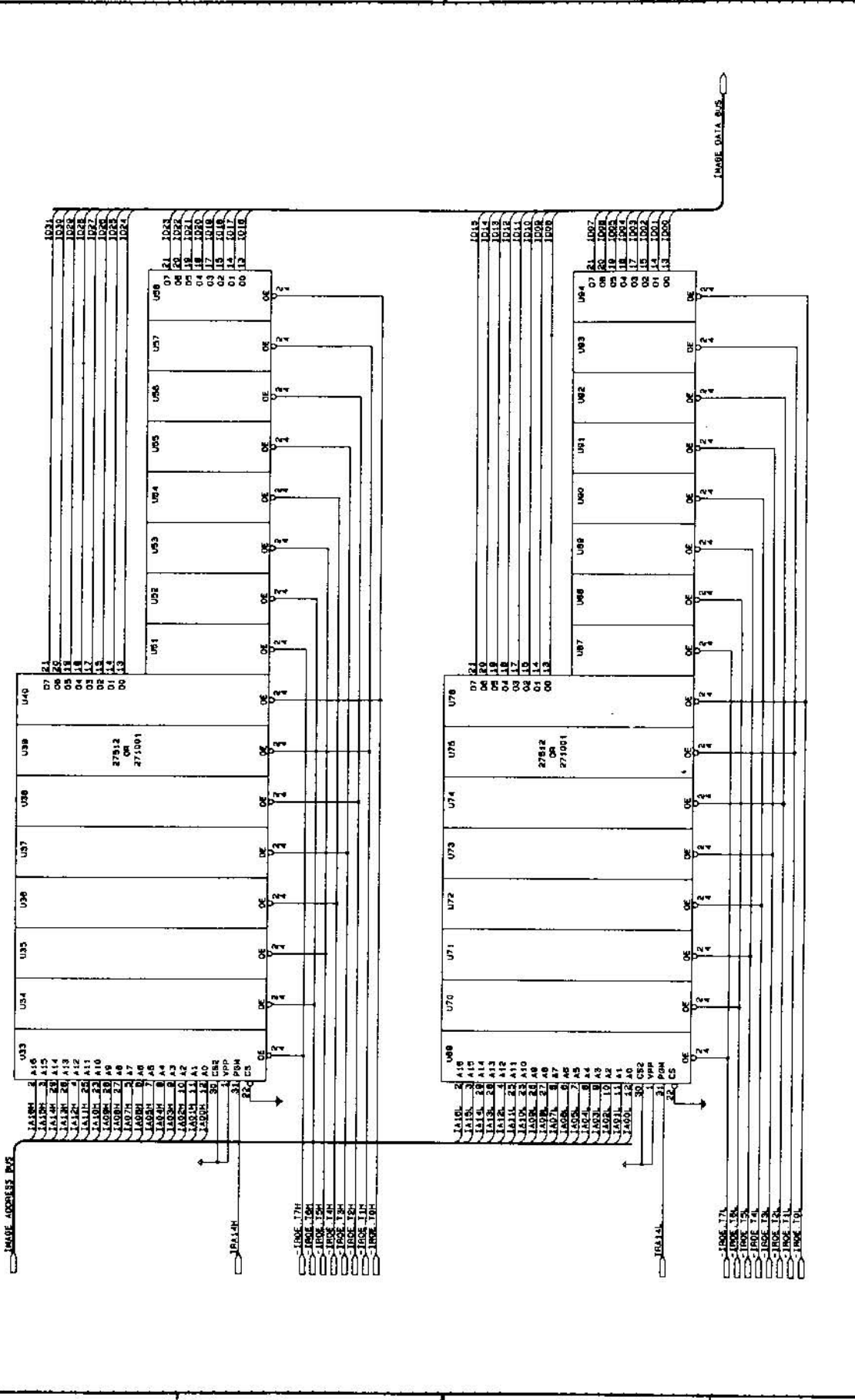
DESCRIPTION OF CHANGE
NEW PART RELEASE

16-9041

1 2 3 4

16-9041

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ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	DO NOT SCALE WORK TO DIMENSIONS SHOWN	REMOVE BURRS - BREAK SHARP CORNERS & EDGES		1	16-9041	ROM-2 SCHEMATIC	
2	DATE: 6-24-68	UNLESS OTHERWISE SPECIFIED		2	16-9041	ROM-2 SCHEMATIC	
3	DESIGNED BY: [Signature]	TOLERANCES		3	16-9041	ROM-2 SCHEMATIC	
4	CHECKED BY: [Signature]	DRAWN BY: [Signature]		4	16-9041	ROM-2 SCHEMATIC	
5	DATE: 7/6/68	SCALE: 1:1		5	16-9041	ROM-2 SCHEMATIC	
6	DATE: 7/6/68	SCALE: 1:1		6	16-9041	ROM-2 SCHEMATIC	

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	16-9041	ROM-2 SCHEMATIC		1	16-9041	ROM-2 SCHEMATIC	
2	16-9041	ROM-2 SCHEMATIC		2	16-9041	ROM-2 SCHEMATIC	
3	16-9041	ROM-2 SCHEMATIC		3	16-9041	ROM-2 SCHEMATIC	
4	16-9041	ROM-2 SCHEMATIC		4	16-9041	ROM-2 SCHEMATIC	
5	16-9041	ROM-2 SCHEMATIC		5	16-9041	ROM-2 SCHEMATIC	
6	16-9041	ROM-2 SCHEMATIC		6	16-9041	ROM-2 SCHEMATIC	

WILLIAMS ELECTRONICS, INC.
 3401 N. CALIFORNIA AVE.
 CHICAGO, ILL.
 NAME: SYS-2 ROM-2 SCHEMATIC
 PART NO: 16-9041
 DATE: 7/6/68

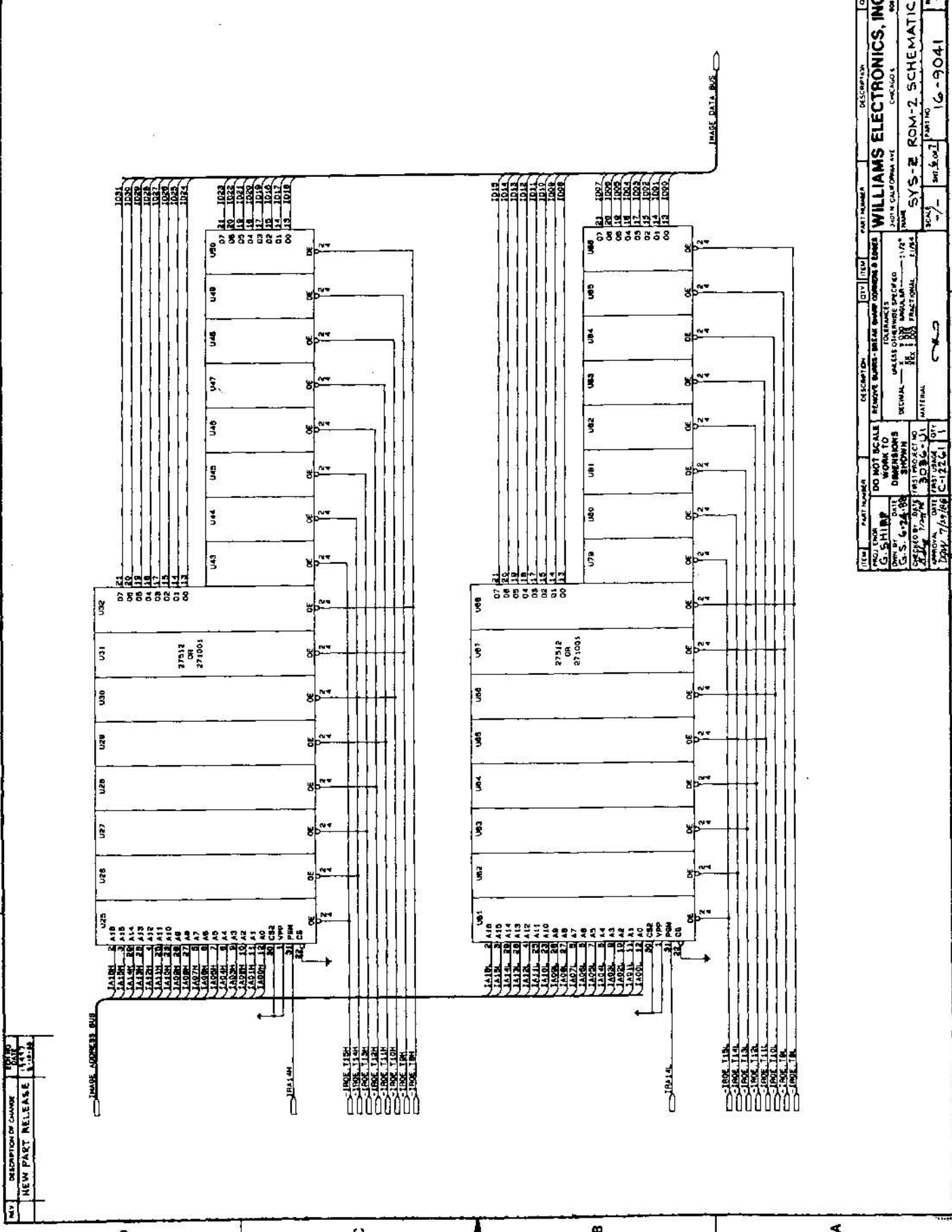
16-9041

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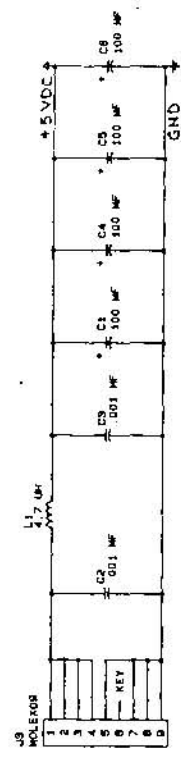
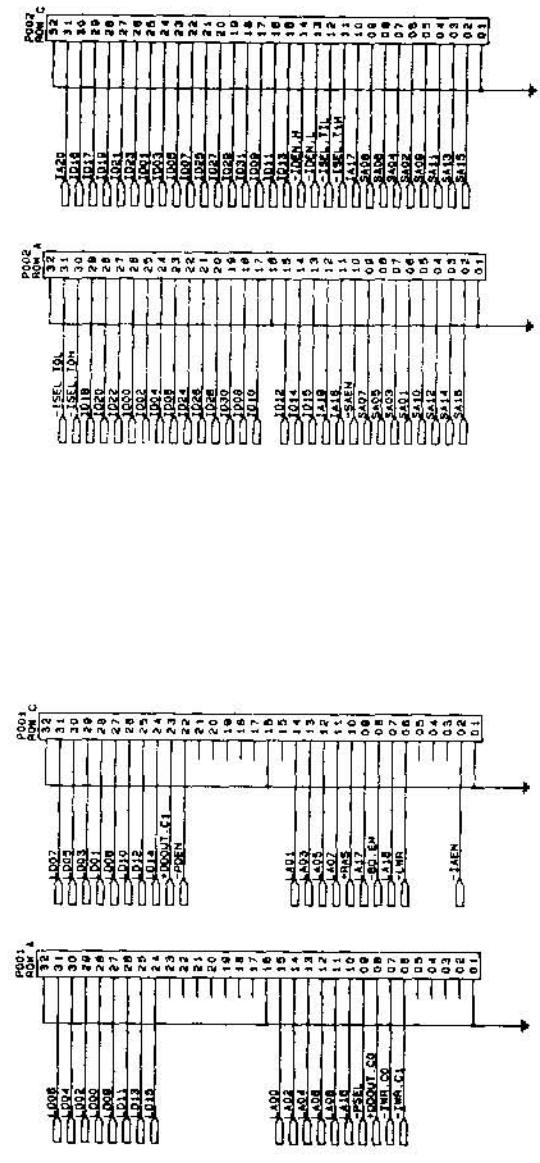
REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	11/14/68

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	G-5118P	DO NOT SCALE WORK TO DIMENSIONS SHOWN		1	16-9041	ROM-2 SCHEMATIC	
2	G-5118P	REMOVE BURRS - BREAK SHARP CORNERS & EDGES		2	16-9041	ROM-2 SCHEMATIC	
3	G-5118P	UNLESS OTHERWISE SPECIFIED TOLERANCES FOLLOW: DECIMAL - 1/100 INCHES FRACTIONAL - 1/32 INCHES		3	16-9041	ROM-2 SCHEMATIC	
4	G-5118P	DATE 11/14/68		4	16-9041	ROM-2 SCHEMATIC	
5	G-5118P	DATE 11/14/68		5	16-9041	ROM-2 SCHEMATIC	
6	G-5118P	DATE 11/14/68		6	16-9041	ROM-2 SCHEMATIC	
7	G-5118P	DATE 11/14/68		7	16-9041	ROM-2 SCHEMATIC	
8	G-5118P	DATE 11/14/68		8	16-9041	ROM-2 SCHEMATIC	
9	G-5118P	DATE 11/14/68		9	16-9041	ROM-2 SCHEMATIC	
10	G-5118P	DATE 11/14/68		10	16-9041	ROM-2 SCHEMATIC	

WILLIAMS ELECTRONICS, INC.	CHICAGO 1
3018 CALIFORNIA AVE	CHICAGO 1
SY-2 ROM-2 SCHEMATIC	16-9041
REV. 5.001	16-9041

REV	DESCRIPTION OF CHANGE
1	NEW PART RELEASE

16-9041



ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	DESCRIPTION
1	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		1	WILLIAMS ELECTRONICS, INC.
2	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		2	WILLIAMS ELECTRONICS, INC.
3	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		3	WILLIAMS ELECTRONICS, INC.
4	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		4	WILLIAMS ELECTRONICS, INC.
5	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		5	WILLIAMS ELECTRONICS, INC.
6	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		6	WILLIAMS ELECTRONICS, INC.
7	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		7	WILLIAMS ELECTRONICS, INC.
8	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		8	WILLIAMS ELECTRONICS, INC.
9	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		9	WILLIAMS ELECTRONICS, INC.
10	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		10	WILLIAMS ELECTRONICS, INC.
11	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		11	WILLIAMS ELECTRONICS, INC.
12	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		12	WILLIAMS ELECTRONICS, INC.
13	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		13	WILLIAMS ELECTRONICS, INC.
14	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		14	WILLIAMS ELECTRONICS, INC.
15	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		15	WILLIAMS ELECTRONICS, INC.
16	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		16	WILLIAMS ELECTRONICS, INC.
17	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		17	WILLIAMS ELECTRONICS, INC.
18	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		18	WILLIAMS ELECTRONICS, INC.
19	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		19	WILLIAMS ELECTRONICS, INC.
20	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		20	WILLIAMS ELECTRONICS, INC.
21	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		21	WILLIAMS ELECTRONICS, INC.
22	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		22	WILLIAMS ELECTRONICS, INC.
23	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		23	WILLIAMS ELECTRONICS, INC.
24	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		24	WILLIAMS ELECTRONICS, INC.
25	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		25	WILLIAMS ELECTRONICS, INC.
26	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		26	WILLIAMS ELECTRONICS, INC.
27	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		27	WILLIAMS ELECTRONICS, INC.
28	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		28	WILLIAMS ELECTRONICS, INC.
29	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		29	WILLIAMS ELECTRONICS, INC.
30	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		30	WILLIAMS ELECTRONICS, INC.
31	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		31	WILLIAMS ELECTRONICS, INC.
32	DO NOT SCALE	REMOVE NUMBER BEHIND COMPONENTS & DIMS		32	WILLIAMS ELECTRONICS, INC.

REV	DESCRIPTION OF CHANGE	DATE	BY
1	NEW PART RELEASE	3-1-65	

WILLIAMS ELECTRONICS, INC.	16-9041	1
3030 SHERWOOD AVENUE	16-9041	1
ANN ARBOR, MICHIGAN 48106	16-9041	1
SYNOPSIS	16-9041	1
DESCRIPTION	16-9041	1
DATE	16-9041	1
BY	16-9041	1
PROJECT NO.	16-9041	1
DATE	16-9041	1
BY	16-9041	1
PROJECT NO.	16-9041	1
DATE	16-9041	1
BY	16-9041	1
PROJECT NO.	16-9041	1
DATE	16-9041	1
BY	16-9041	1

C-12037

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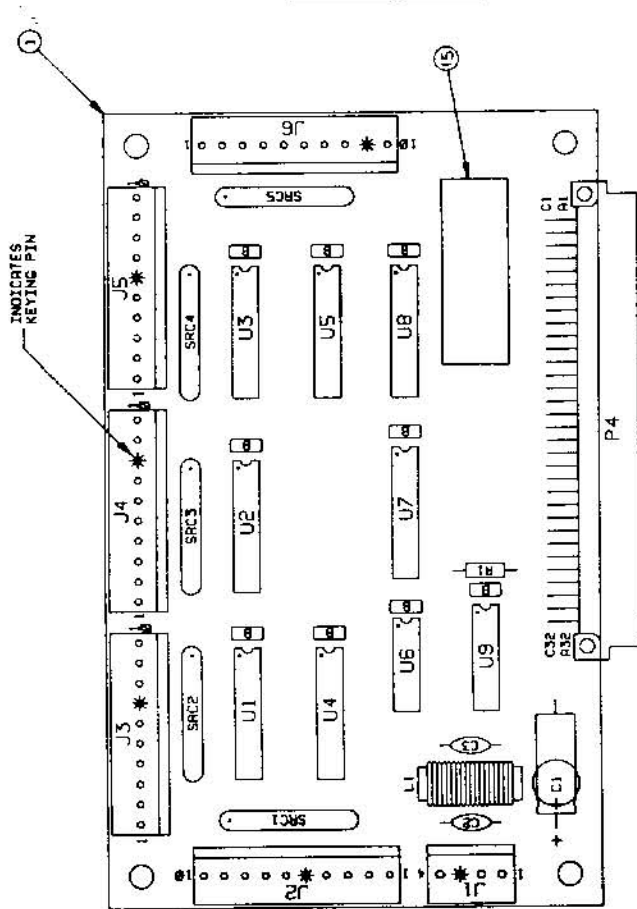
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ITEM	PART NO.	PART DESCRIPTION	DESCRIPTION	QTY.
15	14-8650		LABEL, PCB IDENT.	1
14	5792- 10025-00	P4	CONNECTOR, 64P EURO-DIN CARD CONN, FEMALE	1
13	5791- 10862-10	J2, J3 J4, J5, J6	CONNECTOR, 10P MOLEX, .156" CENTER PINS	5
12	5791- 10862-04	J1	CONNECTOR, 4P MOLEX, .156" CENTER PINS	1
11	5043- 09845-00	C2, C3	CAPACITOR, .001 MFD.	2
10	5040- 08986-00	C1	CAPACITOR, 100 MFD.	1
9	5043- 08986-00	B	CAPACITOR, 0.01 MFD.	9
8	5010- 08991-00	R1	RESISTOR, 4.7K, 1/4W, 5%	1
7	5059- 10396-00	SCR1, SCR2, SCR3, SRC4, SRC5	SIP, 10P 8-RES/8 CAP NETWORK, 4.7K, 470 PF	5
6	5551- 09822-00	L1	INDUCTOR, 4.7 UH	1
5	5311- 10948-00	U9	74HC138, H-CMOS 3/8 DECODER	1
4	5317- 12208-00	U7, U8	74ALS245, ALS TTL DIGITAL BUS TRANSCEIVER	2
3	5311- 10945-00	U6	74HC32, H-CMOS QUAD 2-INPUT OR GATE	1
2	5311- 12287-00	U1, U2, U3, U4, U5	74HC541, HC TTL DIGITAL BUFFER	5
1	5779- 12285-00		BARE PC BOARD	1

BILL OF MATERIALS

WILLIAMS ELECTRONICS, INC. 3001 N. CALIFORNIA AVE COSTA MESA, CALIF. 92626	
PROJECT: 16-9029 DATE: 2/12/88 DRAWN BY: J. J. JONES CHECKED BY: J. J. JONES	REMOVE BURRS - BREAK SHARP CORNERS & EDGES TOLERANCES UNLESS OTHERWISE SPECIFIED DECIMAL: .005 ANGULAR: 1/16° HOLE: .005 .005 FRACTIONAL: 1/16"
DO NOT SCALE WORK TO DIMENSIONS SHOWN	SCALE: 1.5" = 1" PART NO: C-12037
SYSTEM: NONE	PART NO: C-12037



NOTE: FOR SCHEMATIC, REFER TO DRAWING NO. 16-9029.

3J2 Functions

- Pin/Function
- 1 - NC
- 2 - NC
- 3 - NC
- 4 - NC
- 5 - Key
- 6 - Memory Protect
- 7 - T/B Strobe
- 8 - Player 2 Start
- 9 - Player 1 Start

3J4 Functions

- Pin/Function
- 1 - Player 1 Rocket
- 2 - Player 1 Jump
- 3 - Player 1 Fire
- 4 - Player 1 Crouch
- 5 - Player 1 Right
- 6 - Player 1 Left
- 7 - Player 1 Down
- 8 - Key
- 9 - Player 1 Up
- 10 - Ground

3J3 Functions

- Pin/Function
- 1 - Player 2 Rocket
- 2 - Player 2 Jump
- 3 - Player 2 Fire
- 4 - Player 2 Crouch
- 5 - Player 2 Right
- 6 - Player 2 Left
- 7 - Key
- 8 - Player 2 Down
- 9 - Player 2 Up
- 10 - Ground

REV	DESCRIPTION OF CHANGE	DATE
1	NEW PART RELEASE	2-22-88

REV 1

DESCRIPTION OF CHANGE
NEW PART RELEASE 4-23-68

16-9028

REV 2

DESCRIPTION OF CHANGE
NEW PART RELEASE 4-23-68

16-9028

REV 3

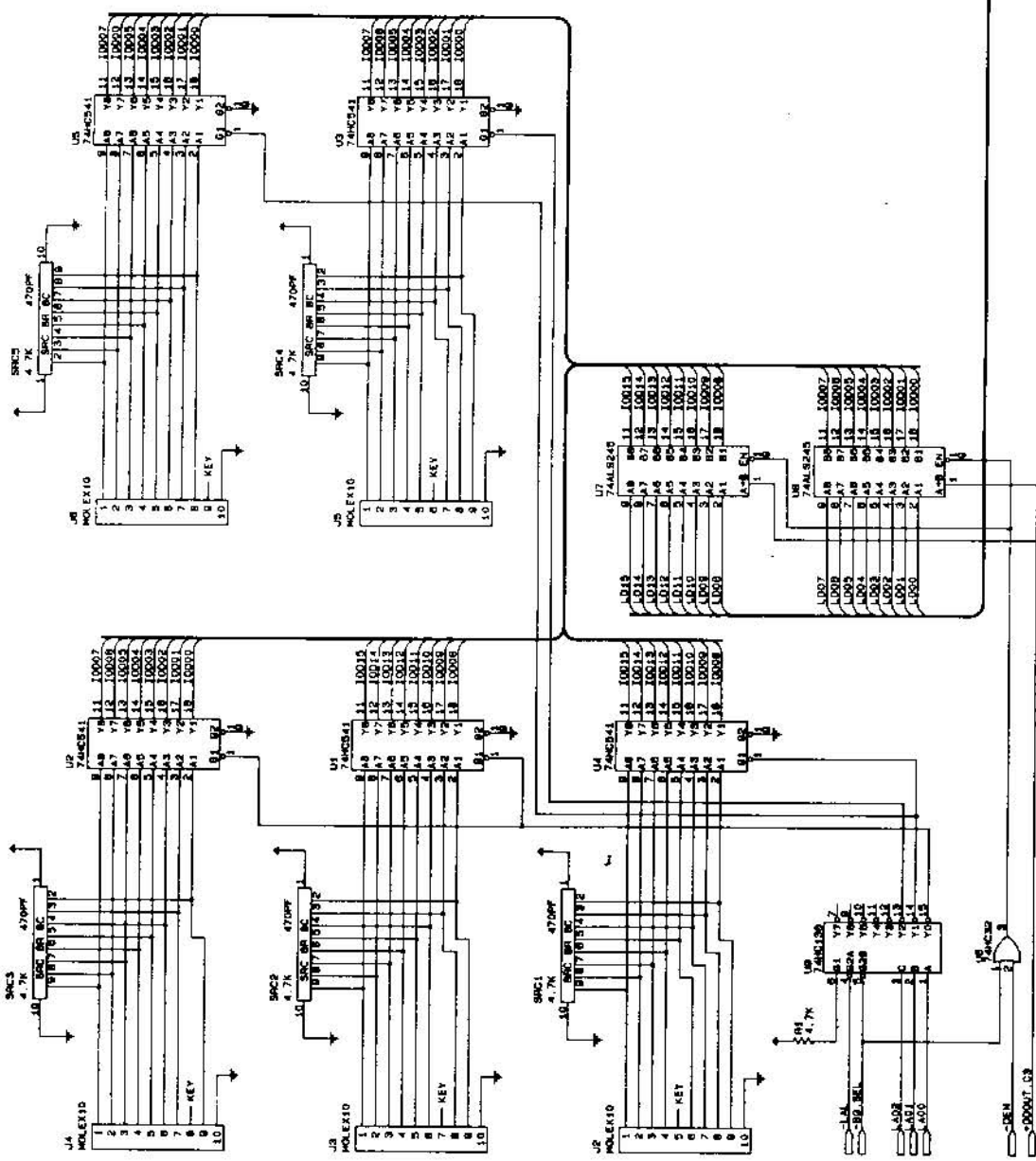
DESCRIPTION OF CHANGE
NEW PART RELEASE 4-23-68

16-9028

REV 4

DESCRIPTION OF CHANGE
NEW PART RELEASE 4-23-68

16-9028



LOCAL DATA BUS

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT
PROJ. NO.	16-9028	DESCRIPTION		QTY
M. DIFFERENTIAL	DO NOT SCALE	REMOVE MARKS - DIMENSIONS SHOWN		
DATE	11/79	TOLERANCES UNLESS OTHERWISE SPECIFIED		
G.S. #	4-20-68	DECIMAL - INCHES FRACTIONAL - INCHES		
DESIGNED BY	DAVE WELLS	DATE	11/79	
CHECKED BY	DAVE WELLS	DATE	11/79	
APPROVED BY		DATE		
REV	1	DATE		
REV	2	DATE		
REV	3	DATE		
REV	4	DATE		

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT
PROJ. NO.	16-9028	DESCRIPTION		QTY
M. DIFFERENTIAL	DO NOT SCALE	REMOVE MARKS - DIMENSIONS SHOWN		
DATE	11/79	TOLERANCES UNLESS OTHERWISE SPECIFIED		
G.S. #	4-20-68	DECIMAL - INCHES FRACTIONAL - INCHES		
DESIGNED BY	DAVE WELLS	DATE	11/79	
CHECKED BY	DAVE WELLS	DATE	11/79	
APPROVED BY		DATE		
REV	1	DATE		
REV	2	DATE		
REV	3	DATE		
REV	4	DATE		

WILLIAMS ELECTRONICS, INC.
3401 N. CALIFORNIA AVE.
CHICAGO, ILL. 60641
NAME: SYS-Z I/O SCHEMATIC
SCALE: 1/16" = 1" PART NO: 16-9028
REV: 1

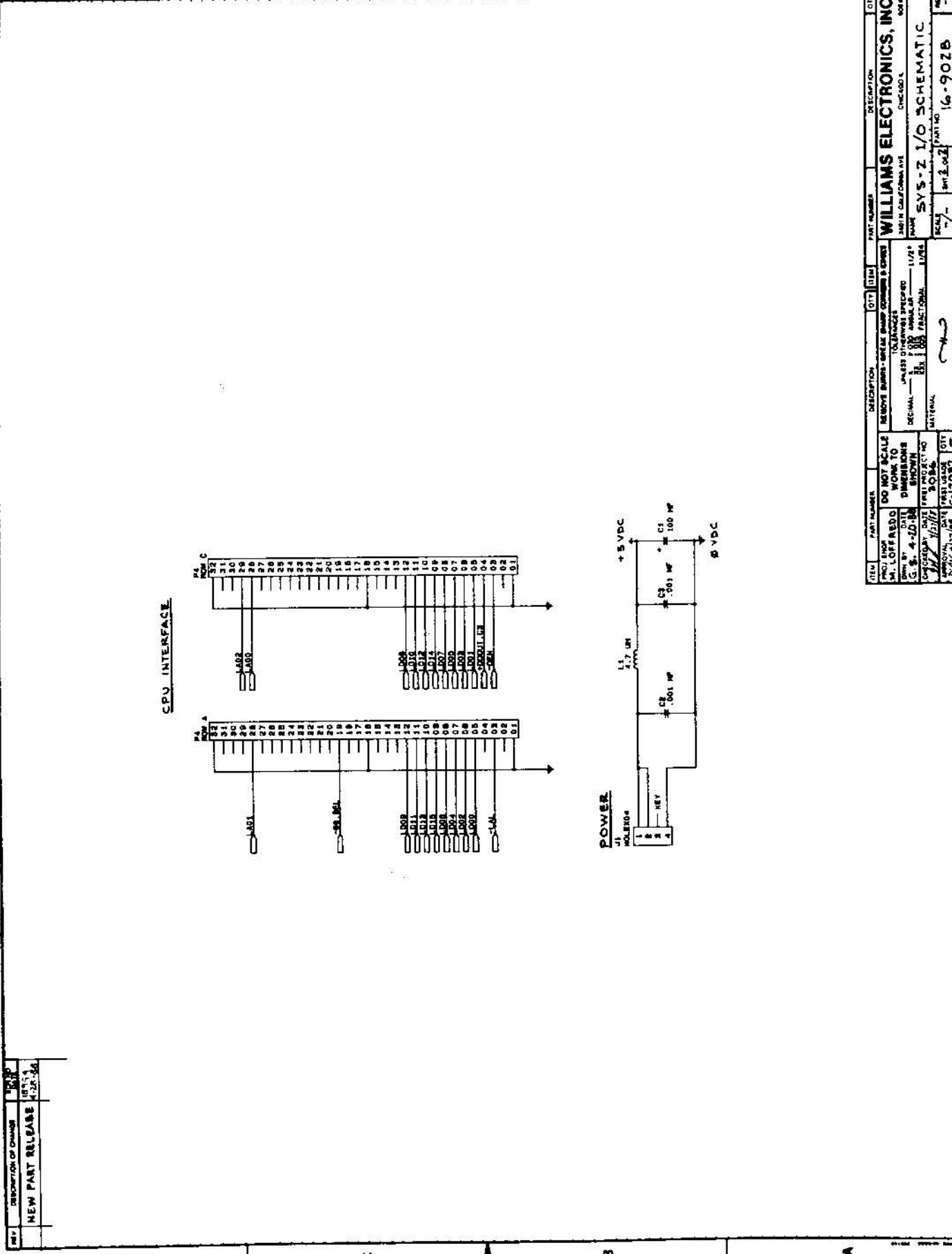
16-902B

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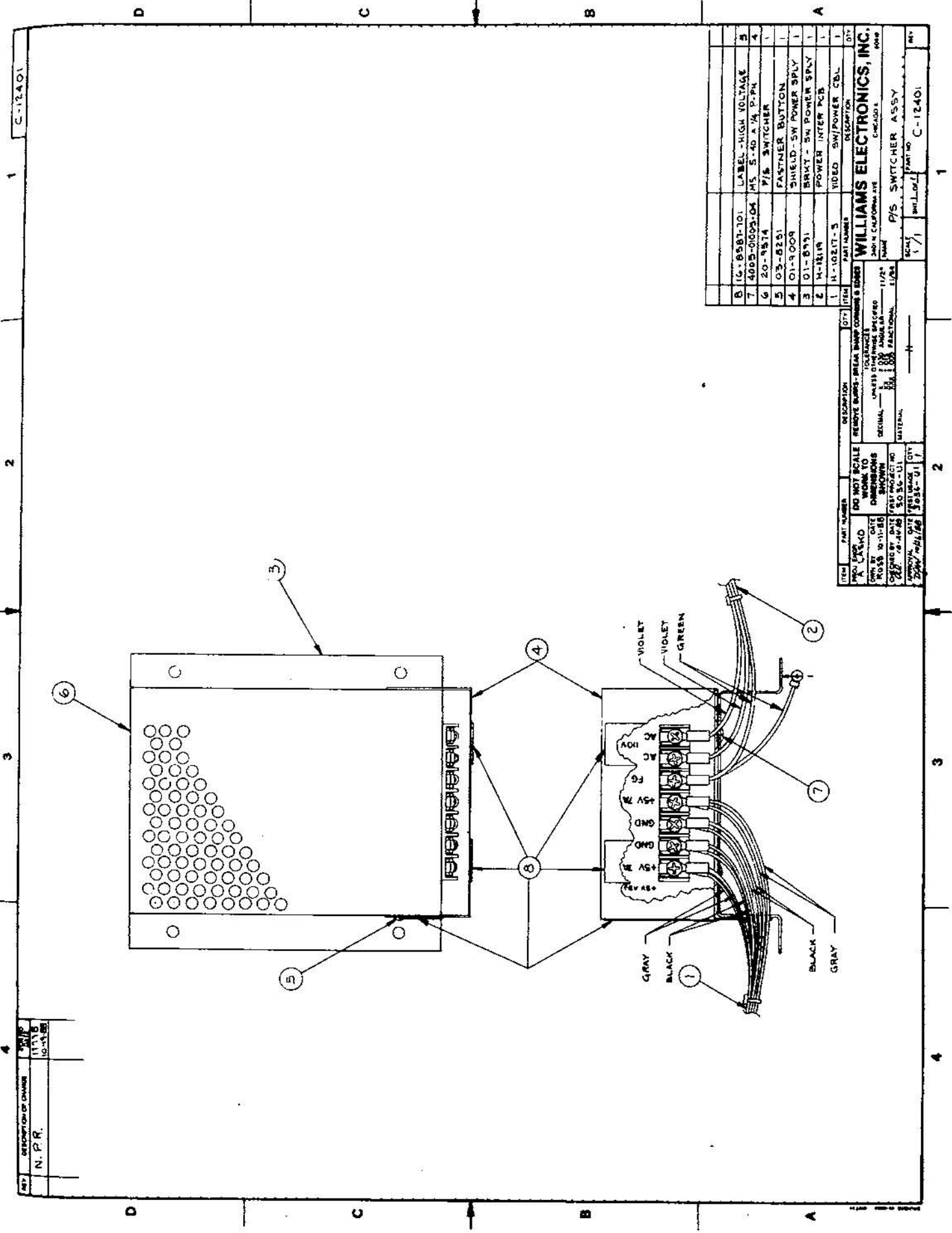


ITEM	PART NUMBER	QTY	UOM	DESCRIPTION	CITY
PROJ. ENG.	DO NOT SCALE WORK TO DIMENSIONS SHOWN			REMOVE BARRIERS - REMOVE SHIELDING & WIRING TO EXPOSE	CHICAGO, ILL.
DATE	4-20-58			CLASS OTHERS SPECIFIED	CHICAGO, ILL.
SCALE	1/2" = 1"			FRACTIONAL	
DESIGNED BY	W. J. BROWN			EXTERNAL	
CHECKED BY	W. J. BROWN				
APPROVED BY					
DATE	4-20-58				
PROJECT NO.	16-902B				
REV.	1				

WILLIAMS ELECTRONICS, INC.
 3418 CALIFORNIA AVE
 CHICAGO, ILL.

SYS-Z I/O SCHEMATIC
 PART NO. 16-902B
 REV. 1

DESCRIPTION OF CHANGE	DATE
NEW PART RELEASE	4-20-58



1 C-12401

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REV	DESCRIPTION OF CHANGE	DATE
	N. P. R.	11/15/68
		10-23-68

ITEM	PART NUMBER	DESCRIPTION	QTY
6	16-8581-101	LABEL-HIGH VOLTAGE	5
7	4005-01003-04	M5.5-40 A/4 P-PH	4
6	20-9574	P/S SWITCHER	1
5	03-8251	FASTNER BUTTON	1
4	01-9009	SHIELD-SW POWER SPLY	1
3	01-8971	SHWT-SW POWER SPLY	1
2	M-1214	POWER INTER PCB	1
1	H-10217-5	VIDED SW/POWER CBL	1

PROJ. NO.	11118	DATE	10-11-68
DESIGNED BY	W. J. R.	CHECKED BY	W. J. R.
APPROVED BY	W. J. R.	DATE	10-11-68
REVISED BY		DATE	
ISSUED BY		DATE	
REVISIONS			
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100	AS SHOWN		

WILLIAMS ELECTRONICS, INC.
3000 N. CALIFORNIA AVE
DREHLO 1
6040

P/S SWITCHER ASSY
REV. 1/1
PART NO. C-12401

1 2 3 4

C-12350

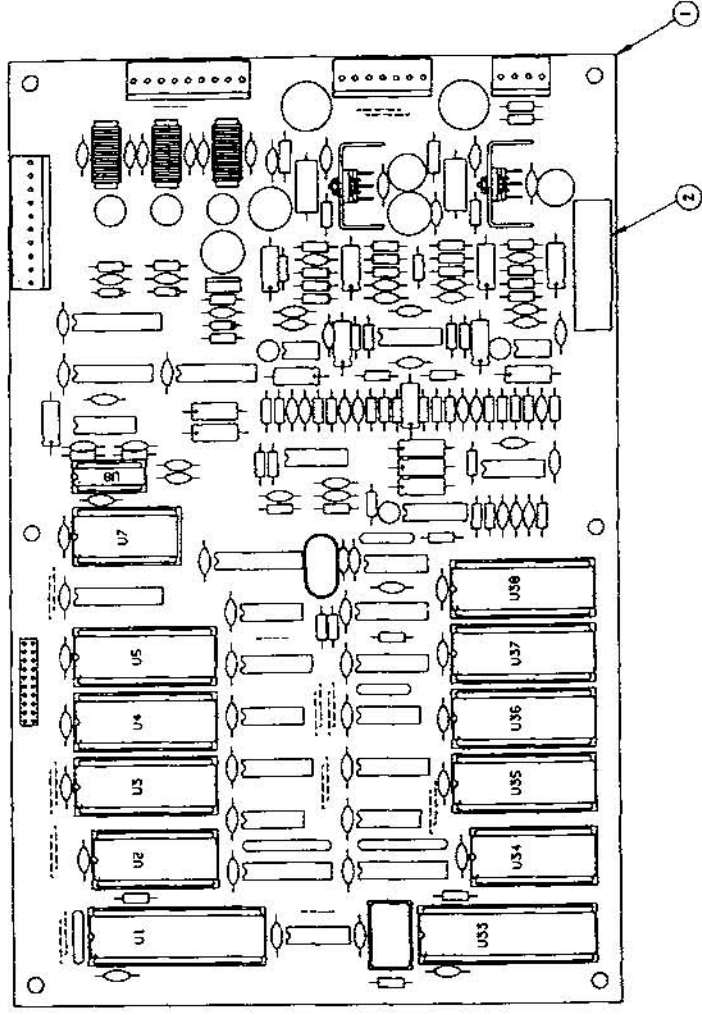
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INT	REPRODUCTION OF CUSTOMER DRAWING
	NEW PART RELEASE



NOTE:
FOR SCHEMATIC, REFER TO DRAWING NO. 16-9044.

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	QTY	UNIT	REVISION	DATE	BY
1	0-12350-1	REMOVE NUMBER-WEAR STRIP CONDUCTOR'S EDGES							
<p>DO NOT SCALE</p> <p>FORM ID: 10-10-60</p> <p>DATE: 9-23-68</p> <p>DESIGNED BY: B. G.</p> <p>CHECKED BY: J. J.</p> <p>APPROVED BY: J. J.</p> <p>DATE: 11-20-68</p> <p>TIME: 3:03 PM</p> <p>PROJECT NO: 0-12350-1</p> <p>QTY: 1</p> <p>DATE: 11-20-68</p> <p>TIME: 3:03 PM</p> <p>PROJECT NO: 0-12350-1</p>									
<p>WILLIAMS ELECTRONICS, INC.</p> <p>3401 CALIFORNIA AVE</p> <p>CHICAGO 9, ILL.</p> <p>NAME: SYS-2 SOUND-2 ASSEMBLY</p> <p>REV: 1/1</p> <p>PART NO: C-12350</p> <p>REV: NY</p>									

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C-12350

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NEW DESCRIPTION OF CHANGE
NEW PART RELEASE

QAGE NAME	3078
ASST. NO.	
U3	
U4	
U6	
U35	
U38	
U37	
U39	

PLATE DESIGNATION

ITEM	PART NO.	PART DESCRIPTION	DESCRIPTION	QTY
15				
14				
13				
12				
11				
10				
9				
8				
7	SEE CHART	U3, U4, U5, U35, U37, U38	27512/1001 EPROM 250 MS	1
6	5371-	U5	YR3012 DUAL SERIAL DAC	1
5	8370-	U7	TR2151 SOUND GENERATOR	1
4	5348-	U2, U34	8K / 8 STATIC RAM, 150MS	2
3	8400-	U1, U33	88888E MICROPROCESSOR	2
2	18-8930-	236	LABEL, PCB IDENT	1
1	C-12350		SYS-2 SOUND BOARD SUB-ASSY	1

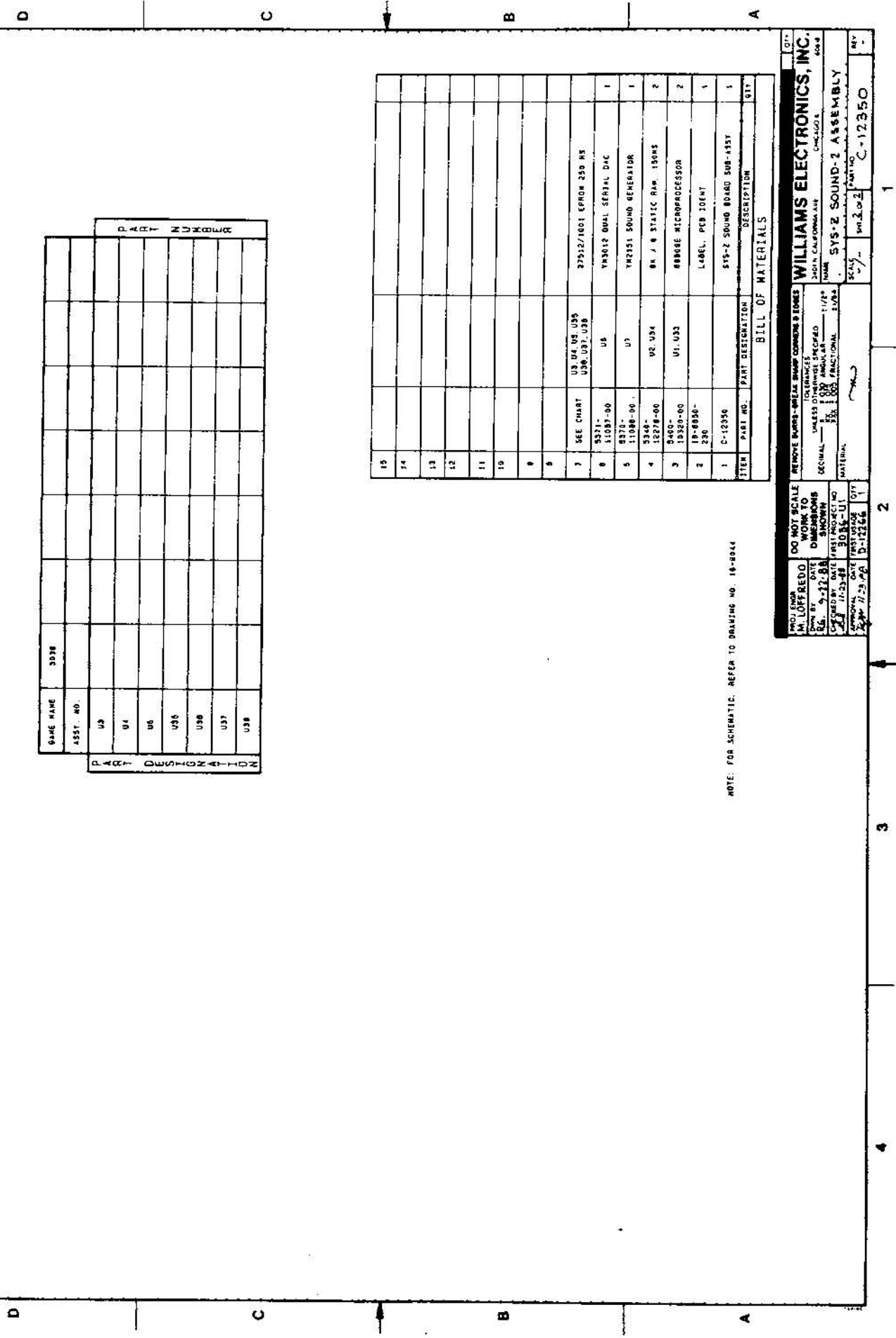
NOTE: FOR SCHEMATIC, REFER TO DRAWING NO. 18-8044

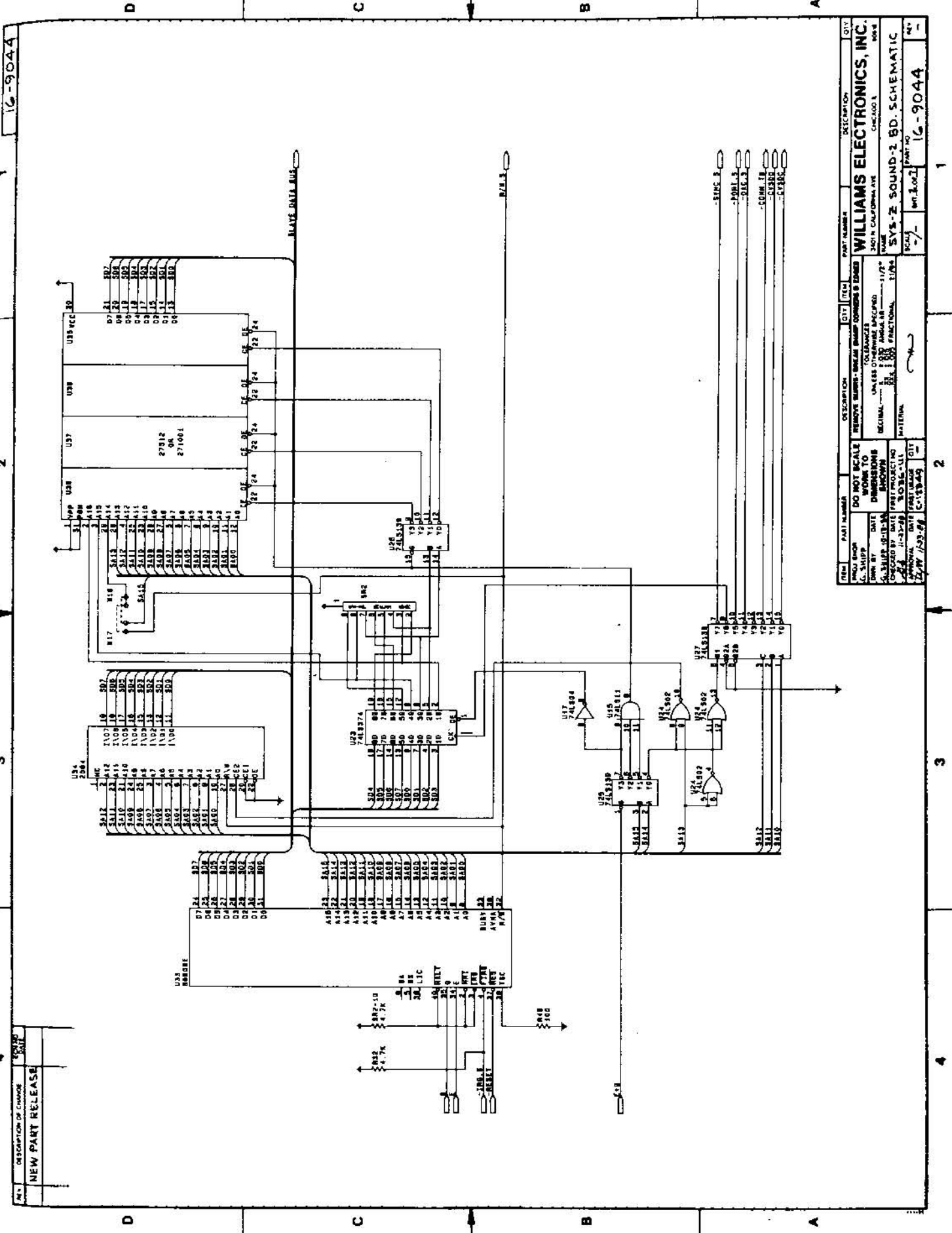
PROJ. ENGR. M. LOFFREDO
 DATE 9-27-88
 CHECKED BY DATE 11-23-88
 DRAWN BY DATE 11-23-88

DO NOT SCALE WORK TO DIMENSIONS SHOWN
 UNLESS OTHERWISE SPECIFIED
 DECIMAL INCHES 1/16"
 FRACTIONAL INCHES 1/32"

REMOVE SURF-MARKS UNLESS SHOWN OTHERWISE
 UNLESS OTHERWISE SPECIFIED
 DECIMAL INCHES 1/16"
 FRACTIONAL INCHES 1/32"

WILLIAMS ELECTRONICS, INC.
 3401 N. CALPORNIA AVE. CHICAGO, IL 60644
 SYS-2 SOUND-2 ASSEMBLY
 SCALE 1/16" = 1" PART NO. C-12350 REV. 1





16-9044

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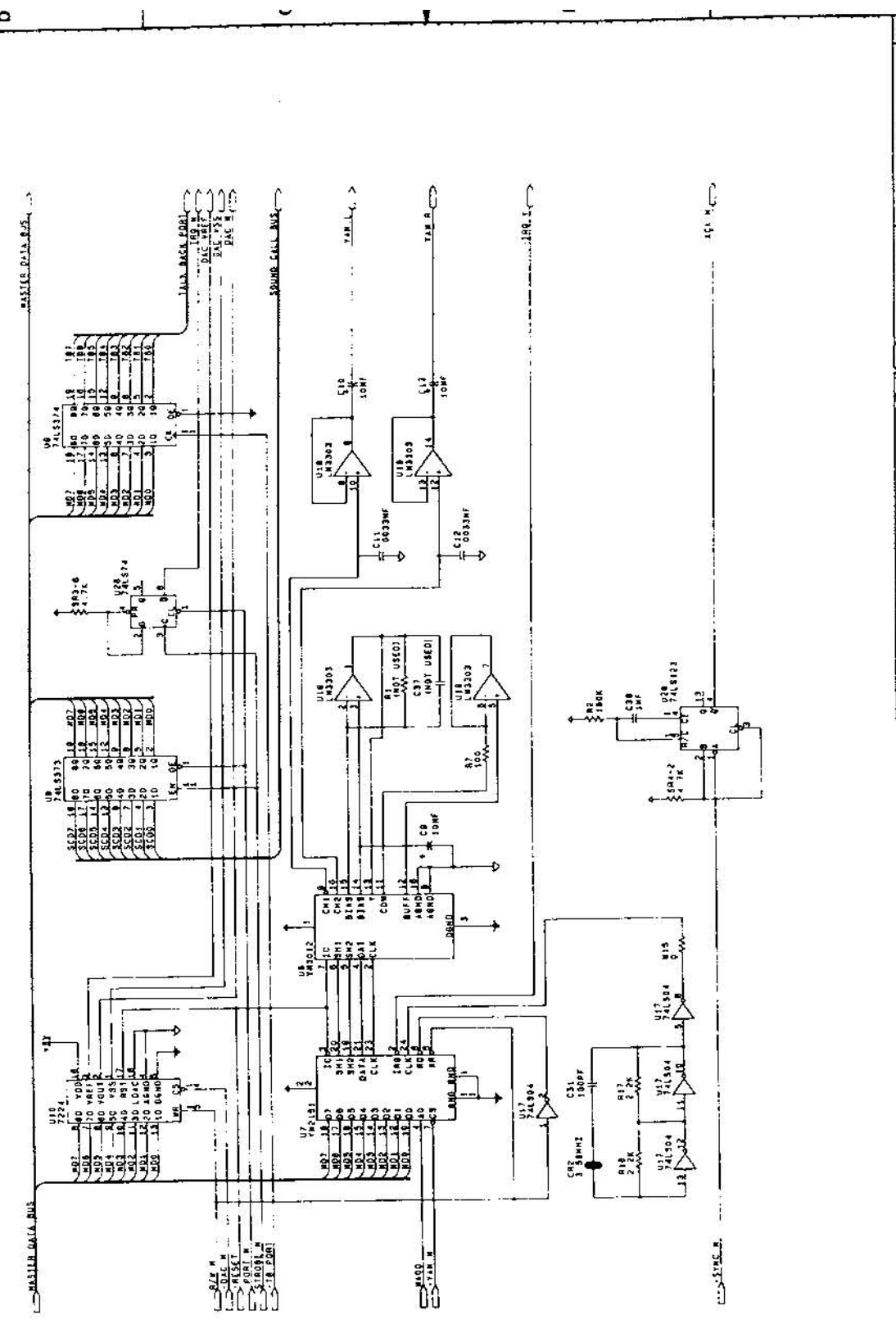
REV	PART NUMBER	DESCRIPTION	QTY	UNIT	DESCRIPTION
1	U34	74LS139	1	IC	74LS139
1	U35	74LS139	1	IC	74LS139
1	U36	74LS00	1	IC	74LS00
1	U37	74LS00	1	IC	74LS00
1	U38	74LS00	1	IC	74LS00
1	U39	74LS139	1	IC	74LS139
1	U40	74LS00	1	IC	74LS00
1	U41	74LS00	1	IC	74LS00
1	U42	74LS00	1	IC	74LS00
1	U43	74LS00	1	IC	74LS00

REV	PART NUMBER	DESCRIPTION	QTY	UNIT	DESCRIPTION
1	U34	74LS139	1	IC	74LS139
1	U35	74LS139	1	IC	74LS139
1	U36	74LS00	1	IC	74LS00
1	U37	74LS00	1	IC	74LS00
1	U38	74LS00	1	IC	74LS00
1	U39	74LS139	1	IC	74LS139
1	U40	74LS00	1	IC	74LS00
1	U41	74LS00	1	IC	74LS00
1	U42	74LS00	1	IC	74LS00
1	U43	74LS00	1	IC	74LS00

WILLIAMS ELECTRONICS, INC
3801 N. CALIFORNIA AVE
CHICO, CALIF. 95926
SYS-2 SOUND-2 BD. SCHEMATIC
REV. 1.007 PART NO. 16-9044

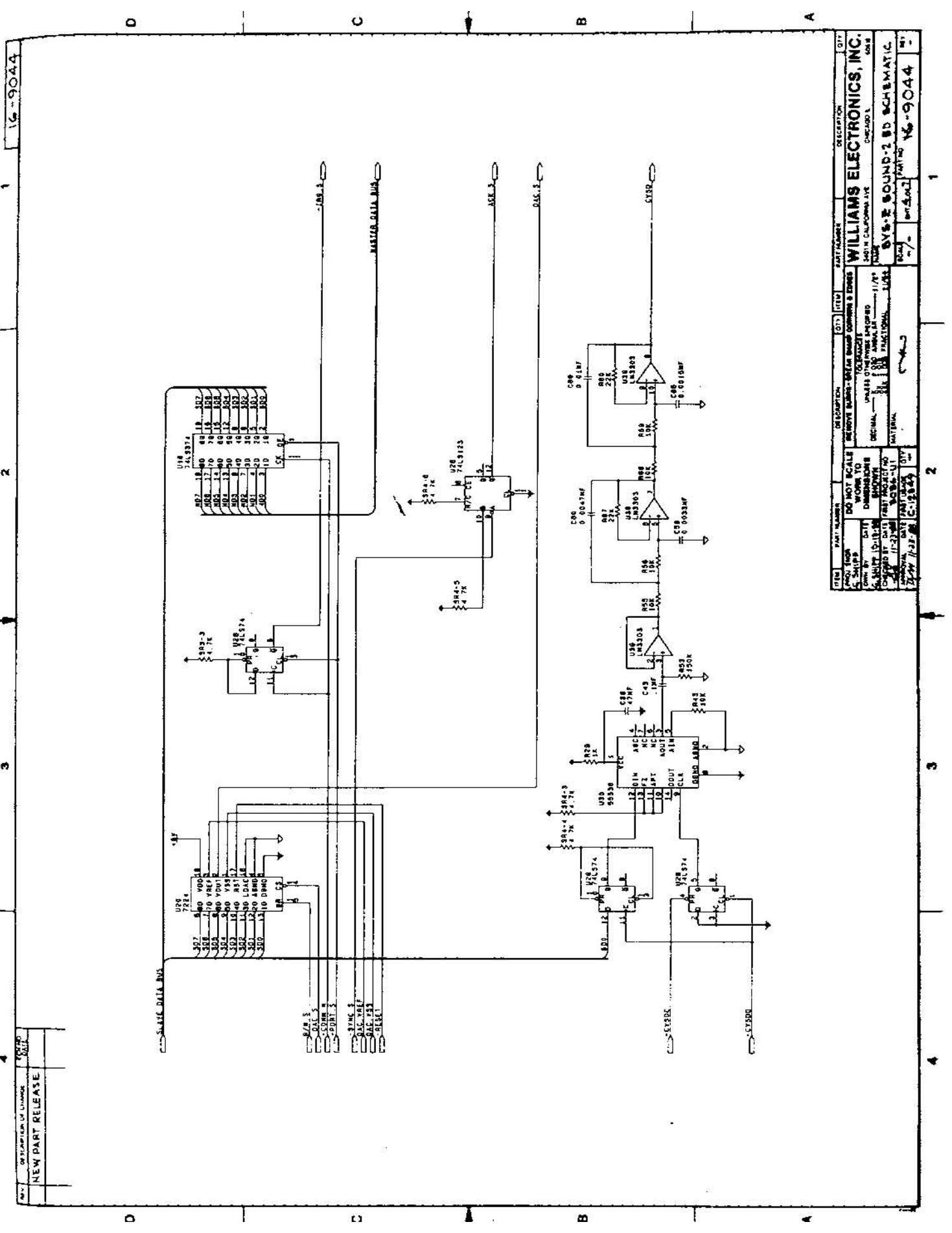
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REV	DESCRIPTION OF CHANGE
1	NEW PART RELEASE



ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	REMARKS
1	U1	74LS139	1	PCB	
2	U2	74LS375	1	PCB	
3	U3	74LS374	1	PCB	
4	U4	74LS139	1	PCB	
5	U5	74LS139	1	PCB	
6	U6	74LS139	1	PCB	
7	U7	74LS04	1	PCB	
8	U8	74LS139	1	PCB	
9	C1	0.022µF	1	PCB	
10	C2	0.022µF	1	PCB	
11	C3	0.022µF	1	PCB	
12	C4	100Ω	1	PCB	
13	C5	10µF	1	PCB	
14	C6	10µF	1	PCB	
15	C7	10µF	1	PCB	
16	C8	10µF	1	PCB	
17	C9	10µF	1	PCB	
18	R1	2.2K	1	PCB	
19	R2	10K	1	PCB	

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	REMARKS
WILLIAMS ELECTRONICS, INC.					
3700 LEXINGTON AVE CINCINNATI, OHIO 45202					
1	U1	74LS139	1	PCB	
2	U2	74LS375	1	PCB	
3	U3	74LS374	1	PCB	
4	U4	74LS139	1	PCB	
5	U5	74LS139	1	PCB	
6	U6	74LS139	1	PCB	
7	U7	74LS04	1	PCB	
8	U8	74LS139	1	PCB	
9	C1	0.022µF	1	PCB	
10	C2	0.022µF	1	PCB	
11	C3	0.022µF	1	PCB	
12	C4	100Ω	1	PCB	
13	C5	10µF	1	PCB	
14	C6	10µF	1	PCB	
15	C7	10µF	1	PCB	
16	C8	10µF	1	PCB	
17	C9	10µF	1	PCB	
18	R1	2.2K	1	PCB	
19	R2	10K	1	PCB	



NEW PART RELEASE

ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT	PART NAME	LOCATION	DIV
1	U28	74LS125	1	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL
2	U26	74LS74	1	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL
3	U29	74LS103	1	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL
4	U25	74LS03	3	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL
5	U27	74LS03	1	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL
6	U28	74LS03	1	PCB	IC	WILLIAMS ELECTRONICS, INC.	CHICAGO, IL

16-9044

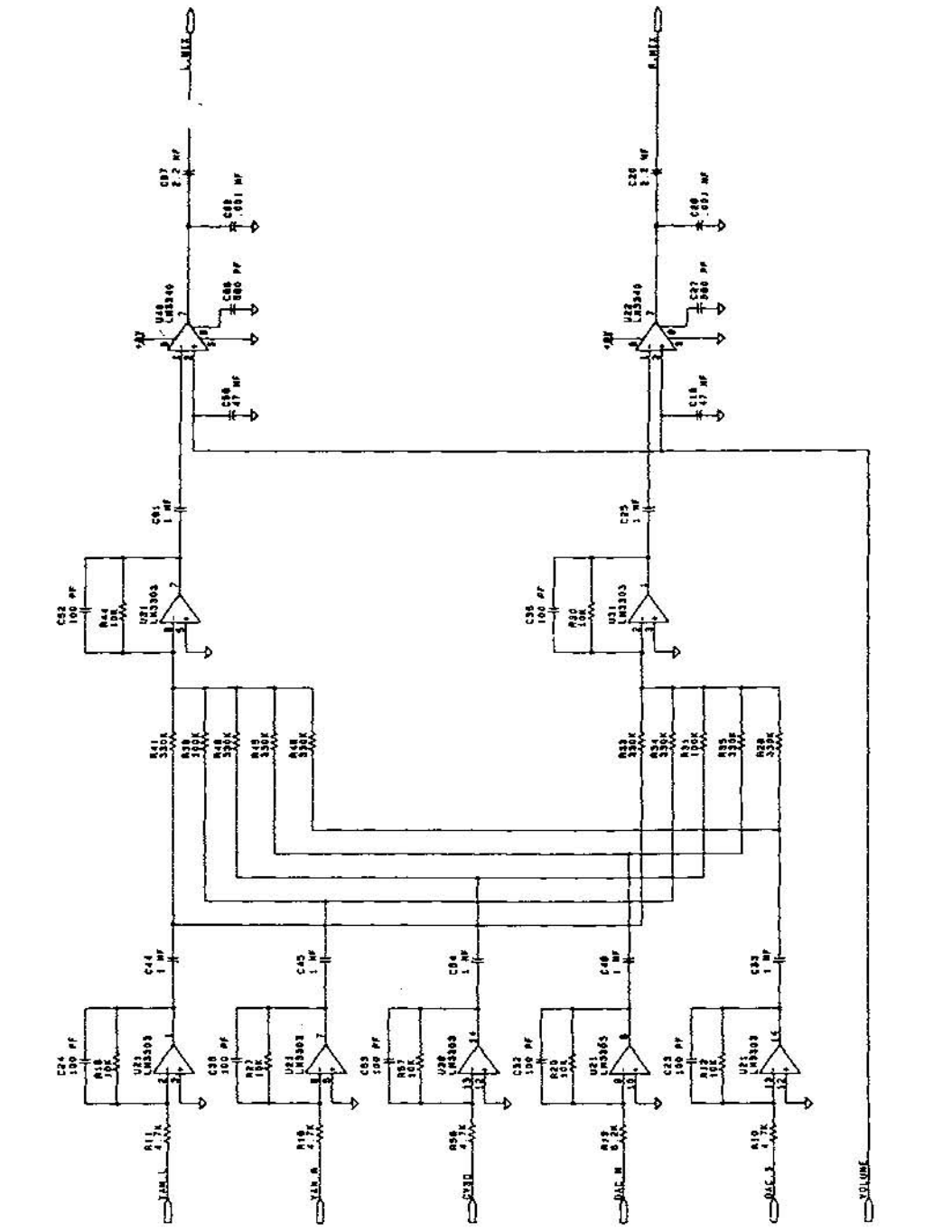
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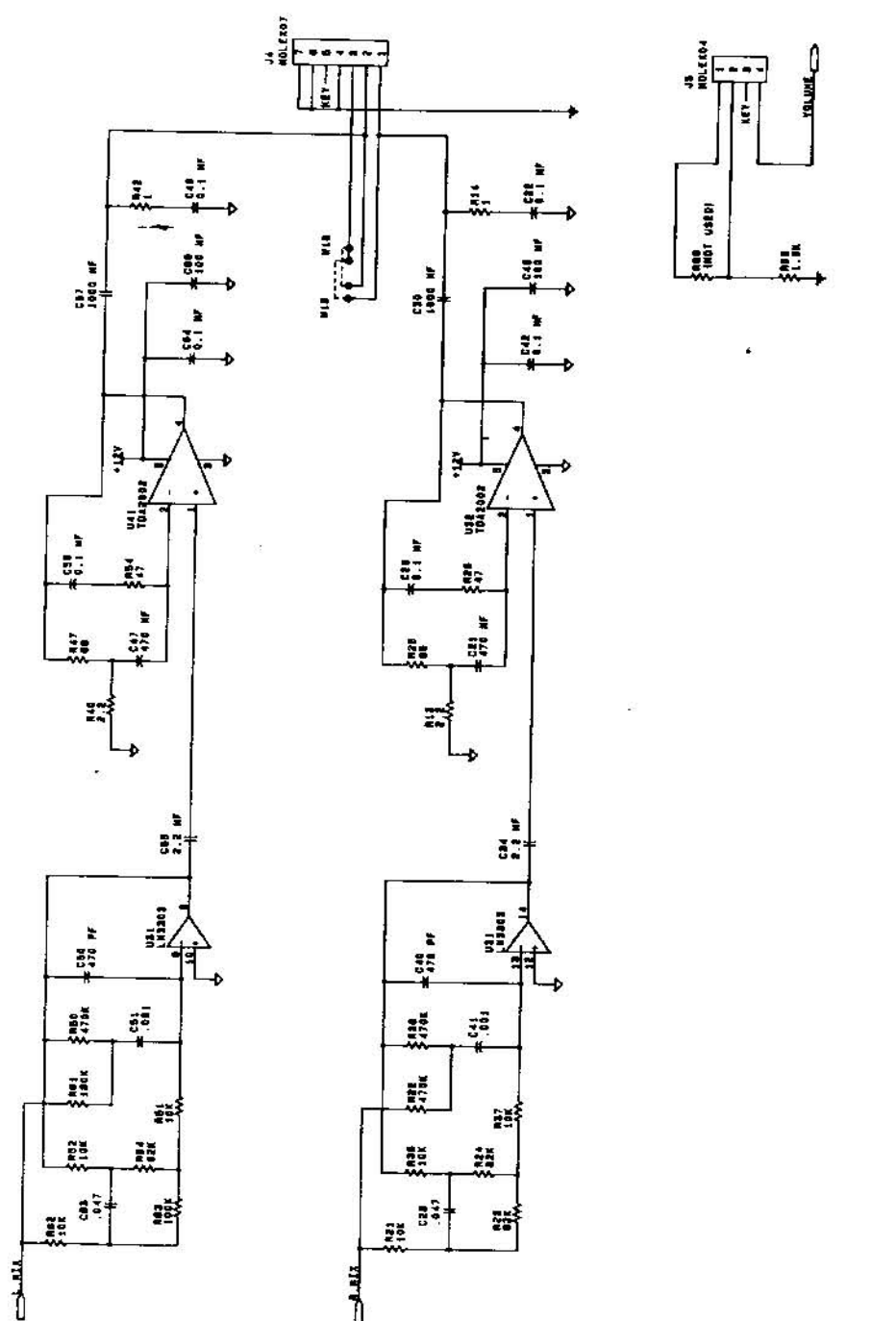
REV	DESCRIPTION OF CHANGE
1	NEW PART RELEASE



ITEM	PART NUMBER	DESCRIPTION	QTY	UNIT
PROJ ENGR	DO NOT SCALE	REMOVE MARKS-BREAK SHAPE CORNERS & ROUNDS		
DATE	WORK TO	TOLERANCES		
DESIGNED BY	DIMENSIONS	UNLESS OTHERWISE SPECIFIED		
11-25-68	SIMONIN	1/16" ANGULAR	1/16"	
11-25-68	PRE-PROJECTING	1/16" FRACTIONAL	1/16"	
11-25-68	BOARDS-ULL	MATERIAL		
11-25-68	PRINTING			
11-25-68	C-12345			
WILLIAMS ELECTRONICS, INC.		CHICAGO, ILL.		
3401 N. CALPORNIA AVE.				
NAME: SYS-2 SOUND-2 BD. SCHEMATIC				
MATERIAL		REV	DATE	BY
		1	11-25-68	SM
		PART NO.		16-9044
		REV		1

REV 1 DESCRIPTION OF CHANGE
NEW PART RELEASE

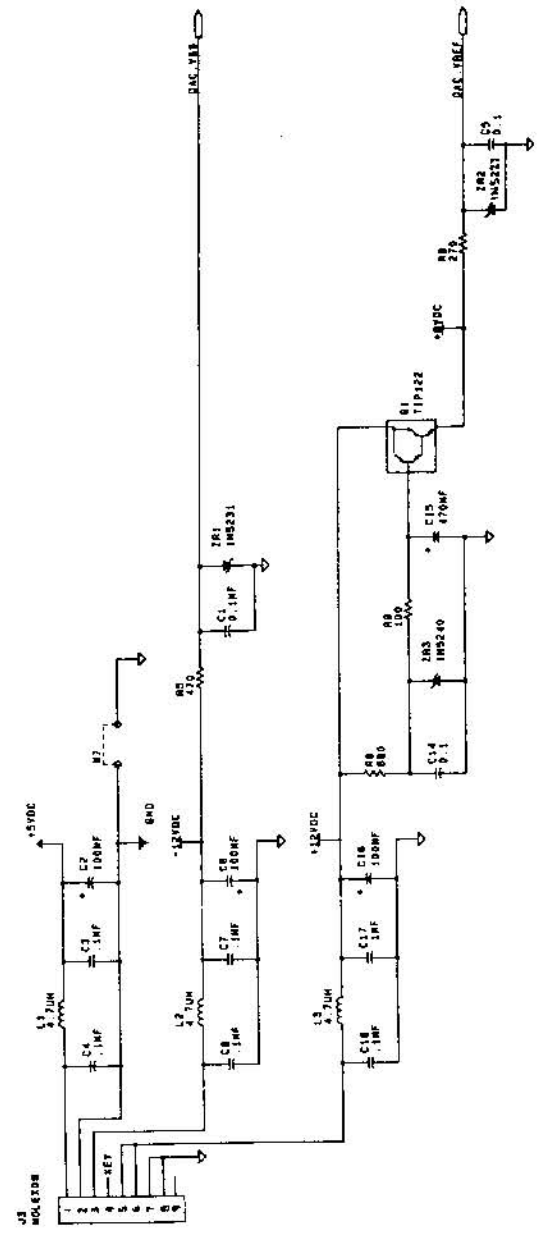
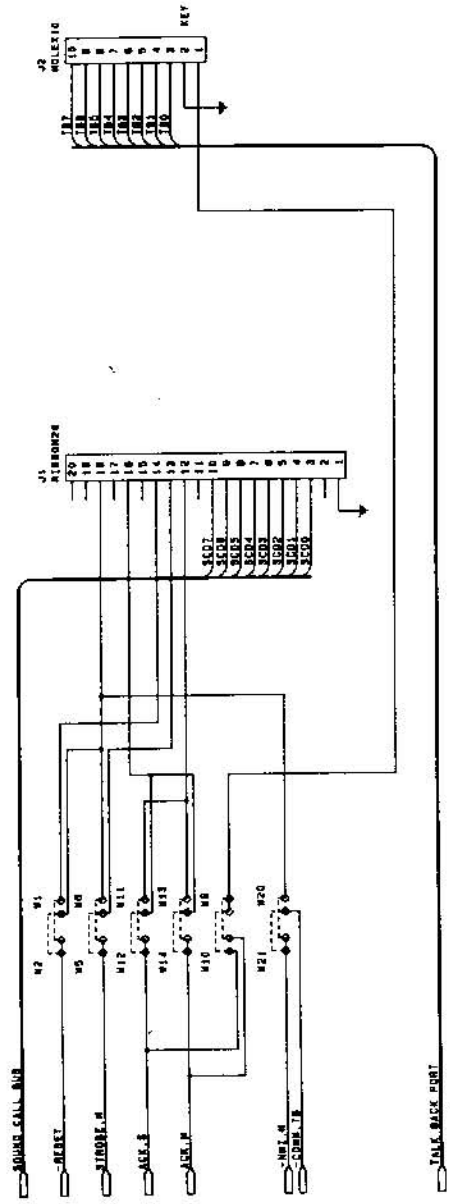
1 16-9044



ITEM	PART NUMBER	QTY	DESCRIPTION
	DO NOT SCALE WORK TO DIMENSIONS UNLESS OTHERWISE INDICATED		REMOVE BUSHING - BREAK BUSHING - REMOVE BUSHING
PROJ ENGR	DATE	BY	
W. SMITH	12-15-58	W. SMITH	
			REVISION NO. 1 OF 1
			DRAWN BY W. SMITH
			CHECKED BY W. SMITH
			APPROVED BY W. SMITH
PART NUMBER		DESCRIPTION	QTY
16-9044		SYS-2 SOUND-2 BD. SCHEMATIC	1
PART NO		REV	
16-9044		1	

WILLIAMS ELECTRONICS, INC.
300 N. CALIFORNIA AVE. CHICAGO, ILL. 60644
SYS-2 SOUND-2 BD. SCHEMATIC

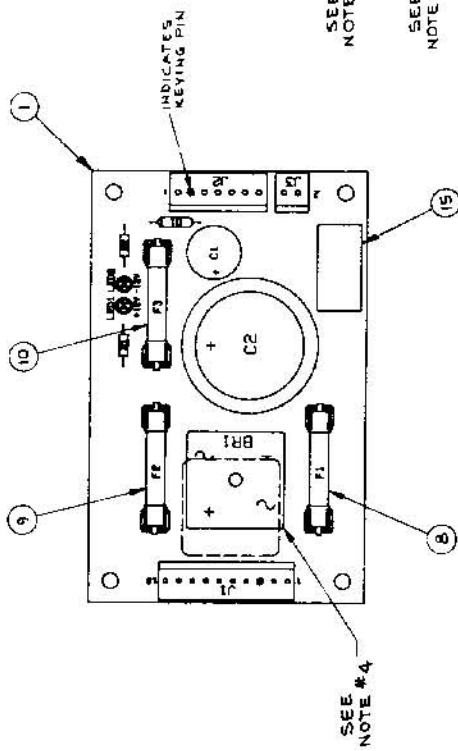
REV	DESCRIPTION OF CHANGE
1	NEW PART RELEASE



ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION
PROJ ENGR	DATE	DO NOT SCALE				
DESIGNED BY	DATE	REMOVE BURRS - BRUSH CONTACTS & SPACES				
CHECKED BY	DATE	UNLESS OTHERWISE SPECIFIED				
APPROVED BY	DATE	DECIMAL				
		FRACTIONAL				
		NATIONAL				
WILLIAMS ELECTRONICS, INC.			CHICAGO, ILL.			
SYS-2 SOUND-2, 8D, SCHEMATIC			PART NO 16-9044			
REV -			REV -			

NO. 1
DESCRIPTION OF CHANGE
NEW PART RELEASE

C-12218



ITEM	PART NO.	PART DESCRIPTION	DESCRIPTION	QTY.
15	16-BA50-216		LABEL, PCB IDENT.	1
14	5791-10662-10	J1	CONN., 10-PIN MOLEX, .156" CENTER PINS	1
13	5791-10662-07	J2	CONN., 7-PIN MOLEX, .156" CENTER PINS	1
12	5791-10662-02	J3	CONN., 2-PIN MOLEX, .156" CENTER PINS	1
11	5733-12060-01	F1, F2, F3	FUSEHOLDER	3
10	5730-09197-00	F3	FUSE, 0.75A, 250V	1
9	5731-09432-00	F2	FUSE, 7A 5B, 250V	1
8	5731-10556-00	F1	FUSE, 3A 5B, 250V	1
7	5040-12315-00	C2	CAPACITOR, ELECT., RAD., 1500 MFD. 25V.	1
6	5040-12314-00	C1	CAPACITOR, ELECT., RAD., 2200 MFD. 25V.	1
5	5671-09019-00	LED1, LED2	LIGHT EMITTING DIODE, RED	2
4	5070-09418-00	BR1	BRIDGE RECTIFIER, 55V.	1
3	5070-04258-00	DI	DIODE, 1N4001	1
2	5010-09314-00	R1, R2	RESISTOR, C.F., 1.2K 5% 1/4 WATT	2
1	5773-12389-88		PCB BOARD	1

BILL OF MATERIALS

NOTE: 1. FOR SCHEMATIC, REFER TO DRAWING NO. 16-98037.
 2. ALL FUSES TO BE INSTALLED AFTER SOLDER WASH.
 3. EACH FUSEHOLDER CAN BE SUBSTITUTED WITH 2 FUSE CLIPS PT. NO. 5732-09178-00.
 4. BR1 MUST BE MOUNTED 1/8" ABOVE SURFACE OF PCB.

DO NOT SCALE REMOVE DIMENSIONS FROM THIS DRAWING

DATE: 5/18/88
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVAL: [Signature]

WILLIAMS ELECTRONICS, INC.
 1000 CALIFORNIA
 SANTA ANA, CALIFORNIA 92701

SYG-Z J2 UNREG. P/S. ASSY
 1/1

C-12218

16-9037

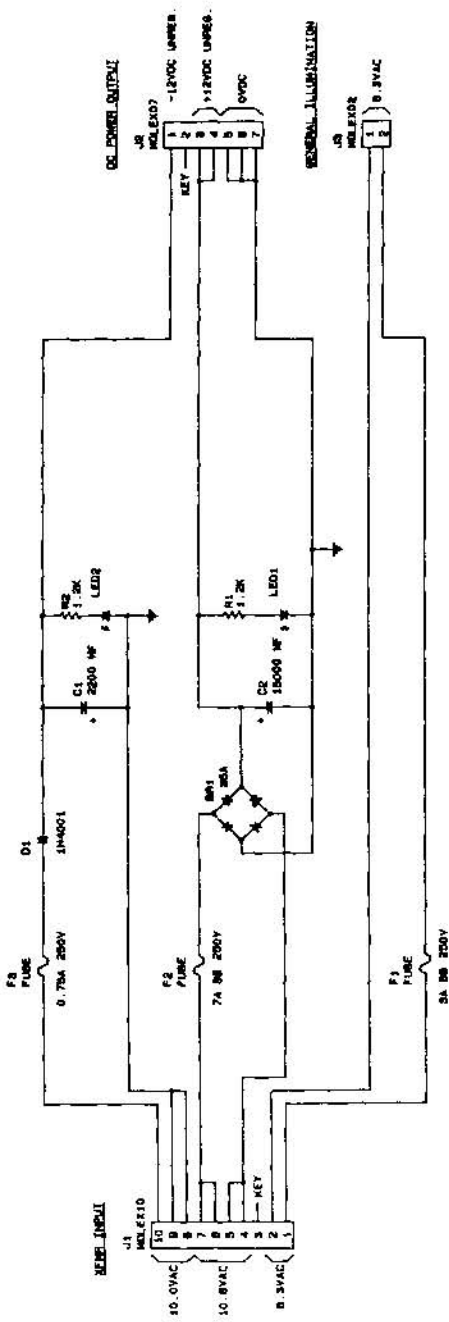
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REV	DESCRIPTION OF CHANGE	DATE
	NEW PART RELEASE	12-18-60



FIELD	PART NUMBER	DESCRIPTION	QTY
1	16-9037	POWER SUPPLY	1
2	16-9037	ILLUMINATION	1

DO NOT SCALE	DESCRIPTION	QTY	UNIT
UNLESS OTHERWISE SPECIFIED	WILLIAMS ELECTRONICS, INC.		
UNLESS OTHERWISE SPECIFIED	240 N. CALIFORNIA AVE.		
UNLESS OTHERWISE SPECIFIED	CHEVROLET		
UNLESS OTHERWISE SPECIFIED	12 UNREG P/S BD., SCHEMATIC		
UNLESS OTHERWISE SPECIFIED	16-9037		