

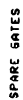
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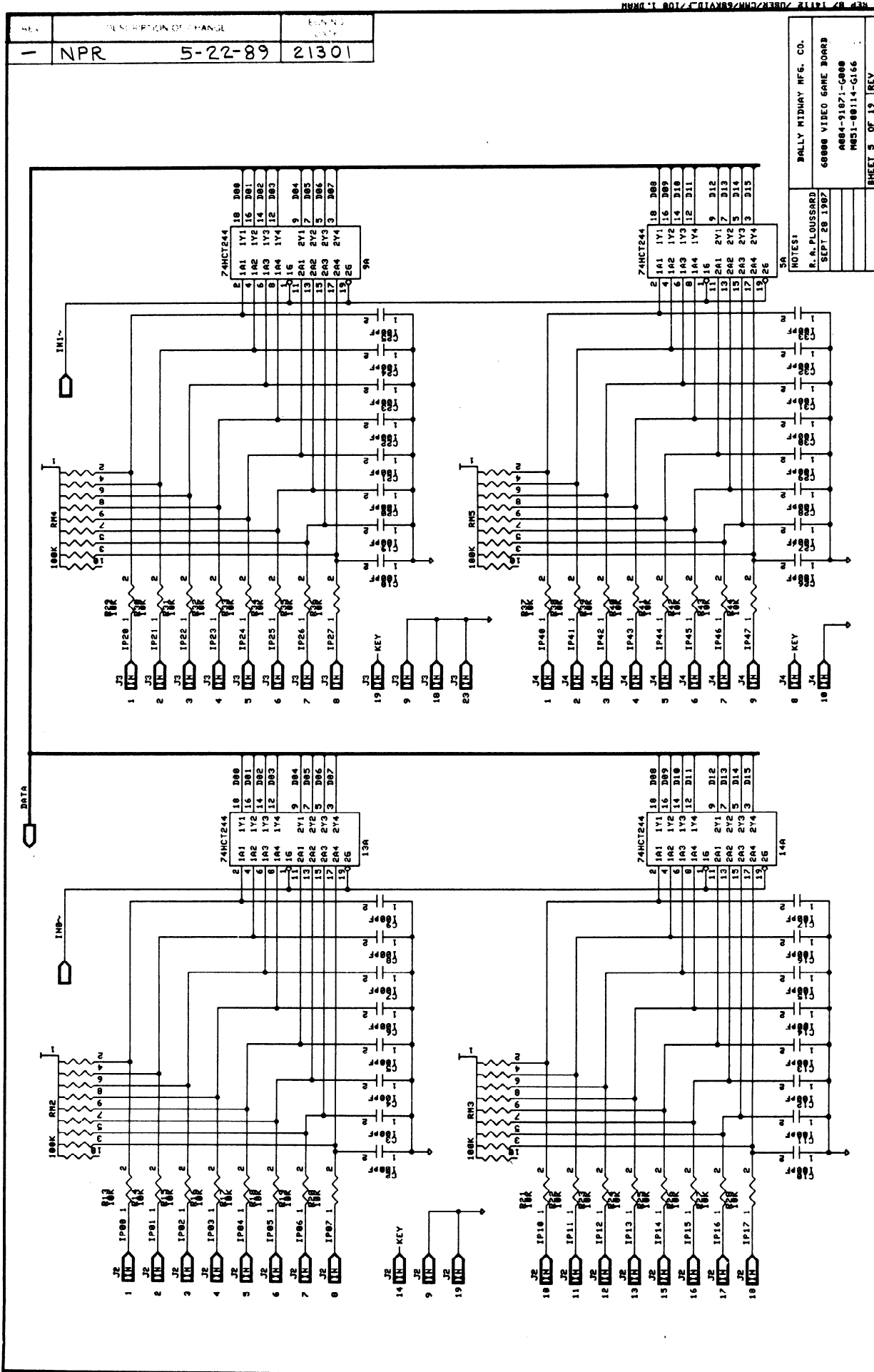


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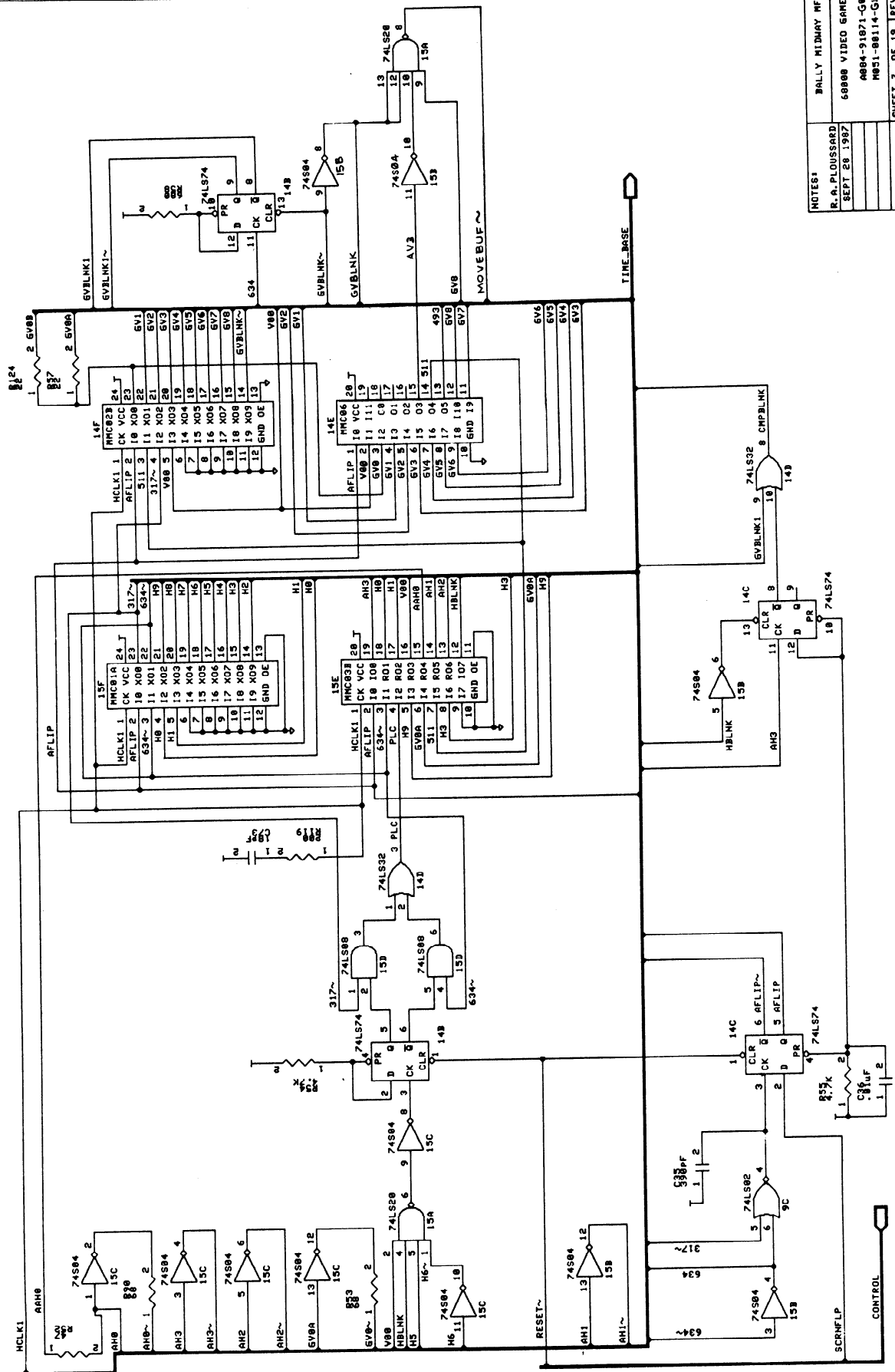
25



REV	DESCRIPTION OF CHANGE	DATE
1	NPR	5-22-89
		21301

NOTES:	BALLY MIDWAY MFG. CO.
	R. A. PLOUSSARD
	68000 VIDEO GAME BOARD
	SEP 28 1987
	0884-91871-C000
	M851-00114-G166
	SHEET 5 OF 19 REV

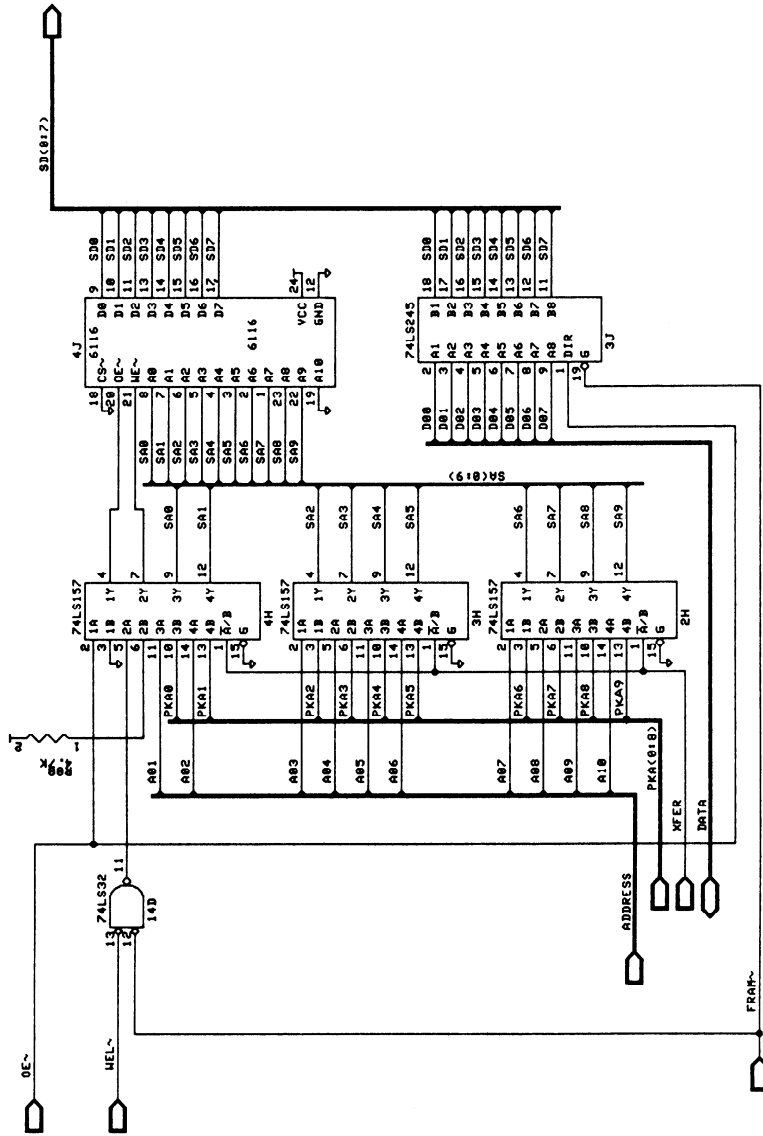
1 NPR 5-22-83 21301
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



NOTES:
 R.A. PLOUSSARD
 SEPT 28 1987
 68000 VIDEO GAME BOARD
 A084-91871-G000
 M051-88114-G166
 SHEET 2 OF 19 REV

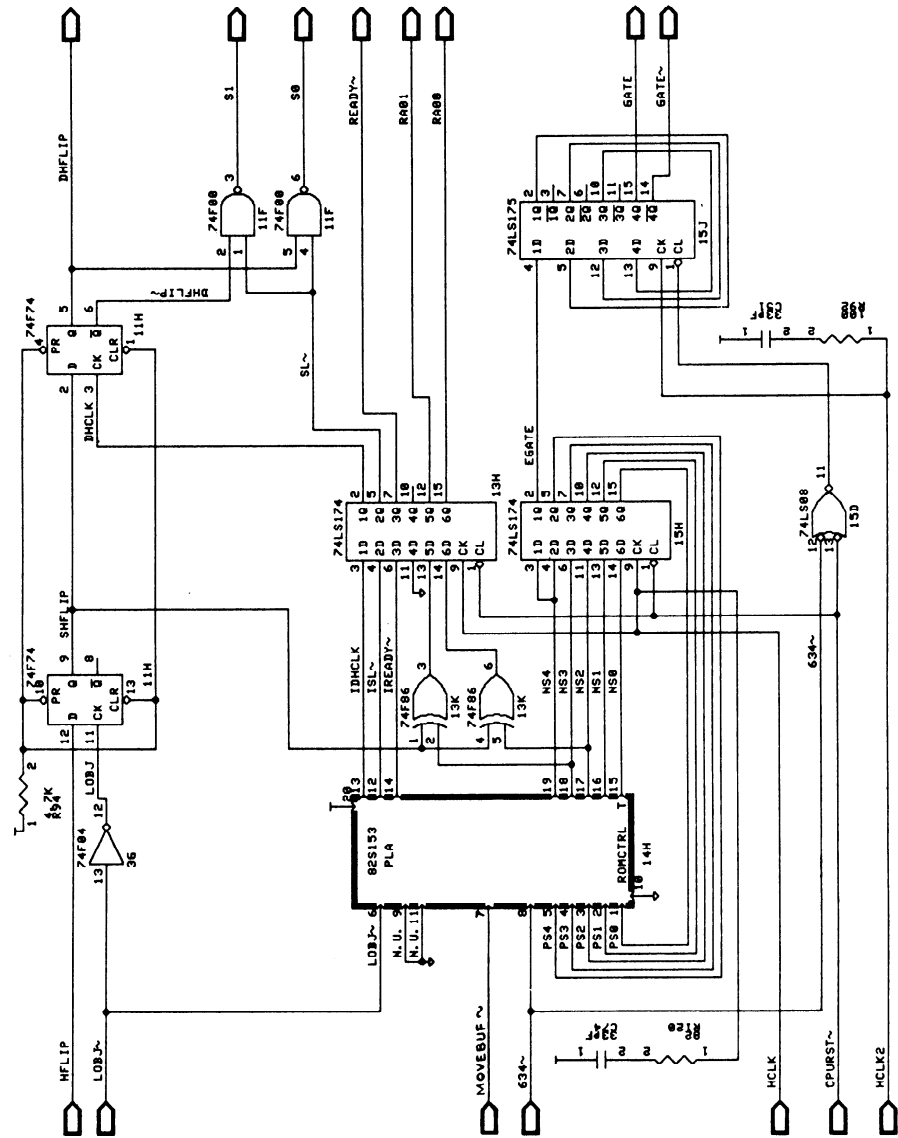
28 SEP 87 14116 7058K/CMM/68KVID-1/7/TIME-2/88-1-1/URN

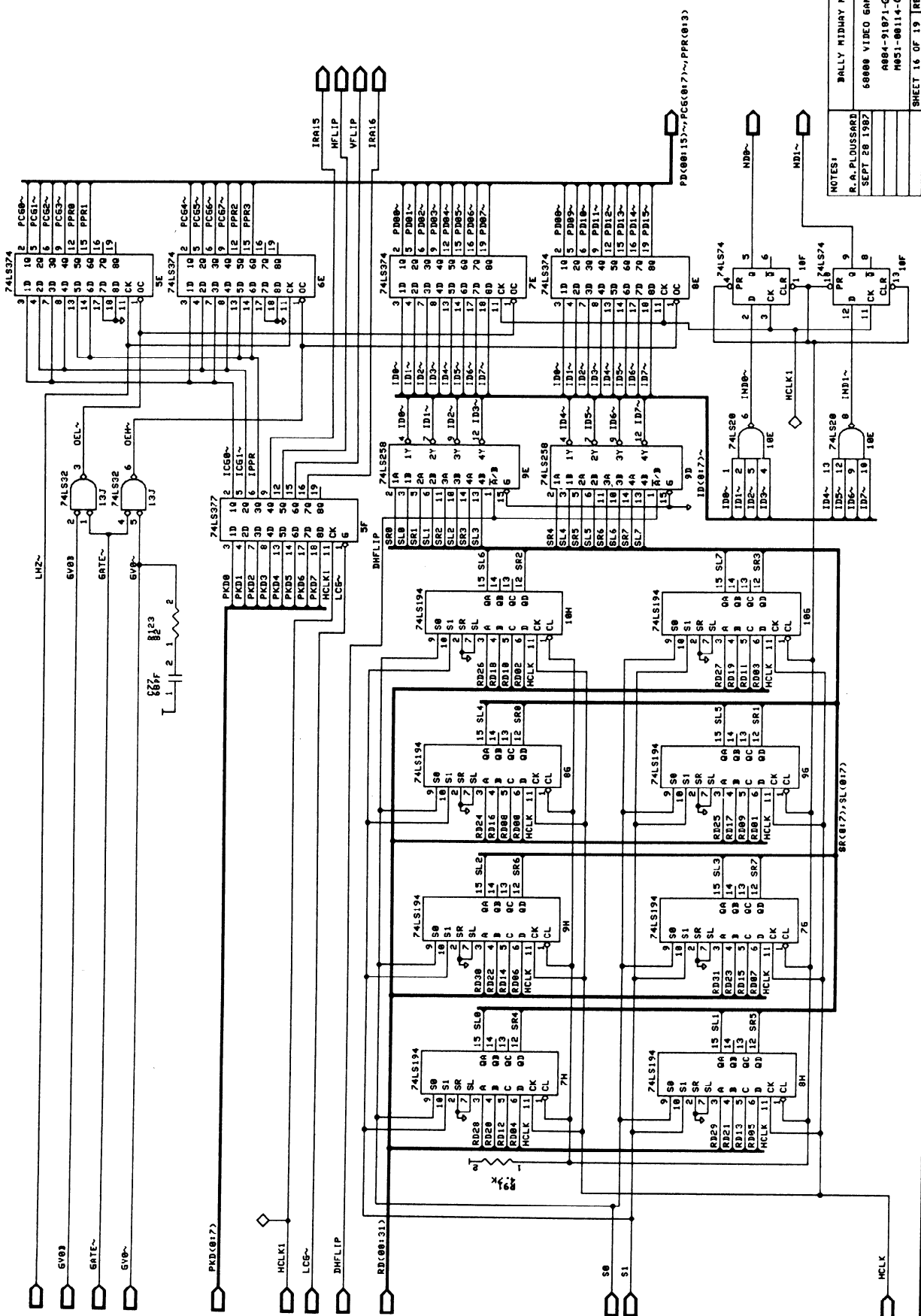
1	N P R	5-22-89	21301
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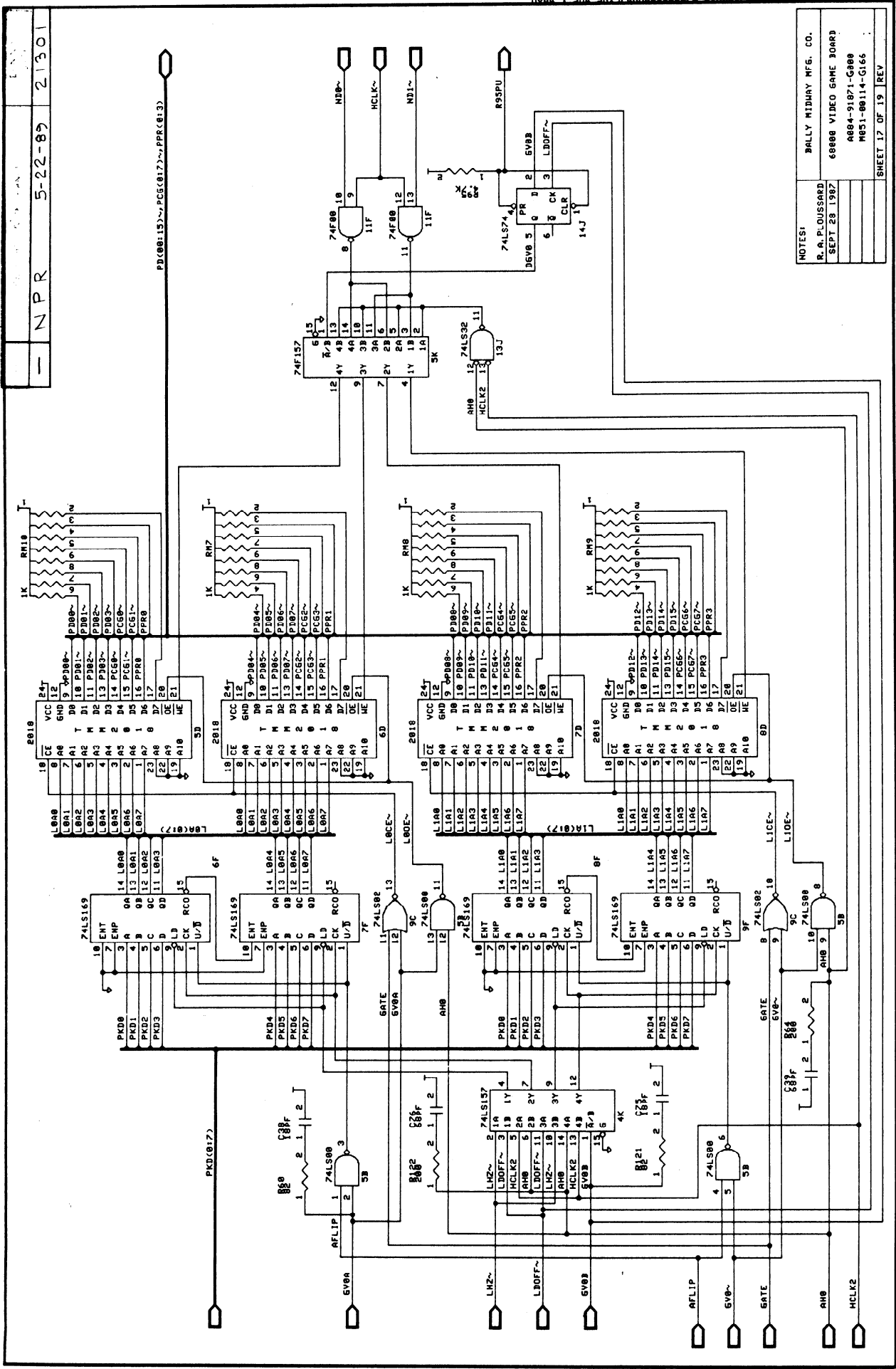
NOTES:	BALLY MIDWAY MFG. CO.
R.A. PLOUSSARD	68000 VIDEO GAME BOARD
SEPT 28 1987	A684-91871-G888
	M851-88114-G166
	SHEET 11 OF 19 REV

28 SEP 87 1411 / USER/CM/68KVID-7/FOREROUND/STABLE-KAM 1-KRAM





NOTES:	BALLY MIDWAY MFG. CO.
R. A. PLOUSSARD	68000 VIDEO GAME BOARD
SEPT 28 1987	A884-91971-G800
	M851-00114-G166
	SHEET 16 OF 19 REV

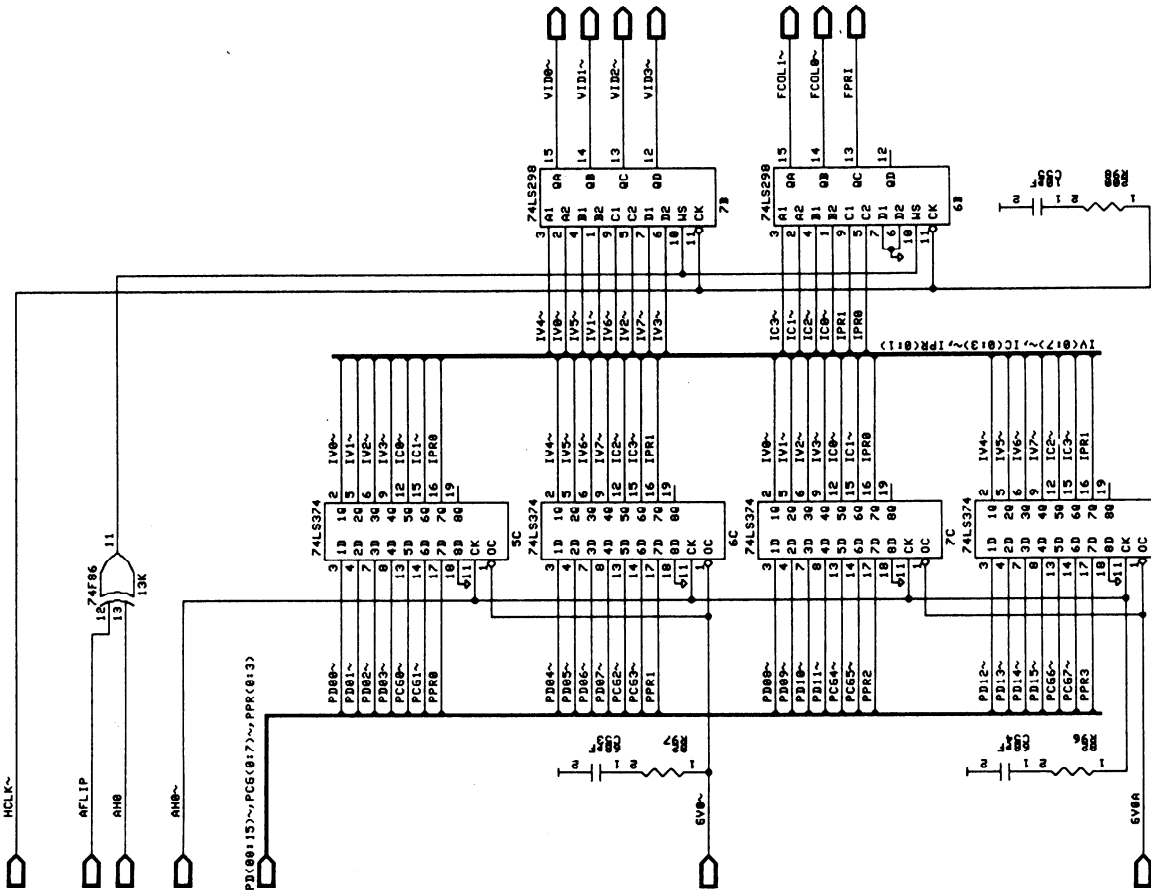


— NPR 5-22-89 21301

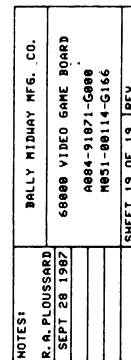
NOTES:
R. A. PLOUSSARD
SEPT 28 1987
BALLY MIDWAY MFG. CO.
68888 VIDEO GAME 30A83
A884-91871-G888
M851-88114-G166
SHEET 17 OF 19 REV

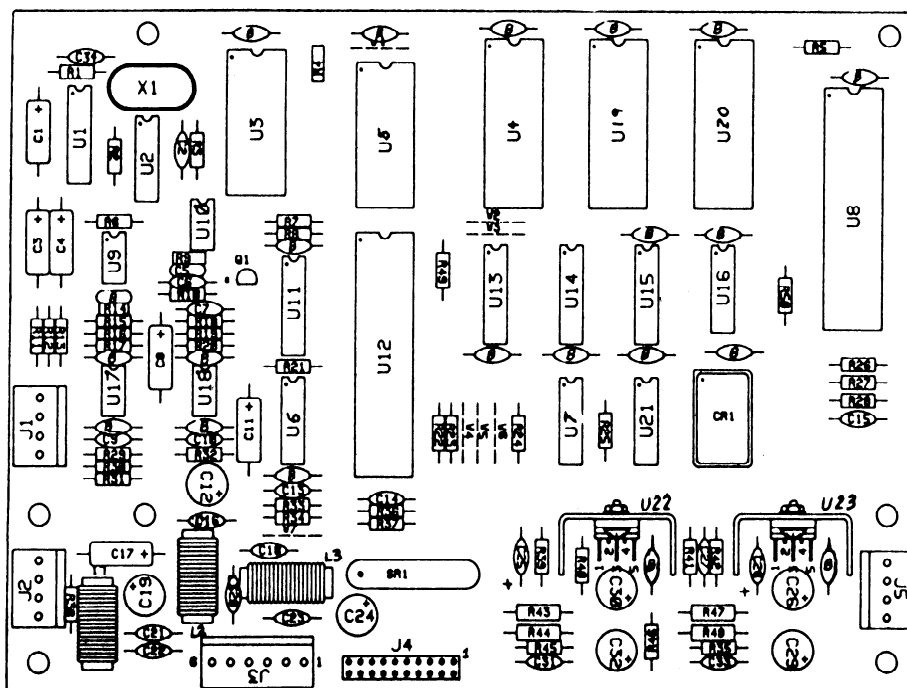
89 SEP 87 14181 705K/CM/68KVID 740RESGNDN/2 LINE DUF 1.00MM

REV	DATE
1	2/30/89
5-22-89	2/30/89



NOTES:	BALLY MIDWAY MFG. CO.
R.A. PLOUSSARD	68000 VIDEO GAME BOARD
SEPT 28 1987	8884-91821-G088
	M851-88114-G166
	SHEET 18 OF 19 REV





Audio Board Assembly

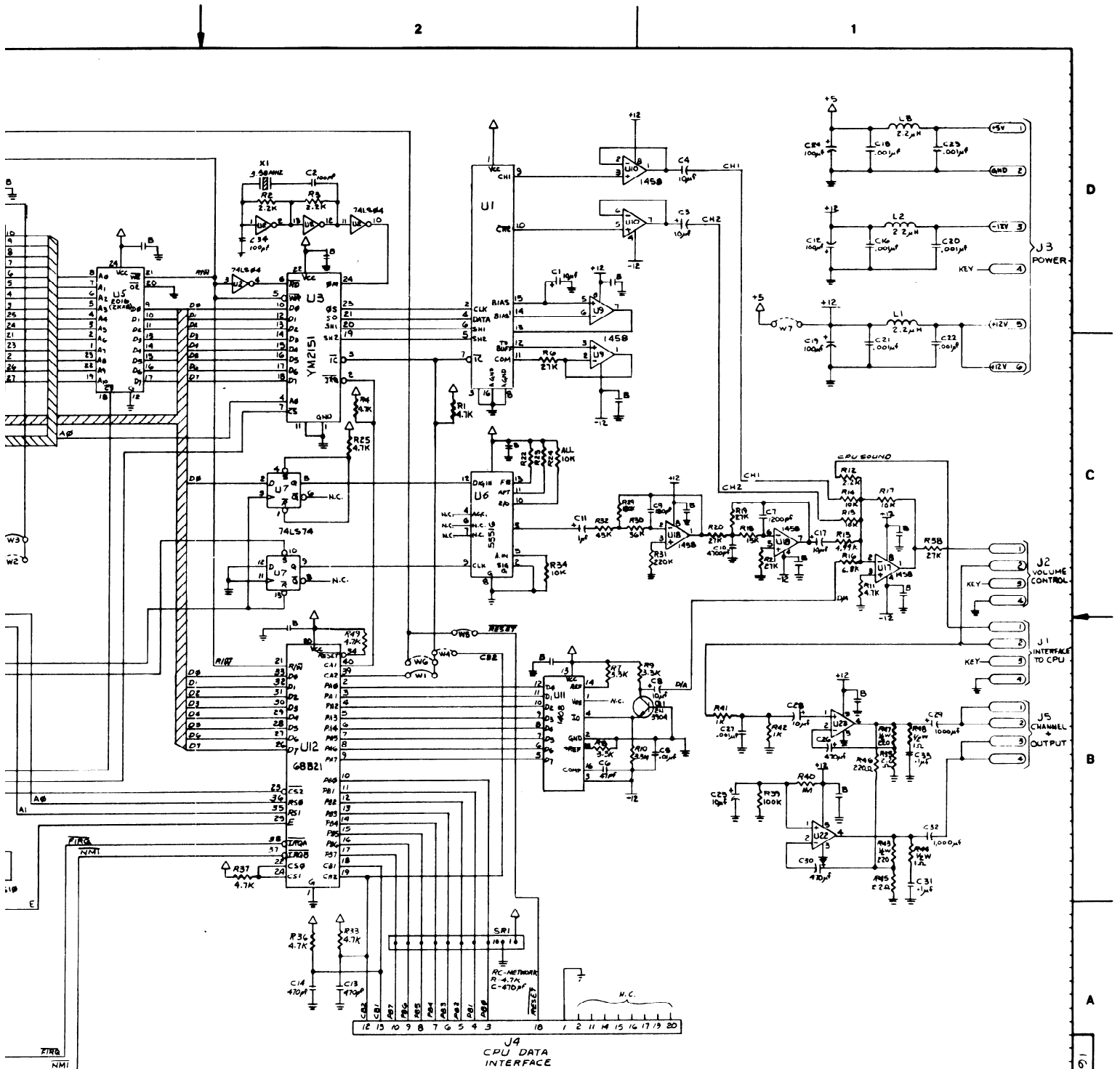
p/n D-11581-4001

Part No.	Kct Designator	Description	Part No.	Kct Designator	Description
5766-12130-00		Bare P. C. Board	5010-08991-00	R1, R4, R5, R11, R25 - R28, R33, R36, R37, R49, R50	Resistor, 4.7K, 1/4w, 5%
5731-11087-00	U1	IC, D/A Conv, YM3012	5010-09034-00	R14 - R17	Resistor, 10K, 1/4w, 5%
a) 5700-09006-00		Socket, IC, 16-pin (U1)	5010-09324-00	R6, R38	Resistor, 27K, 1/4w, 5%
5730-11086-00	U3	IC, Sound Processor, YM2151	5010-09162-00	R39	Resistor, 100K, 1/4w, 5%
a) 5700-09004-00		Socket, IC, 24-pin (U3)	5010-10258-00	R40	Resistor, 1M, 1/4w, 5%
5400-10320-00	U8	IC, μ Processor, MC68B09E	5010-09179-00	R10	Resistor, 3.3M, 1/4w, 5%
a) 5700-08985-00		Socket, IC, 40-pin (U8)	5010-09534-00	W9	Resistor, 0 Ω , 1/4w, 5%
A-5343-4001-1	U4	IC, Audio ROM 1	5040-09343-00	C1, C3, C4, C8	Capacitor, 10 μ fd, 20v, $\pm$ 20%
A-5343-4001-2	U19	IC, Audio ROM 2	5040-10974-00	C12, C19, C24	Capacitor, 100 μ fd, 35v
A-5343-4001-3	U20	IC, Audio ROM 3	5040-09776-00	C26, C30	Capacitor, 470 μ fd, 16v; +50, -10%
a) 5700-10176-00		Socket, IC, 28-pin (U4, U19, U20)	5040-12006-00	C29, C32	Capacitor, 1000 μ fd, 16v, 20%
5371-09152-00	U11	IC, D/A Convtr, MC1408	5041-09243-00	C25, C28	Capacitor, 10 μ fd, 10v, $\pm$ 10%
5430-10322-00	U12	IC, PIA, MC68B21	5043-08980-00	C5, B (17)*	Capacitor, 0.01 μ fd, 50v, +80, -20%
5340-09878-00	U5	IC, RAM, 2016	5043-08996-00	C31, C33	Capacitor, 0.1 μ fd, 50v, $\pm$ 20%
5281-09487-00	U16	IC, Dual D Flipflop, 74LS74	5043-09065-00	C13 - C15	Capacitor, 470 pfd, 50v, $\pm$ 20%
5281-10043-00	U13	IC, 74LS175	5043-09492-00	C2, C34	Capacitor, 100 pfd, 50v, $\pm$ 10%
5281-09235-00	U21	IC, Triple NAND, 74LS10	5043-09844-00	C6	Capacitor, 47 pfd, 50v, $\pm$ 20%
5370-09321-00	U9, U10, U17	IC, Op Amp, MC1458	5043-09845-00	C16, C18, C20 - C23, C27	Capacitor, 1000 pfd, 50v, $\pm$ 20%
5281-09215-00	U2	IC, Hex Inv, 74LS04	5520-09020-00	X1	Crystal, 3.58 MHz
5281-09246-00	U14	IC, 2-4 Dec, 74LS139	5521-10931-00	CR1	Oscillator, 8 MHz
5281-09745-00	U15	IC, Dual Mux, 74LS138	5551-09822-00	L1 - L3	Inductor, 4.7 μ H, 3A
5370-09156-00	U22, U23	IC, Audio Amp, TDA2002	5791-09437-00	J4	Connector, 20 pin, (Hdr), Rib. Cbl
a) 5705-09199-00		Heatsink, #6030B	5791-10862-04	J1, J2, J5	Connector, 4 pin (Hdr)
b) 20-9229		Thermal Compound	5791-10862-06	J3	Connector, 6 pin (Hdr)
c) 4006-01003-06		6-32 x 3/8 P-PH-S			
d) 4406-01117-00		6-32 Hexnut			
e) 4703-00007-00		#6 Ext. Lockwasher			
5370-09691-00	U6	IC, CVSD, 55536			
5160-10269-00	Q1	Transistor, 2N3904, NPN			
5060-10396-00	SR1	SIP 4.7K & 470pfd, 8R8C			
5010-09181-00	R44, R48	Resistor, 1.0 Ω , 1/2w, 5%			
5010-09161-00	R35, R45	Resistor, 2.2 Ω , 1/4w, 5%			
5010-09361-00	R43, R46, R47	Resistor, 220 Ω , 1/2w, 5%			
5010-09358-00	R41, R42	Resistor, 1K, 1/4w, 5%			
5010-08998-00	R2, R3, R12	Resistor, 2.2K, 1/4w, 5%			
5010-08983-00	R7 - R9	Resistor, 3.3K, 1/4w, 5%			

Notes: * 17 capacitors (shown on diagram with "B" symbol) provide +5VDC filtering for ICs.

All capacitors are ceramic, 50v, axial, unless otherwise noted.

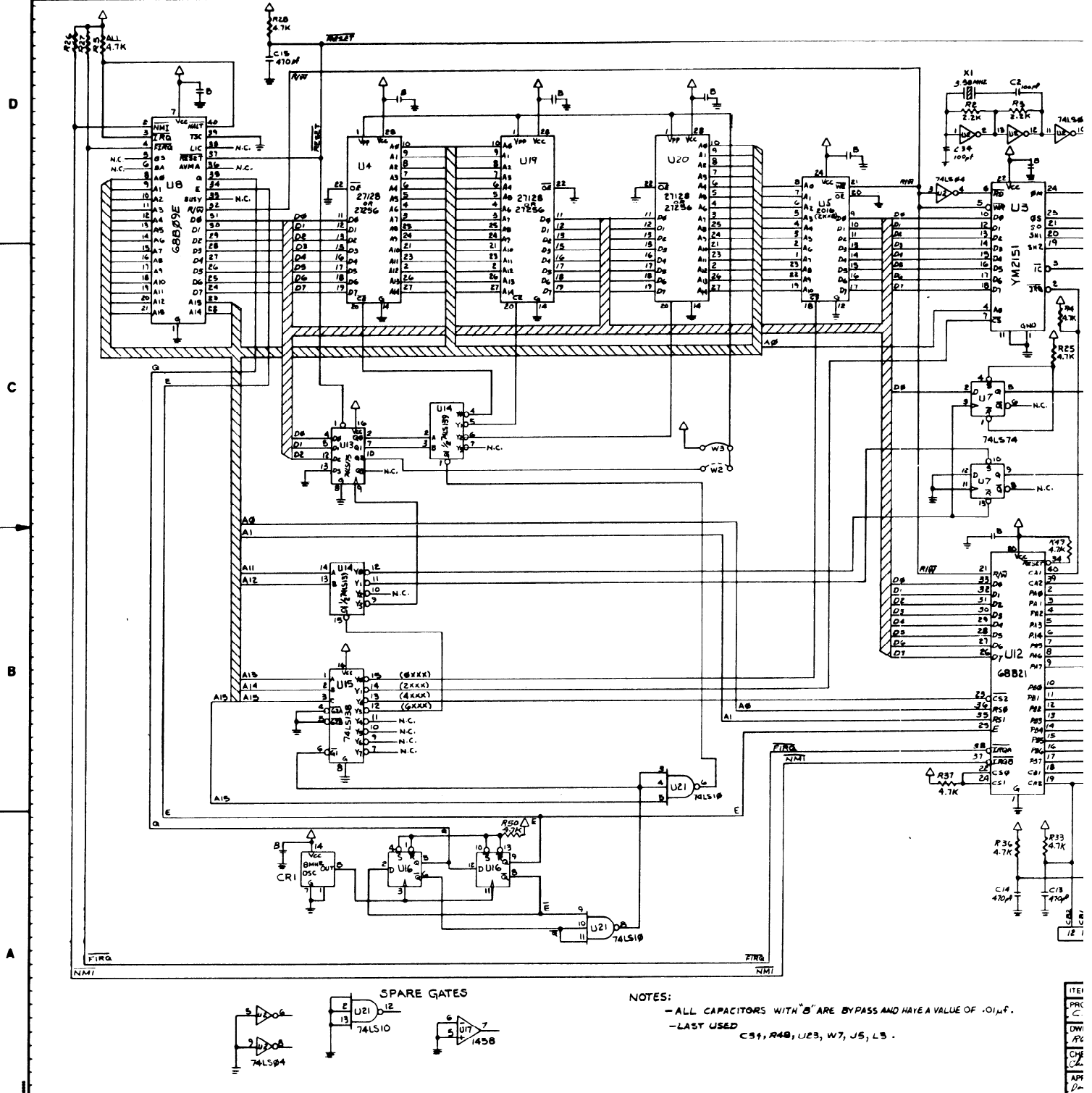
All resistors are 5%, 1/4w, Carbon Film, unless otherwise noted.

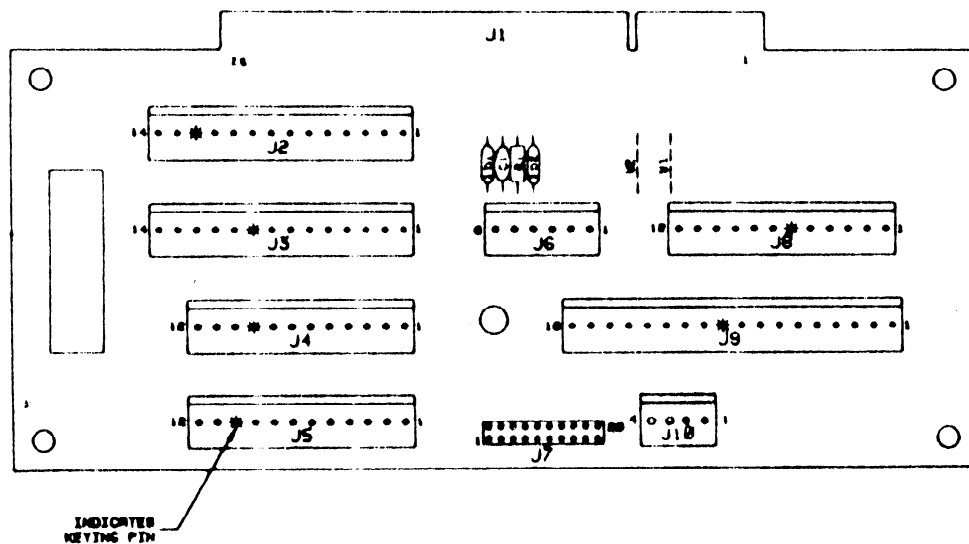


APACITORS WITH "B" ARE BYPASS AND HAVE A VALUE OF .01μF.
USED C54, R48, U23, W7, J5, L3.

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR C. BLEICH	DO NOT SCALE WORK TO DIMENSIONS SHOWN	REMOVE BURRS - BREAK SHARP CORNERS & EDGES TOLERANCES UNLESS OTHERWISE SPECIFIED DECIMAL .X .030 ANGULAR .5/12° XXX .005 FRACTIONAL .1/64		WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE CHICAGO IL 60618 NAME AUDIO SYSTEM SCHEMATIC SCALE N/S SHT 1 OF 1 PART NO 16-8999 REV -			
CHECKED BY DATE Checked 1/22/87	FIRST PROJECT NO 554	MATERIAL H					
APPROVAL DATE Date V. A. 1/22/87	FIRST USAGE D-11579	QTY 1					

REV	DESCRIPTION OF CHANGE	ECN NO	DATE
1	N. P. R.	16728	8-27-87

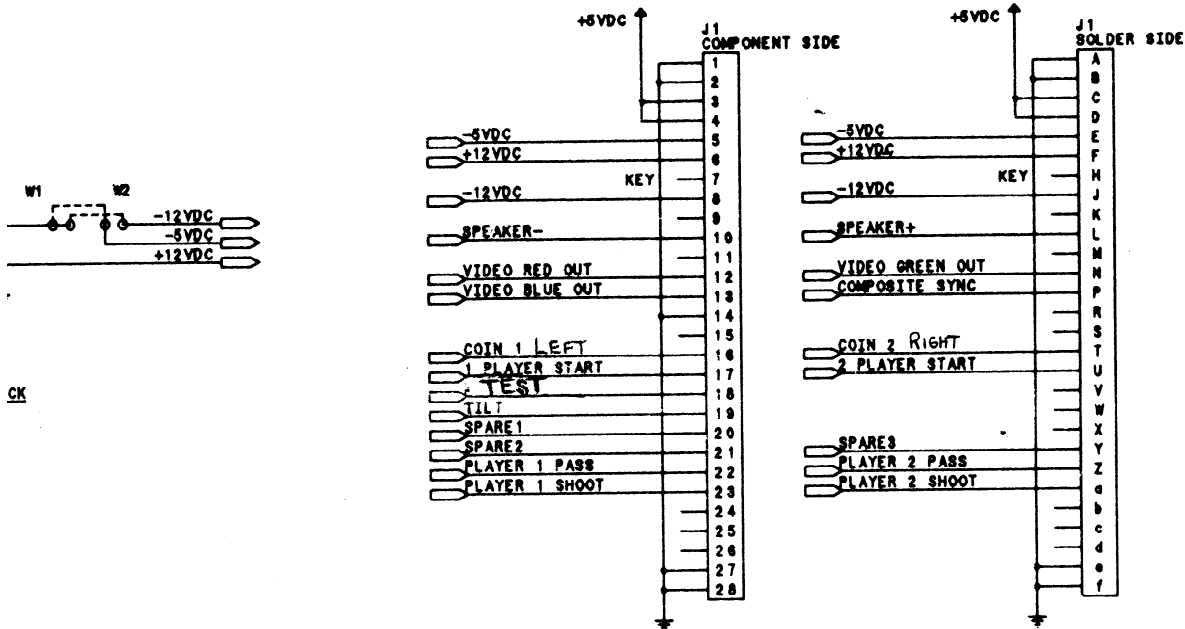




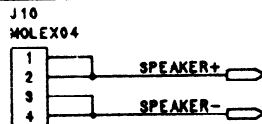
JAMMA INTERFACE BOARD ASSEMBLY p/n C-12284

Part no.	Ckt. Designator	Description
5678-12455-00		Bare P. C. Board
16-8587-975		Lable, PCB Indent.
5010-09358-00	R1	Resistor, 1KΩ 5% 1/4W
5070-08919-00	D1, D2	Diode, 1N4148
5010-09534-00	W1	Resistor, 0Ω
5043-08996-00	C1	Capacitor, Axial, .1MFD
5791-10862-04	J10	Connector, 4 Pin
5791-10862-06	J6	Connector, 6 Pin
5791-10862-12	J4, J5, J8	Connector, 12 Pin
5791-10862-14	J2, J3	Connector, 14 Pin
5791-10862-18	J9	Connector, 18 Pin
5791-09437-00	J7	Connector, 20 Pin Ribbon

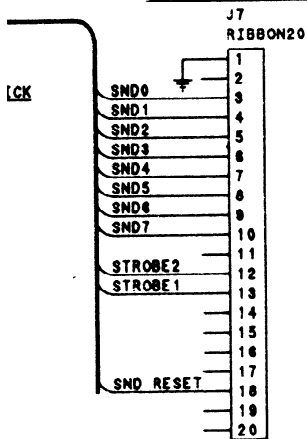
JAMMA EDGE CONNECTOR



SPEAKER INPUT



SOUND BOARD INTERFACE



COMPOSITE SYNC

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
THE INFO CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF WILLIAMS ELECTRONICS GAMES, INC. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION							
PROJ ENGR G. SHIPP		DO NOT SCALE WORK TO DIMENSIONS SHOWN		REMOVE BURRS - BREAK SHARP CORNERS & EDGES		TOLERANCES UNLESS OTHERWISE SPECIFIED	
DWN BY G. SHIPP		DATE		DECIMAL		ANGULAR	
CHECKED BY		DATE		FIRST PROJECT NO		MATERIAL	
APPROVAL		DATE		FIRST USAGE		QTY	
3/15/87		5-11-87		C-12884		1	
WILLIAMS ELECTRONICS, INC.				3401 N. CALIFORNIA AVE CHICAGO IL 60618			
NAME				SCALE			
SHT 1 OF 1				PART NO			
16-9066				REV			
-				-			

REV	DESCRIPTION OF CHANGE	ECHO DATE
-	NEW PART RELEASE	21215 5-11-85

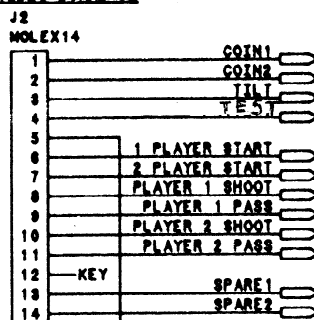
D

C

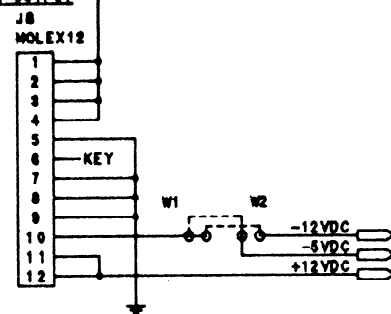
B

A

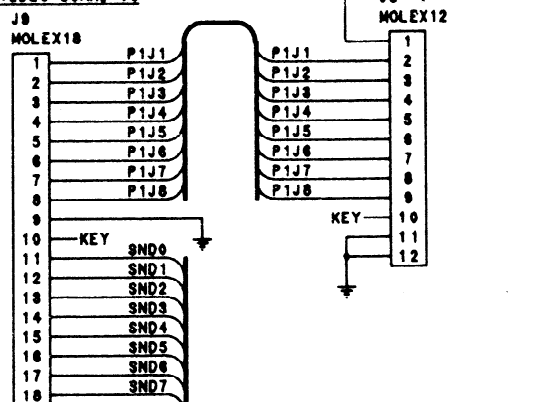
FROM VIDEO BOARD J2



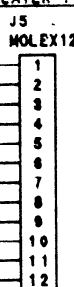
POWER OUTPUT



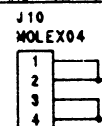
FROM VIDEO BOARD J3



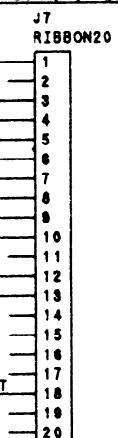
PLAYER 1 JOYSTICK



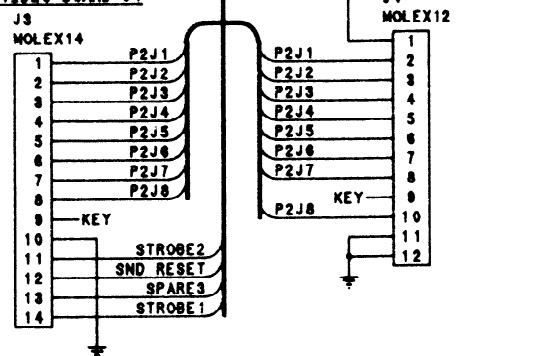
SPEAKER INPUT



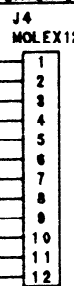
SOUND BOARD INTER



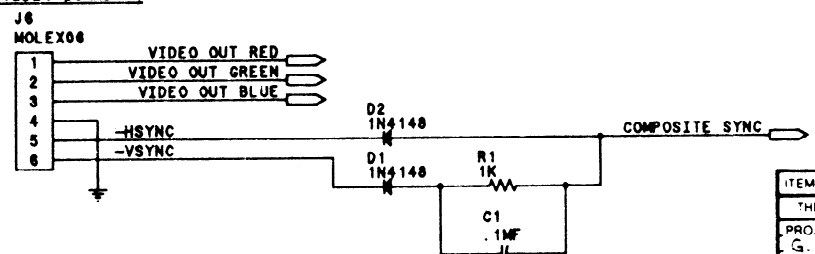
FROM VIDEO BOARD J4



PLAYER 2 JOYSTICK



FROM VIDEO BOARD J5

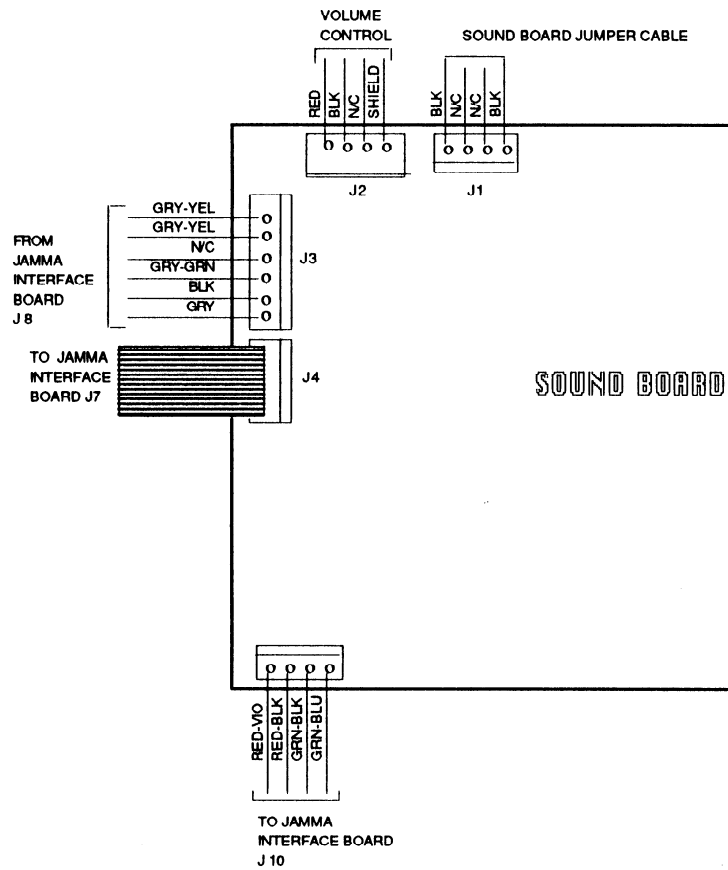
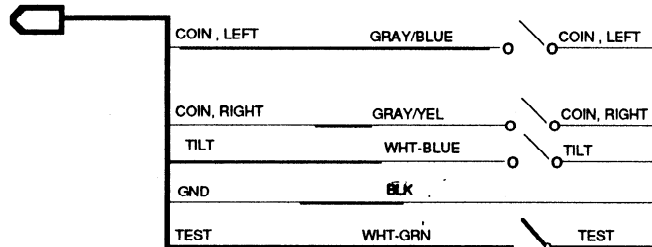


JAMMA INTERFACE BOARD SCHEMATIC

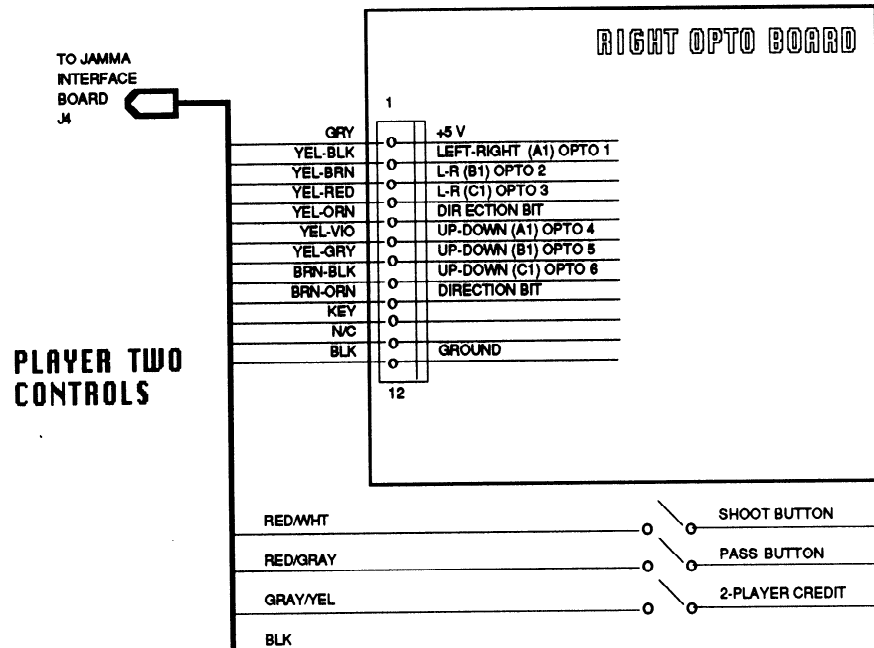
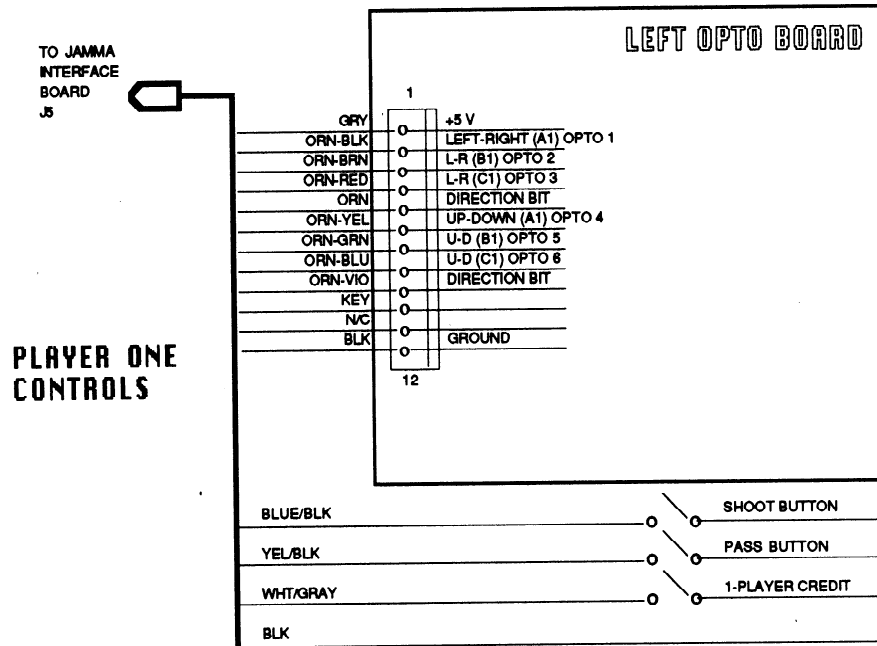
ITEM
THE
PROJ.
G.
OWN
G.S.
CHEC
APPR

COIN DOOR WIRING

TO JAMMA INTERFACE BOARD



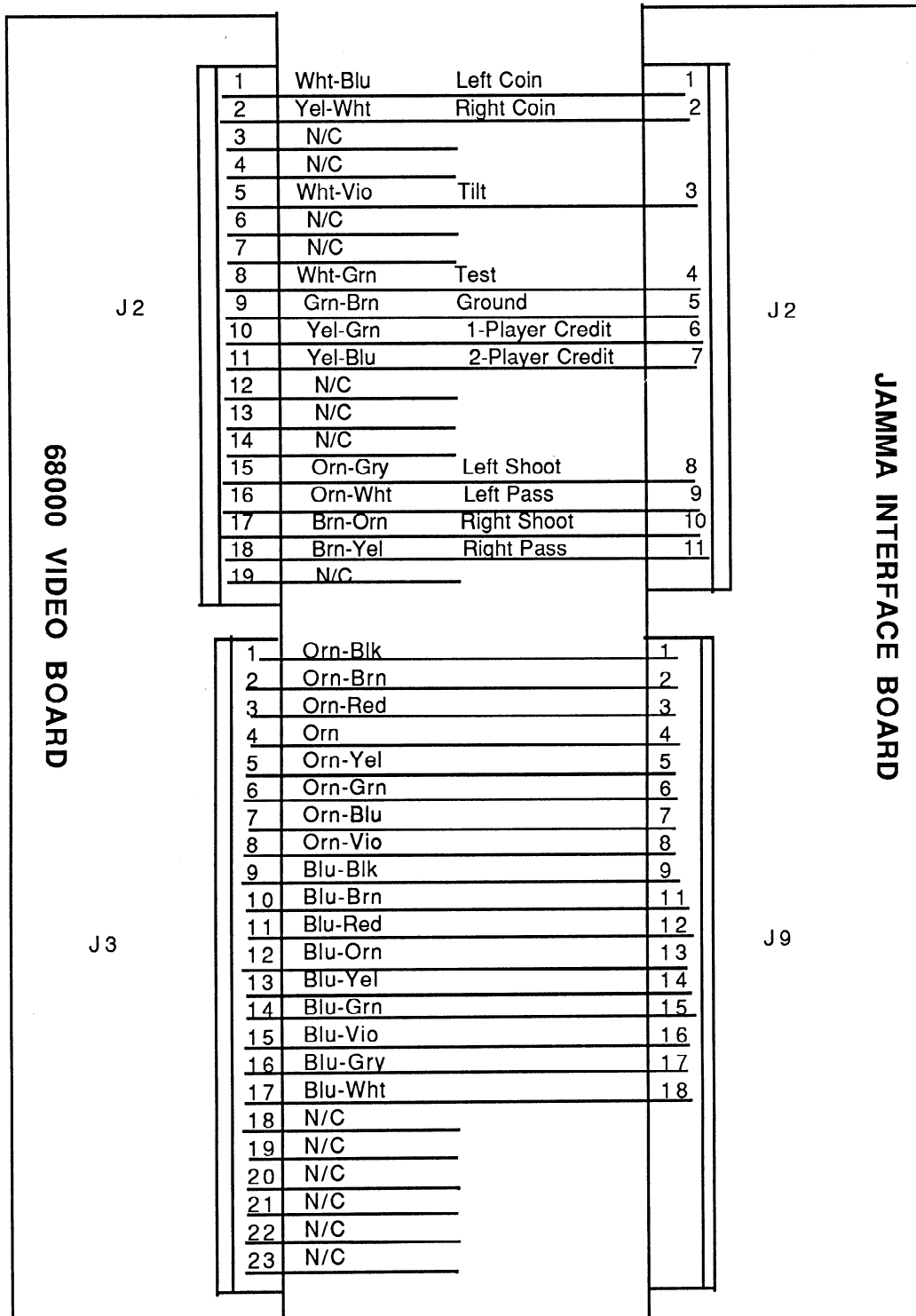
CONTROL PANEL WIRING



Arch Rivals Interboard Wiring

68000 Video Board to Jamma Interface Board

Note: Pin location is shown for reference only, actual location on the board may be different.



68000 VIDEO BOARD CONTINUED

JAMMA INTERFACE BOARD CONTINUED

1	Yel-Blk	1	
2	Yel-Blk	2	
3	Yel-Red	3	
4	Yel-Orn	4	
5	Yel-Vio	5	
6	Yel-Gry	6	
7	Brn-Blk	7	
8	Key		
9	Brn-Red	8	
10	Blk	Ground	10
11	Grn-Red		11
12	Grn-Yel		12
13	N/C		
14	N/C		
15	N/C		
16	Grn-Orn		14

1	Red	6
2	N/C	5
3	Grn	
4	N/C	4
5	Brn	3
6	Shield	
7	Key	2
8	Wht	
9	Blk	1

1	Blk	9
2	Blk	8
3	Gry	4
4	Gry	3
5	N/C	
6	N/C	
7	N/C	
8	N/C	
9	Gry	2
10	Gry	1
11	Blk	7
12	Blk	5

1
2
3
4
5
6
7

NOT USED

Arch Rivals Interboard Wiring

68000 Video Board to Jamma Interface Board Continued.

Parts List

Major Assemblies And Subassemblies Included With Your Kit

Boards:

FCC Card Rack Assembly	C-12892
68000 CPU Board	C-12610
Sound Board	D-11581-4001
Jamma Interface Board	C-12884

Mechanical:

Button Assembly, S-Red	C-9214-4
Button Assembly, S-White	C-9214-5
Analog Joystick, Orange	C-9477-15
Wood Spacer	11-909
Switch: White Diagnostic	5643-09556-00
Bracket	01-9180

Cables:

Main Harness	H-12894
Volume Control	H-8866
Video Signal	H-12936-1
Power Interconnect	H-12933
Jamma Joystick Cable	H-12934
Sound Board Jumper	H-12758

Decals and Overlays:

Marquee, Screened	31-1480-4001-K
Center Shelf Overlay	31-1481-4001
Decal Set	31-1482-4001
CRT Shelf Overlay	31-1483-4001
Hole Spotting Decal	31-1494
4003-K Control Panel Cover	03-6250

ROM Summary

68000 Video Board

7J Foreground Image ROM	A-5343-4001-10
8J Foreground Image ROM	A-5343-4001-11
9J Foreground Image ROM	A-5343-4001-12
10J Foreground Image ROM	A-5343-4001-13
11D Background Image ROM	A-5343-4001-8
12D Background Image ROM	A-5343-4001-9
2B Game Program ROM	A-5343-4001-4
3B Game Program ROM	A-5343-4001-5
2C Game Program ROM	A-5343-4001-6
3C Game Program ROM	A-5343-4001-7

Sound Board

U4 Sound ROM	A-5343-4001-1
U19 Sound ROM	A-5343-4001-2
U20 Sound ROM	A-5343-4001-3

Jumper List

<u>Jumpers</u>	<u>In</u>	<u>Out</u>
JW1		**
JW2		**
JW3	**	
JW4		**
JW5	**	
JW6		**
JW7	**	
JW8	**	
JW9	**	
JW10		**
JW11	**	
JW12		**

WARNINGS & NOTICES

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 electrical 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.

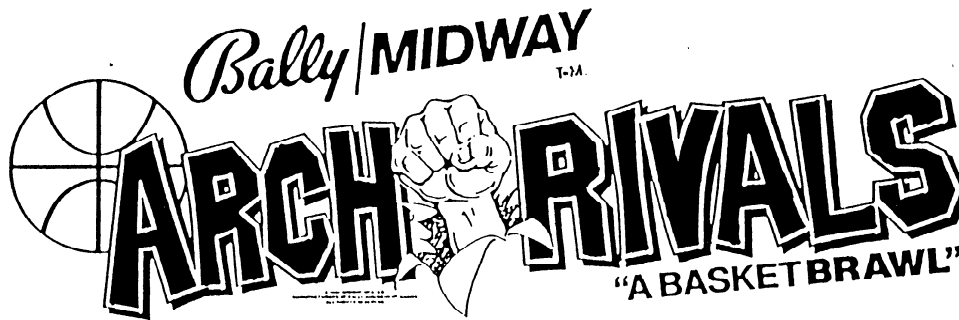
ATTENTION

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.

USE ONLY GENUINE BALLY MIDWAY APPROVED REPLACEMENT PARTS.

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YES! I'VE TAKEN ADVANTAGE OF THE ARCH RIVALS HOMETOWN HEROES
OPTION TO CUSTOMIZE MY GAME! PLEASE RUSH ME MY FREE TEAM
JERSEYS AND PROMO KIT AND SEND PRESS RELEASES AND GLOSSIES
TO MY HOMETOWN NEWSPAPERS!

FOR BEST RESULTS, PLEASE FILL OUT THE FOLLOWING COMPLETELY!

SEND MY FREE TEAM JERSEYS AND PROMO KIT TO:

Name _____

Address _____

City _____ State _____ Zip _____

Jersey #1 Size: S M L XL Jersey #2 Size: S M L XL

Note: Sizes subject to availability.

INFORMATION ABOUT MY ARCH RIVALS GAME:

Location _____

Address _____

City _____ State _____ Zip _____

Serial Number _____

I HAVE ADDED THE FOLLOWING "HOMETOWN HEROES" TO MY GAME:

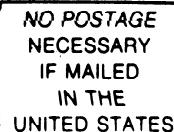
Team Name (as it appears in my game) _____ *

Full Team Name _____

Team's Home Town: City _____ State _____

Type of Team (high school, college, other) _____

*Always obtain written permission before using ANY copyrighted or
similarly protected name. When in doubt, identify the team by
the name of its "home town" or place of origin. To list additional
teams/information, please use reverse side.



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Bally
MIDWAY.

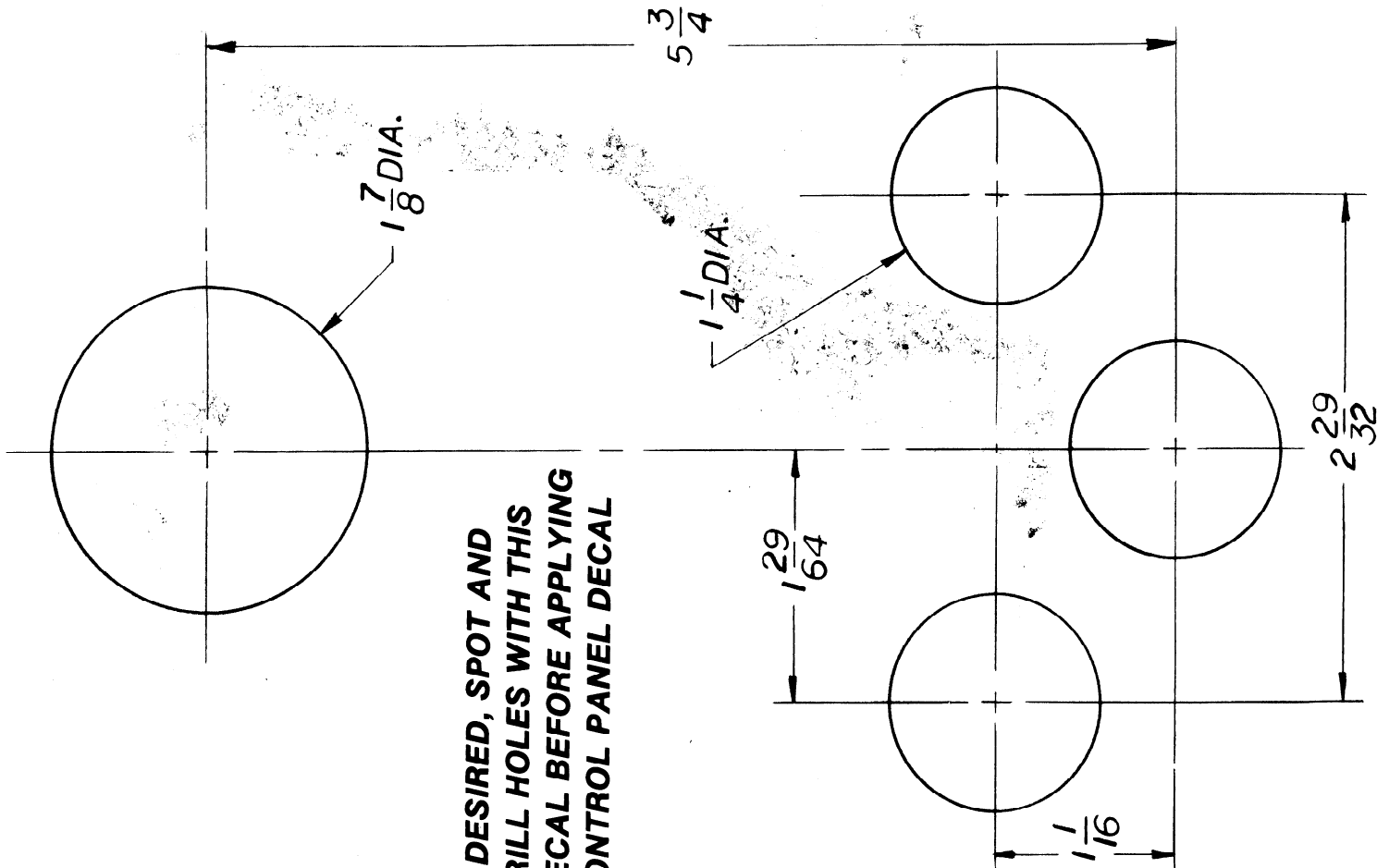
**3401 N. California Ave.
Chicago, Illinois 60618**

ATTN: MARKETING

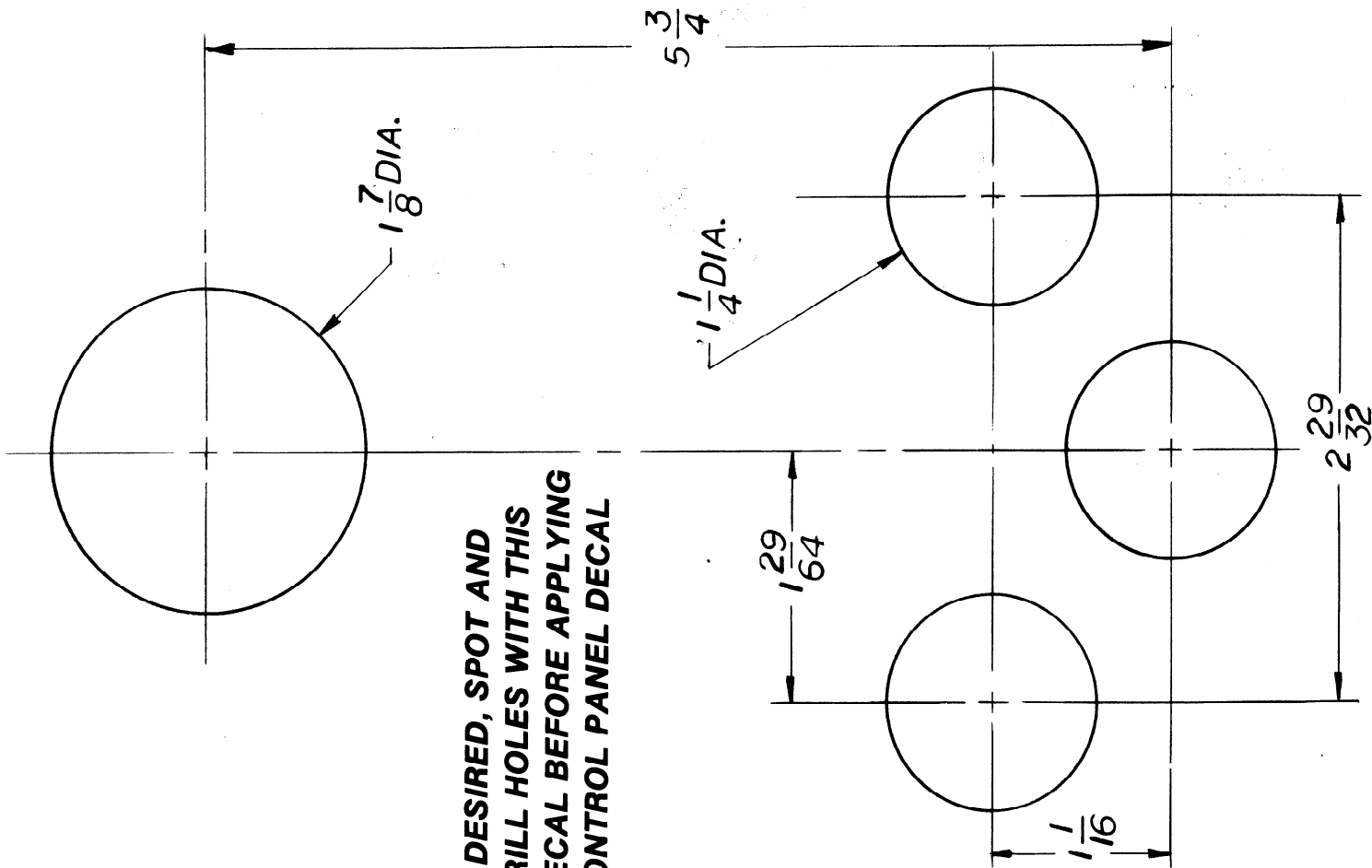
[illegible]**ADDITIONAL COMMENTS:**

FOLD, SEAL & MAIL — FREE — NO POSTAGE REQUIRED

**IF DESIRED, SPOT AND
DRILL HOLES WITH THIS
DECAL BEFORE APPLYING
CONTROL PANEL DECAL**



**IF DESIRED, SPOT AND
DRILL HOLES WITH THIS
DECAL BEFORE APPLYING
CONTROL PANEL DECAL**





HOMETOWN HEROES OPTION - HOW TO CUSTOMIZE YOUR GAME!

1. PUT GAME IN TEST MODE
 - a. Pull out switch inside door
 - b. Activate TILT switch
2. SELECT "Hometown Heroes" OPTIONS
 - a. Use left player control button
 - b. Move cursor (ball) to "Hometown Heroes"
 - c. Press 1 or 2 PLAYER button
3. Turn on SWITCH 6 on game board
4. Select item to update
 - a. Use left player control button
 - b. Move cursor (ball) to item to update
 - c. Press 1/2 PLAYER or ANY left player buttons
5. Team Updates (SELECT "NEW COLORS/NEW NAMES")
 - a. 1 player button for "NEW COLORS"
 - b. 2 player button for "NEW NAME"
6. NEW COLORS
 - a. Move left player joystick to change colors
 - b. Press any left player button to save
 - c. TILT to abort
7. NEW TEAM NAME
 - a. Move left player joystick to change LETTER
 - b. Press any left player button to save LETTER
 - c. Use (<-----) to ERASE
 - d. Clear out all unwanted letters
 - e. Move to "DONE" and press button to save
 - f. TILT to abort
8. TO CHANGE "PRESENTS" SCREEN
 - a. ENTER NAME AS YOU WOULD LIKE IT TO APPEAR
 1. CENTER NAME OVER "PRESENTS"USE SPACE or (<--->)
 - b. Move left player joystick to change LETTER
 - c. Press any left player button to save LETTER
 - d. Use (<---) to ERASE
 - e. Clear out all unwanted letters
 - f. Move to "DONE" and press button to save
 - g. TILT to abort



"Hometown Heroes"
Operator Options Kit.

FREE