



DRAWING SET

including ...

- block diagrams
- schematics
- assembly diagrams
- parts information

FOR SERVICE...

TOLL-FREE NUMBERS:

800-621-1253

IN ILLINOIS CALL:

800-572-1324

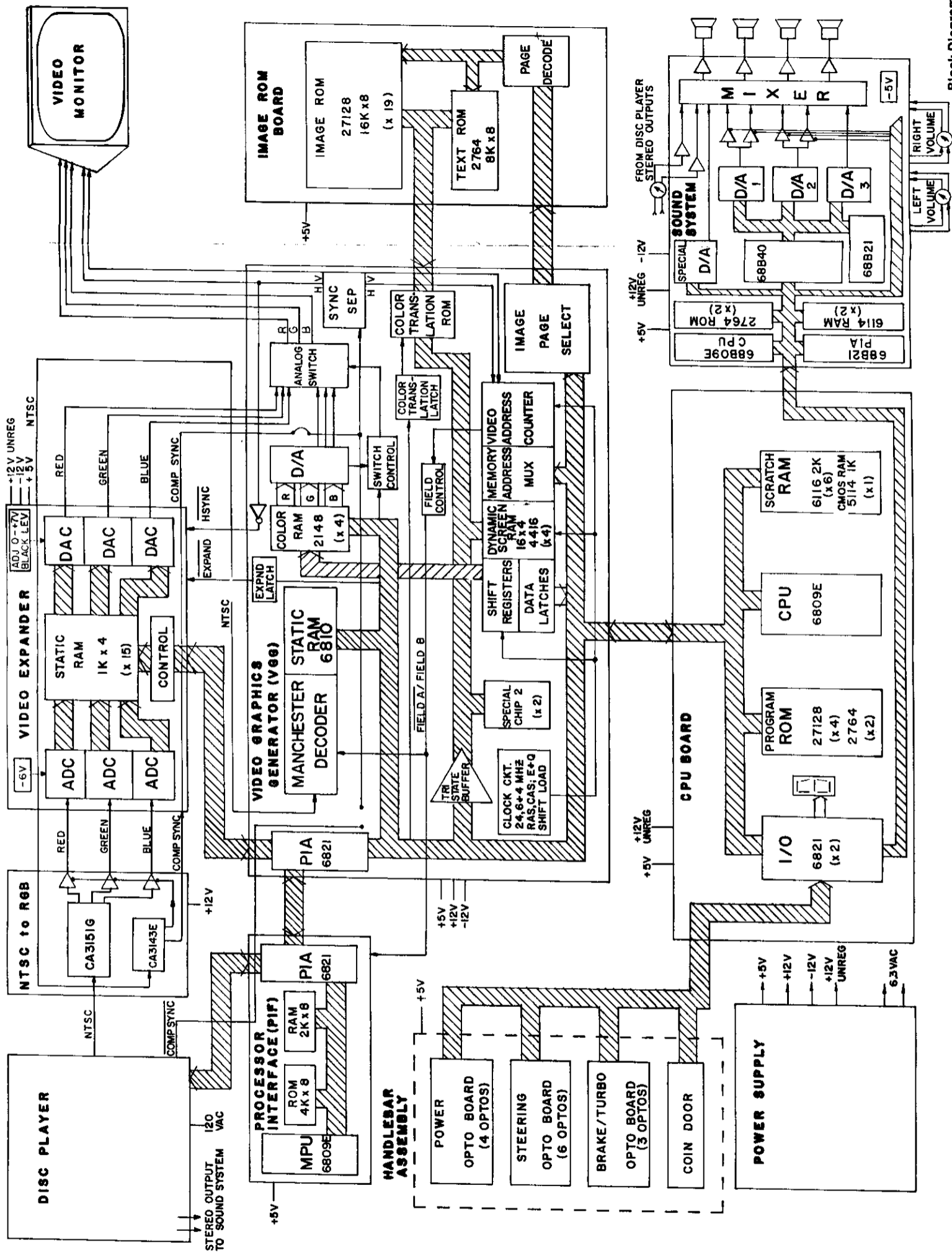
Williams 
ELECTRONICS, INC.

3401 N. California Av.

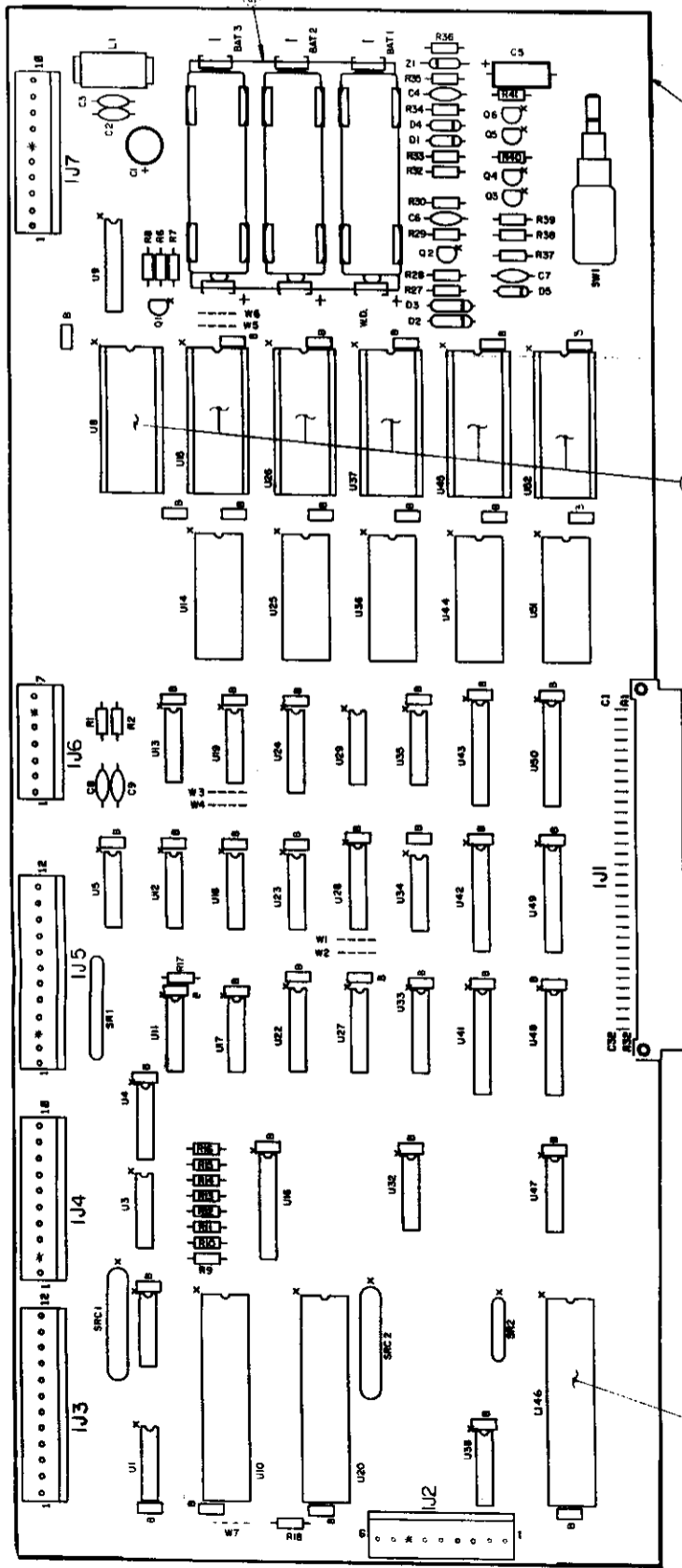
Chicago, IL 60618

(312) 267-2240

DISCAN SYSTEM BLOCK DIAGRAM



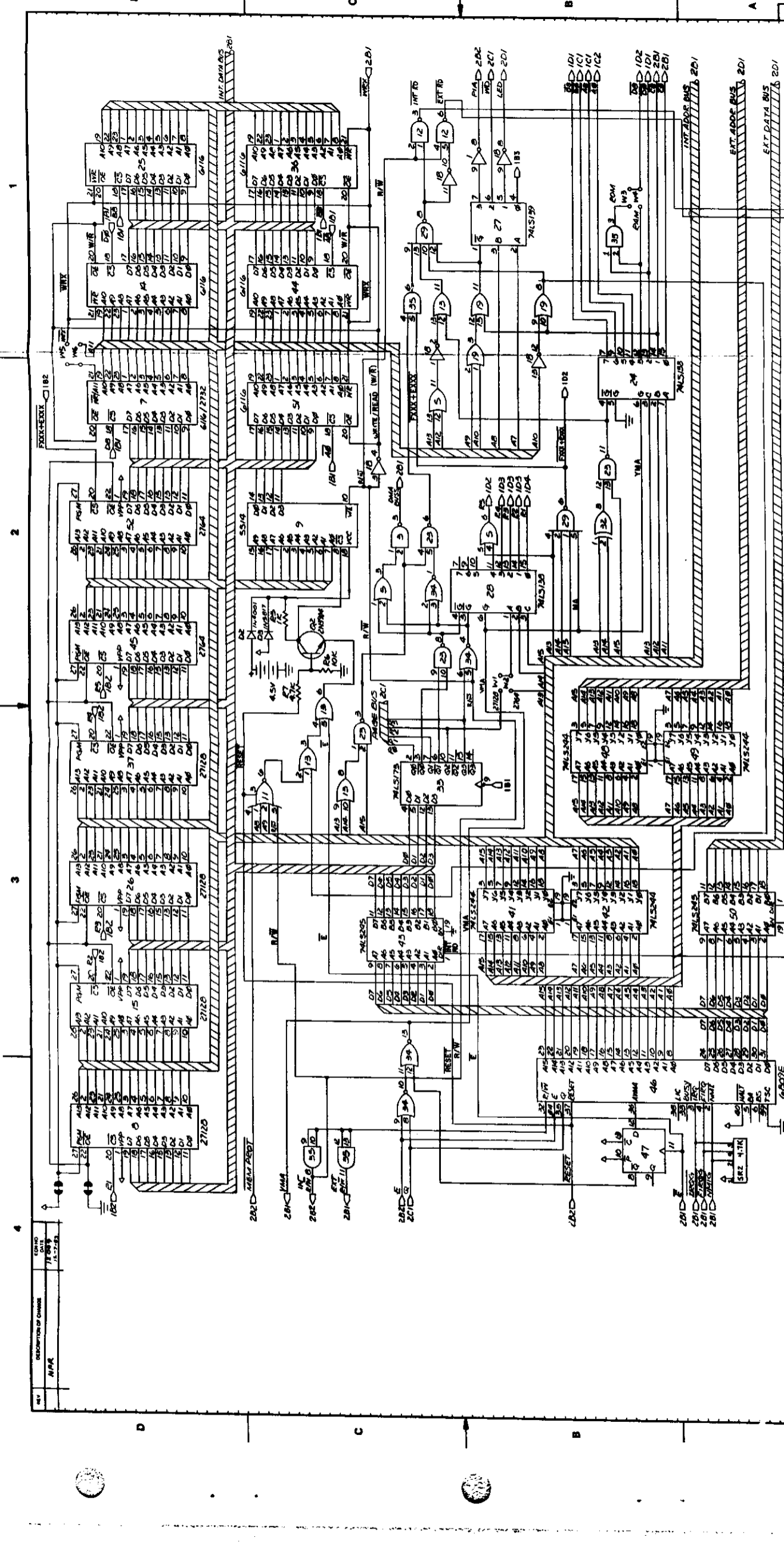
Block Diagram



NOTES: 1. 'B' INDICATES BYPASS CAPACITORS.
 2. 'R' INDICATES PIN CUT FOR HEVING.
 3. 'X' INDICATES PIN 1 OR WATTAGE (E)

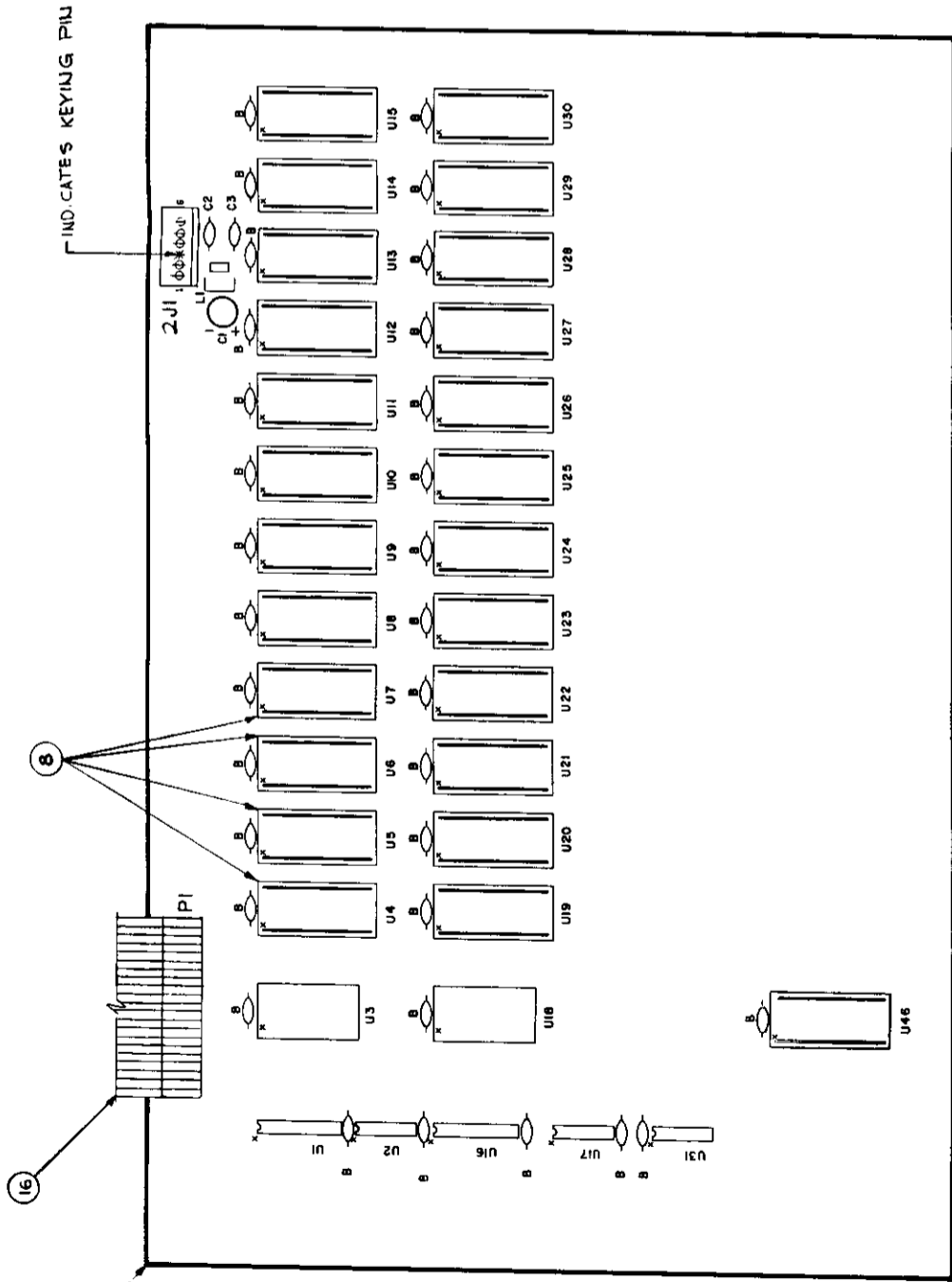
NAME	ITEM NUMBER	DESCRIPTION
U1	D-1002	
U2	A-3342-10008	
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U4	A-3342-10008	
U5	A-3342-10008	
U6	A-3342-10008	
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U97	A-3342-10008	
U98	A-3342-10008	
U99	A-3342-10008	
U100	A-3342-10008	

ITEM NO.	PART NO.	DESCRIPTION	QTY.	UNIT	DESCRIPTION	QTY.	UNIT	DESCRIPTION
56	5700-00	BATT. BATS. BATS	1	30	RESISTOR, 370 OHM 5% 1/4 W	1	R35	RESISTOR, 370 OHM 5% 1/4 W
55	5700-00	BATT. BATS. BATS	3	29	RESISTOR, 270 OHM 5% 1/4 W	3	R36	RESISTOR, 270 OHM 5% 1/4 W
54	5700-00	BATT. BATS. BATS	1	28	RESISTOR, 270 OHM 5% 1/4 W	1	R37	RESISTOR, 270 OHM 5% 1/4 W
53	5700-00	BATT. BATS. BATS	1	27	RESISTOR, 270 OHM 5% 1/4 W	1	R38	RESISTOR, 270 OHM 5% 1/4 W
52	5700-00	BATT. BATS. BATS	1	26	RESISTOR, 270 OHM 5% 1/4 W	1	R39	RESISTOR, 270 OHM 5% 1/4 W
51	5700-00	BATT. BATS. BATS	1	25	RESISTOR, 270 OHM 5% 1/4 W	1	R40	RESISTOR, 270 OHM 5% 1/4 W
50	5700-00	BATT. BATS. BATS	3	24	RESISTOR, 270 OHM 5% 1/4 W	3	R41	RESISTOR, 270 OHM 5% 1/4 W
49	5700-00	BATT. BATS. BATS	0	23	RESISTOR, 270 OHM 5% 1/4 W	0	R42	RESISTOR, 270 OHM 5% 1/4 W
48	5700-00	BATT. BATS. BATS	0	22	RESISTOR, 270 OHM 5% 1/4 W	0	R43	RESISTOR, 270 OHM 5% 1/4 W
47	5700-00	BATT. BATS. BATS	0	21	RESISTOR, 270 OHM 5% 1/4 W	0	R44	RESISTOR, 270 OHM 5% 1/4 W
46	5700-00	BATT. BATS. BATS	5	17	RESISTOR, 270 OHM 5% 1/4 W	5	R45	RESISTOR, 270 OHM 5% 1/4 W
45	5700-00	BATT. BATS. BATS	1	15	RESISTOR, 270 OHM 5% 1/4 W	1	R46	RESISTOR, 270 OHM 5% 1/4 W
44	5700-00	BATT. BATS. BATS	1	14	RESISTOR, 270 OHM 5% 1/4 W	1	R47	RESISTOR, 270 OHM 5% 1/4 W
43	5700-00	BATT. BATS. BATS	45	13	RESISTOR, 270 OHM 5% 1/4 W	45	R48	RESISTOR, 270 OHM 5% 1/4 W
42	5700-00	BATT. BATS. BATS	5	12	RESISTOR, 270 OHM 5% 1/4 W	5	R49	RESISTOR, 270 OHM 5% 1/4 W
41	5700-00	BATT. BATS. BATS	1	11	RESISTOR, 270 OHM 5% 1/4 W	1	R50	RESISTOR, 270 OHM 5% 1/4 W
40	5700-00	BATT. BATS. BATS	1	10	RESISTOR, 270 OHM 5% 1/4 W	1	R51	RESISTOR, 270 OHM 5% 1/4 W
39	5700-00	BATT. BATS. BATS	1	9	RESISTOR, 270 OHM 5% 1/4 W	1	R52	RESISTOR, 270 OHM 5% 1/4 W
38	5700-00	BATT. BATS. BATS	1	8	RESISTOR, 270 OHM 5% 1/4 W	1	R53	RESISTOR, 270 OHM 5% 1/4 W
37	5700-00	BATT. BATS. BATS	2	7	RESISTOR, 270 OHM 5% 1/4 W	2	R54	RESISTOR, 270 OHM 5% 1/4 W
36	5700-00	BATT. BATS. BATS	1	6	RESISTOR, 270 OHM 5% 1/4 W	1	R55	RESISTOR, 270 OHM 5% 1/4 W
35	5700-00	BATT. BATS. BATS	1	5	RESISTOR, 270 OHM 5% 1/4 W	1	R56	RESISTOR, 270 OHM 5% 1/4 W
34	5700-00	BATT. BATS. BATS	1	4	RESISTOR, 270 OHM 5% 1/4 W	1	R57	RESISTOR, 270 OHM 5% 1/4 W
33	5700-00	BATT. BATS. BATS	2	3	RESISTOR, 270 OHM 5% 1/4 W	2	R58	RESISTOR, 270 OHM 5% 1/4 W
32	5700-00	BATT. BATS. BATS	0	2	RESISTOR, 270 OHM 5% 1/4 W	0	R59	RESISTOR, 270 OHM 5% 1/4 W
31	5700-00	BATT. BATS. BATS	9	1	RESISTOR, 270 OHM 5% 1/4 W	9	R60	RESISTOR, 270 OHM 5% 1/4 W



REV	DESCRIPTION OF CHANGE	DATE	BY
1	16-8884	11-7-73	ALP

ITEM	PART NUMBER	DESCRIPTION	QTY	TEXT	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR		REMOVE BURRS - BREAK SHARP EDGES			WILLIAMS ELECTRONICS, INC.		
OWN BY		UNLESS OTHERWISE SPECIFIED			3401 N. CALIFORNIA AVE		
CHECKED BY		FRACTIONAL, 1/16" MIN			CHICAGO, ILL		
APPROVAL		DECIMAL, 0.0005" MIN			NAME 3016 CPU SCHEMATIC		
		THREADS, 1/8" DIA			SCALE 3016 CPU SCHEMATIC		
		MATERIAL			PART NO 16-5584		
		FIRST PROJECT NO			REV		
		DATE			16-5584		
		FIRST USAGE					
		DATE					
		BY					



GAME NAME	STAR RIDER
ASSY NO.	D-9926
U4	A-534-10607
U6	A-534-10609
U7	A-534-10611
U8	A-534-10613
U9	A-534-10615
U10	A-534-10617
U11	A-534-10621
U12	A-534-10623
U13	A-534-10625
U14	NOT USED
U15	NOT USED
U16	A-534-10608
U20	A-534-10610
U21	A-534-10612
U22	A-534-10614
U23	A-534-10616
U24	A-534-10618
U25	A-534-10620
U26	A-534-10622
U27	A-534-10624
U28	NOT USED
U29	NOT USED
U30	NOT USED
U46	A-5343-10658

PART DESIGNATION

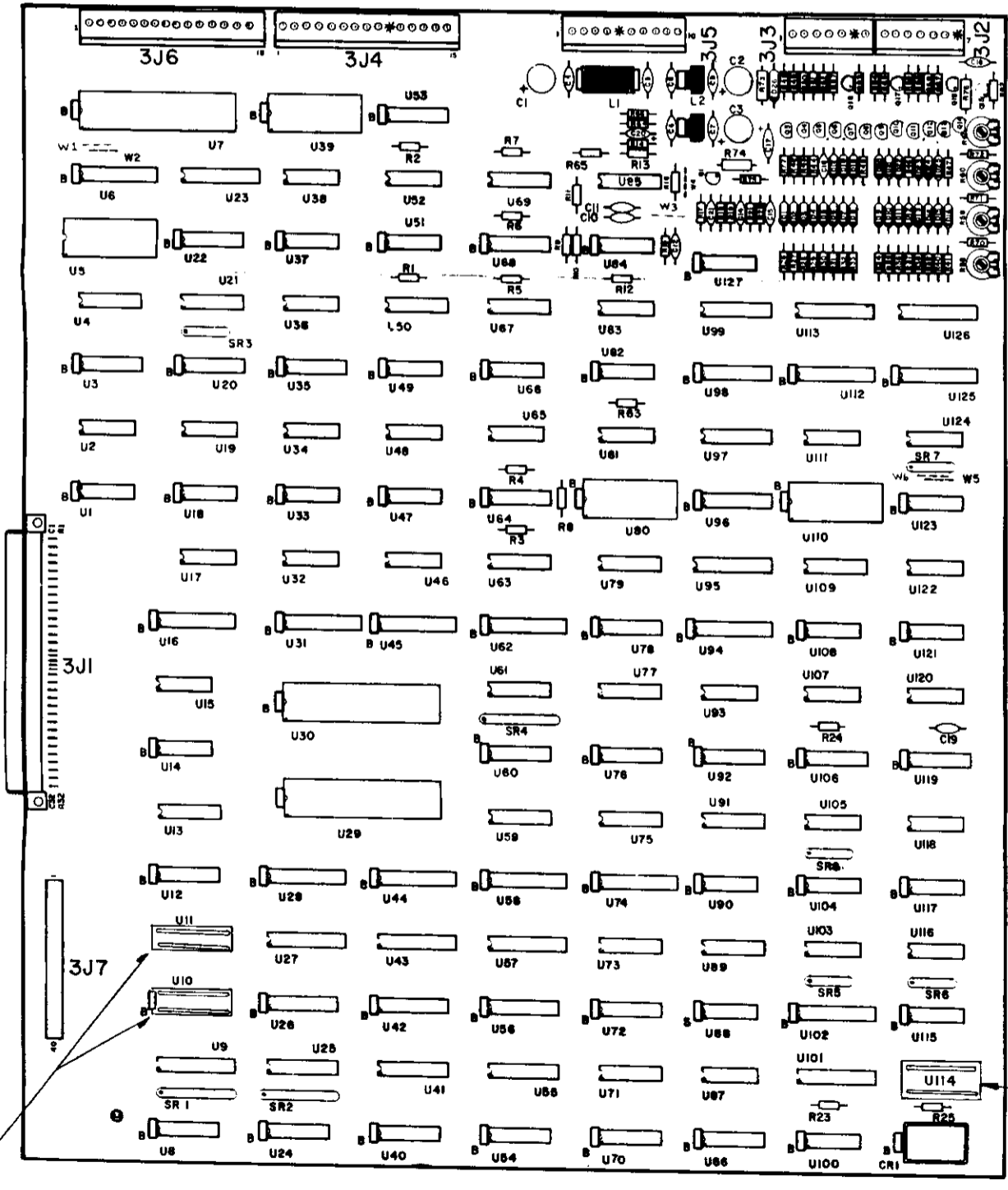
ITEM	PART N°	DESIGNATION	DESCRIPTION	QTY.
6	5195-09352-00	PI	RIBBON CABLE ASSY, 40 PIN, 3'	1
5	5741-09098-00	J1	6-PIN HEADER 04-65-1061	1
4	---			---
3	5043-09845-00	C2, C3	CAPACITOR, .001MFD, 50V, ±20%	2
2	5043-08980-00	BYPASS (8)	CAPACITOR, .01MFD, 50V, +80-20%	32
11	5040-09421-00	C1	CAPACITOR, 100MFD, 25V, +50-10%	1
10	---			---
9	5531-10161-00	L1	INDUCTOR 20-H, 3A	1
8	5700-10176-00		SOCKET 28-PIN IC	25
7	---			---
6	5281-09867-00	U1, U16	IC 74LS244 OCTAL BUFFER	2
5	5280-09010-00	U3, U15	IC 74154 4-16 LINE DECODER	2
4	5281-09500-00	U17	IC 74LS32 QUAD OR	1
3	5281-091743-00	U31	IC 74LS08 QUAD AND	1
2	5281-09215-00	U2	IC 74LS04 HEX INVERTER	1
1	5771-10364-00	PART	BARE PC BOARD ROM	1
			DESCRIPTION	QTY.

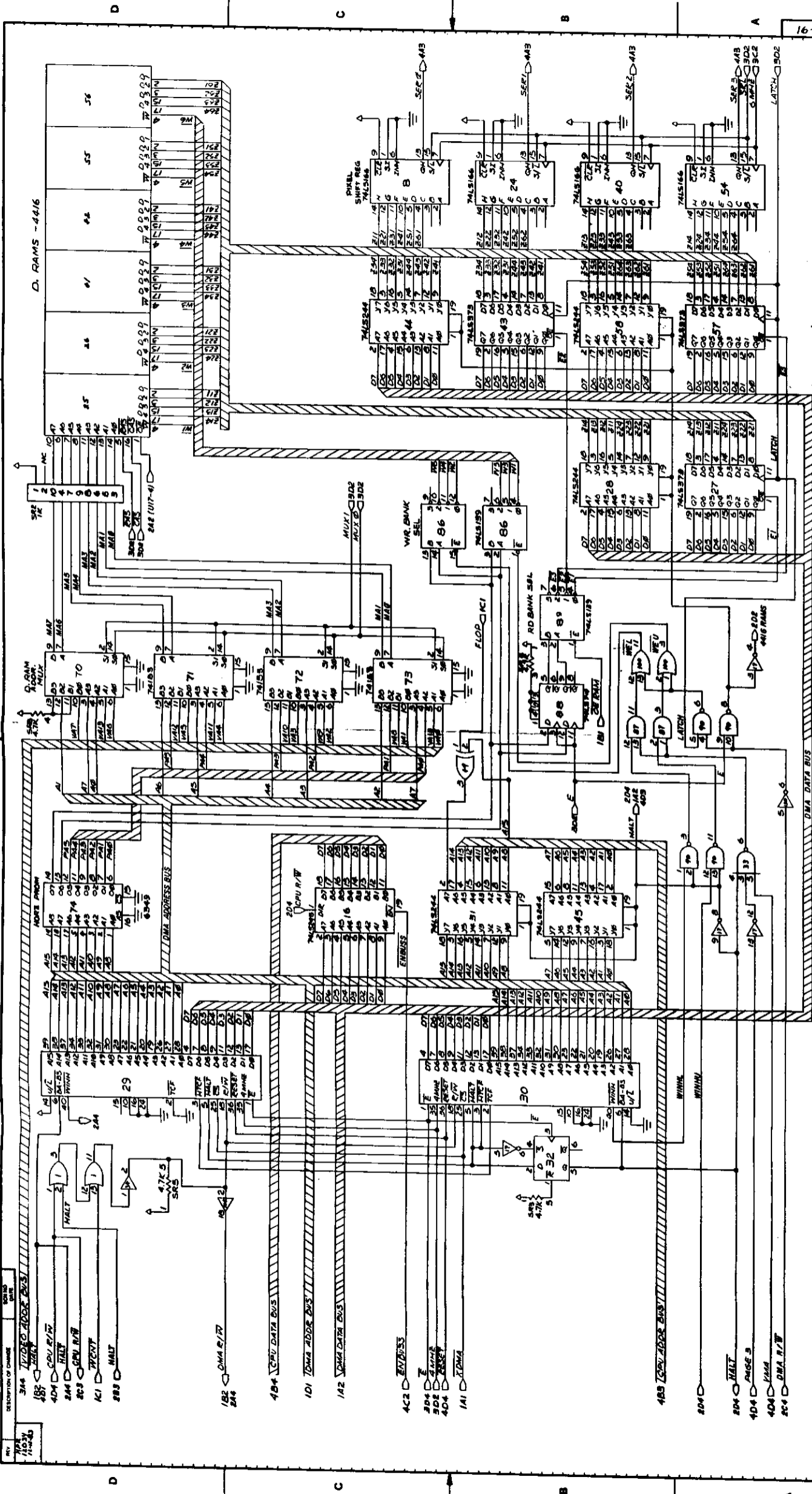
NOTE: 1. FOR SCHEMATIC REFER TO DWG# 16-888G

ITEM	PART NO.	DESCRIPTION	QTY.	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	
89	5281-09746-00	U22	1	5281-09746-00	U22	HEX INVERTER	1	5281-09746-00	U22	HEX INVERTER	1	5281-09746-00	U22	HEX INVERTER	1	5281-09746-00	U22	HEX INVERTER
88	5281-09486-00	U101	4	5281-09486-00	U101	HEX INVERTER	4	5281-09486-00	U101	HEX INVERTER	4	5281-09486-00	U101	HEX INVERTER	4	5281-09486-00	U101	HEX INVERTER
87	5281-10470-00	U101	1	5281-10470-00	U101	HEX INVERTER	1	5281-10470-00	U101	HEX INVERTER	1	5281-10470-00	U101	HEX INVERTER	1	5281-10470-00	U101	HEX INVERTER
86	5281-09856-00	U47, U48, U49	3	5281-09856-00	U47, U48, U49	HEX INVERTER	3	5281-09856-00	U47, U48, U49	HEX INVERTER	3	5281-09856-00	U47, U48, U49	HEX INVERTER	3	5281-09856-00	U47, U48, U49	HEX INVERTER
85	5281-10478-00	U50, U103	2	5281-10478-00	U50, U103	HEX INVERTER	2	5281-10478-00	U50, U103	HEX INVERTER	2	5281-10478-00	U50, U103	HEX INVERTER	2	5281-10478-00	U50, U103	HEX INVERTER
84	5281-09808-00	U102, U103	3	5281-09808-00	U102, U103	HEX INVERTER	3	5281-09808-00	U102, U103	HEX INVERTER	3	5281-09808-00	U102, U103	HEX INVERTER	3	5281-09808-00	U102, U103	HEX INVERTER
83	5281-09807-00	SEE NOTE 6	10	5281-09807-00	SEE NOTE 6	HEX INVERTER	10	5281-09807-00	SEE NOTE 6	HEX INVERTER	10	5281-09807-00	SEE NOTE 6	HEX INVERTER	10	5281-09807-00	SEE NOTE 6	HEX INVERTER
82	5281-09733-00	U12, U13	2	5281-09733-00	U12, U13	HEX INVERTER	2	5281-09733-00	U12, U13	HEX INVERTER	2	5281-09733-00	U12, U13	HEX INVERTER	2	5281-09733-00	U12, U13	HEX INVERTER
81	5281-09668-00	U8, U9, U40, U54	4	5281-09668-00	U8, U9, U40, U54	HEX INVERTER	4	5281-09668-00	U8, U9, U40, U54	HEX INVERTER	4	5281-09668-00	U8, U9, U40, U54	HEX INVERTER	4	5281-09668-00	U8, U9, U40, U54	HEX INVERTER
80	5281-10447-00	U38	1	5281-10447-00	U38	HEX INVERTER	1	5281-10447-00	U38	HEX INVERTER	1	5281-10447-00	U38	HEX INVERTER	1	5281-10447-00	U38	HEX INVERTER
79	5281-09735-00	SEE NOTE 5	13	5281-09735-00	SEE NOTE 5	HEX INVERTER	13	5281-09735-00	SEE NOTE 5	HEX INVERTER	13	5281-09735-00	SEE NOTE 5	HEX INVERTER	13	5281-09735-00	SEE NOTE 5	HEX INVERTER
78	5281-09738-00	U4, U21, U78	3	5281-09738-00	U4, U21, U78	HEX INVERTER	3	5281-09738-00	U4, U21, U78	HEX INVERTER	3	5281-09738-00	U4, U21, U78	HEX INVERTER	3	5281-09738-00	U4, U21, U78	HEX INVERTER
77	5281-09810-00	U95, U80, U110	3	5281-09810-00	U95, U80, U110	HEX INVERTER	3	5281-09810-00	U95, U80, U110	HEX INVERTER	3	5281-09810-00	U95, U80, U110	HEX INVERTER	3	5281-09810-00	U95, U80, U110	HEX INVERTER
76	5281-09481-00	U70, U71, U72, U73	4	5281-09481-00	U70, U71, U72, U73	HEX INVERTER	4	5281-09481-00	U70, U71, U72, U73	HEX INVERTER	4	5281-09481-00	U70, U71, U72, U73	HEX INVERTER	4	5281-09481-00	U70, U71, U72, U73	HEX INVERTER
75	5281-09246-00	U86, U87	2	5281-09246-00	U86, U87	HEX INVERTER	2	5281-09246-00	U86, U87	HEX INVERTER	2	5281-09246-00	U86, U87	HEX INVERTER	2	5281-09246-00	U86, U87	HEX INVERTER
74	5281-09745-00	U35	1	5281-09745-00	U35	HEX INVERTER	1	5281-09745-00	U35	HEX INVERTER	1	5281-09745-00	U35	HEX INVERTER	1	5281-09745-00	U35	HEX INVERTER
73	5281-09737-00	U49	1	5281-09737-00	U49	HEX INVERTER	1	5281-09737-00	U49	HEX INVERTER	1	5281-09737-00	U49	HEX INVERTER	1	5281-09737-00	U49	HEX INVERTER
72	5281-09855-00	U53, U60, U64, U75, U76, U77	6	5281-09855-00	U53, U60, U64, U75, U76, U77	HEX INVERTER	6	5281-09855-00	U53, U60, U64, U75, U76, U77	HEX INVERTER	6	5281-09855-00	U53, U60, U64, U75, U76, U77	HEX INVERTER	6	5281-09855-00	U53, U60, U64, U75, U76, U77	HEX INVERTER
71	5281-09487-00	U16, U17, U25	7	5281-09487-00	U16, U17, U25	HEX INVERTER	7	5281-09487-00	U16, U17, U25	HEX INVERTER	7	5281-09487-00	U16, U17, U25	HEX INVERTER	7	5281-09487-00	U16, U17, U25	HEX INVERTER
70	5281-10180-00	U103, U124	2	5281-10180-00	U103, U124	HEX INVERTER	2	5281-10180-00	U103, U124	HEX INVERTER	2	5281-10180-00	U103, U124	HEX INVERTER	2	5281-10180-00	U103, U124	HEX INVERTER
69	5281-09309-00	U54	1	5281-09309-00	U54	HEX INVERTER	1	5281-09309-00	U54	HEX INVERTER	1	5281-09309-00	U54	HEX INVERTER	1	5281-09309-00	U54	HEX INVERTER
68	5281-09551-00	U107	1	5281-09551-00	U107	HEX INVERTER	1	5281-09551-00	U107	HEX INVERTER	1	5281-09551-00	U107	HEX INVERTER	1	5281-09551-00	U107	HEX INVERTER
67	5281-09500-00	U104, U53, U100, U102, U105, U106, U107, U108	8	5281-09500-00	U104, U53, U100, U102, U105, U106, U107, U108	HEX INVERTER	8	5281-09500-00	U104, U53, U100, U102, U105, U106, U107, U108	HEX INVERTER	8	5281-09500-00	U104, U53, U100, U102, U105, U106, U107, U108	HEX INVERTER	8	5281-09500-00	U104, U53, U100, U102, U105, U106, U107, U108	HEX INVERTER
66	5281-10214-00	U14, U51, U109	3	5281-10214-00	U14, U51, U109	HEX INVERTER	3	5281-10214-00	U14, U51, U109	HEX INVERTER	3	5281-10214-00	U14, U51, U109	HEX INVERTER	3	5281-10214-00	U14, U51, U109	HEX INVERTER
65	5281-09831-00	U84	1	5281-09831-00	U84	HEX INVERTER	1	5281-09831-00	U84	HEX INVERTER	1	5281-09831-00	U84	HEX INVERTER	1	5281-09831-00	U84	HEX INVERTER
64	5281-09235-00	U10, U53, U82	3	5281-09235-00	U10, U53, U82	HEX INVERTER	3	5281-09235-00	U10, U53, U82	HEX INVERTER	3	5281-09235-00	U10, U53, U82	HEX INVERTER	3	5281-09235-00	U10, U53, U82	HEX INVERTER
63	5281-09745-00	U19, U87	2	5281-09745-00	U19, U87	HEX INVERTER	2	5281-09745-00	U19, U87	HEX INVERTER	2	5281-09745-00	U19, U87	HEX INVERTER	2	5281-09745-00	U19, U87	HEX INVERTER
62	5281-09215-00	U17, U87, U48, U85, U120	5	5281-09215-00	U17, U87, U48, U85, U120	HEX INVERTER	5	5281-09215-00	U17, U87, U48, U85, U120	HEX INVERTER	5	5281-09215-00	U17, U87, U48, U85, U120	HEX INVERTER	5	5281-09215-00	U17, U87, U48, U85, U120	HEX INVERTER
61	5281-09247-00	U15, U26, U65, U121	4	5281-09247-00	U15, U26, U65, U121	HEX INVERTER	4	5281-09247-00	U15, U26, U65, U121	HEX INVERTER	4	5281-09247-00	U15, U26, U65, U121	HEX INVERTER	4	5281-09247-00	U15, U26, U65, U121	HEX INVERTER

- NOTES:
- RESISTOR, 4.7K OHM 1/4W
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, 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NOTES: 1. 'B' INDICATES BYPASS CAPACITOR.
 2. '*' INDICATES PIN CUT FOR KEYING.
 3. '.' INDICATES PIN 1 OR EMITTER 'E'.





16-8885		CITY	
DESCRIPTION		PART NUMBER	
REMOVE BURRS - BREAK SHARP EDGES		WILLIAMS ELECTRONICS, INC.	
TOLERANCES UNLESS OTHERWISE SPECIFIED		3401N CALIFORNIA AVE	
FRACTIONAL .1154 ANGULAR .51		CHICAGO, ILL.	
DECIMAL .005 FLETS .000 MAX		NAME	
MATERIAL		3016 V.G.G. SCHEM.	
QTY		SCALE	
FIRST USAGE		REV	
DATE		16-8885	
APPROVAL		PART NO	
C.A.		16-8885	

REV 103V 10443

DESCRIPTION OF CHANGE

344 I/O ADDR BUS

488 CPU ADDR BUS

204 HALT

404 PAGE 3

404 K/M

204 CPU ADDR BUS

404 CPU ADDR BUS

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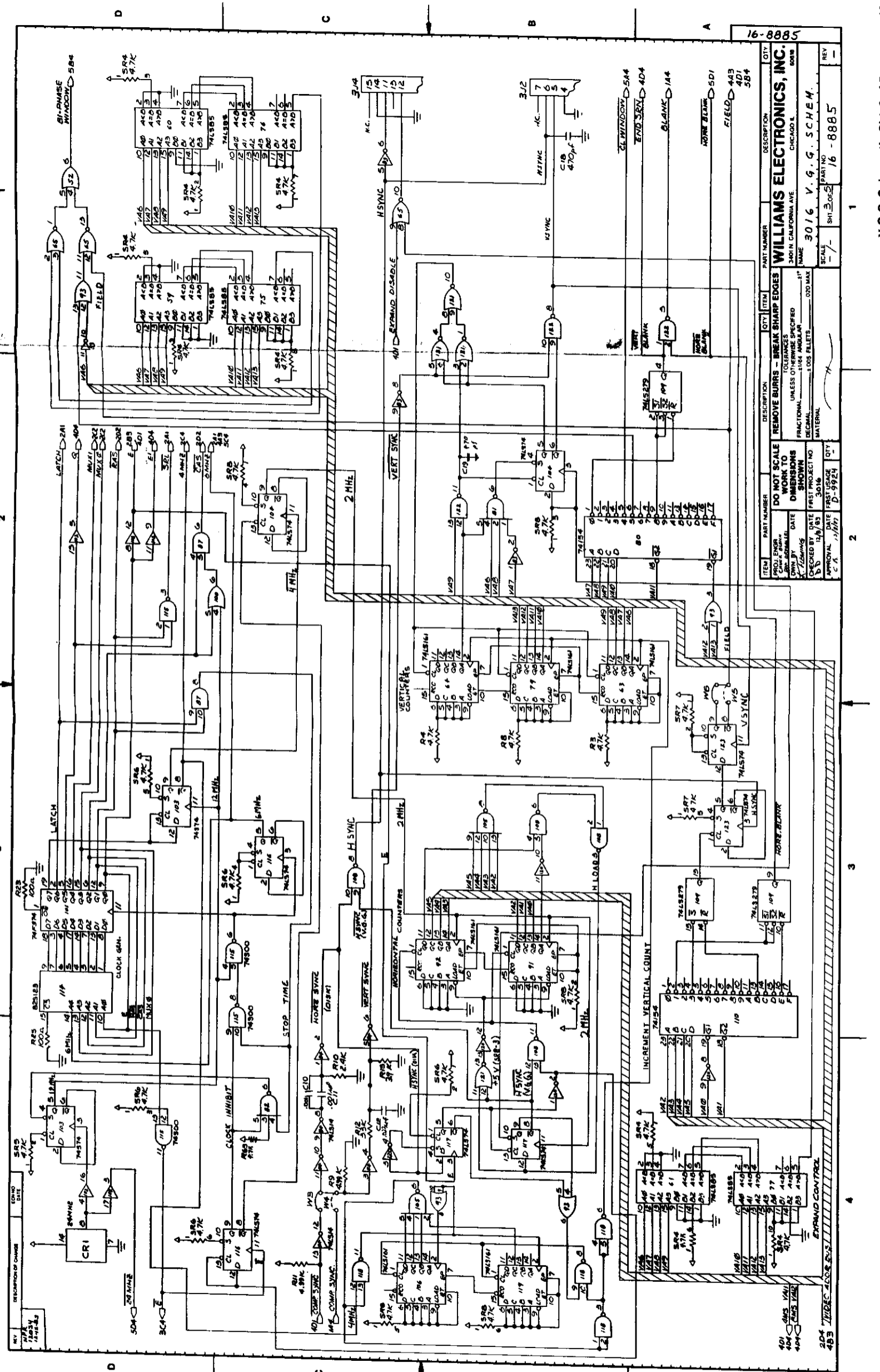
404 CPU ADDR BUS

404 CPU ADDR BUS

404 CPU ADDR BUS

404 CPU ADDR BUS

404 CPU ADDR BUS



16-8885

ITEM	PART NUMBER	DESCRIPTION	QTY
1	74154	DECODER	1
2	74155	MULTIPLEXER	1
3	74154	DECODER	1
4	74155	MULTIPLEXER	1
5	74154	DECODER	1
6	74155	MULTIPLEXER	1
7	74154	DECODER	1
8	74155	MULTIPLEXER	1
9	74154	DECODER	1
10	74155	MULTIPLEXER	1
11	74154	DECODER	1
12	74155	MULTIPLEXER	1
13	74154	DECODER	1
14	74155	MULTIPLEXER	1
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97	74154	DECODER	1
98	74155	MULTIPLEXER	1
99	74154	DECODER	1
100	74155	MULTIPLEXER	1

DO NOT SCALE REMOVE BURRS - BREAK SHARP EDGES TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL UNLESS INDICATED DECIMAL UNLESS OTHERWISE SPECIFIED

3016 V. G. G. SCHEM. 16-8885

WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE. CHICAGO, ILL. 60641

SCALE 1:1

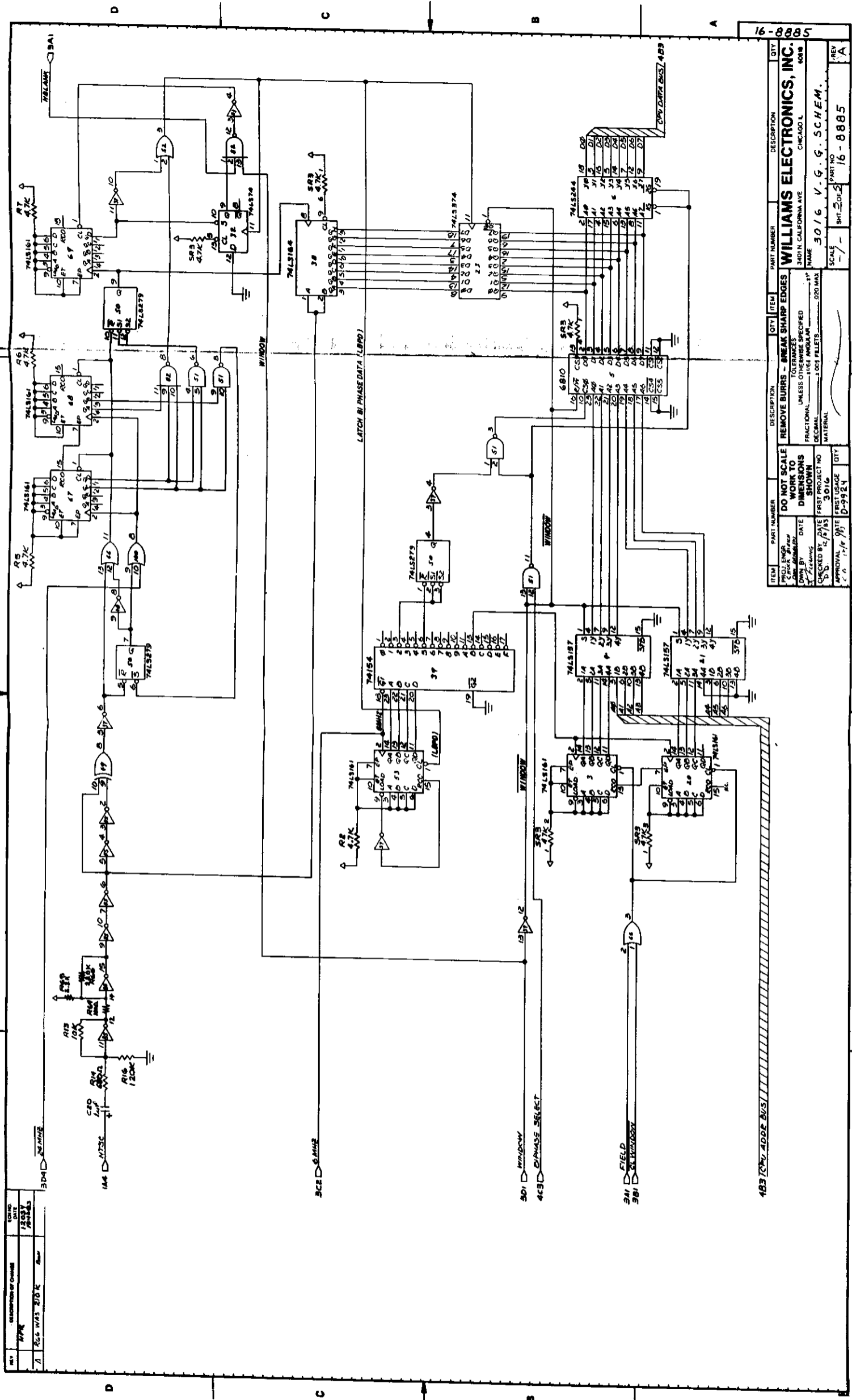
REV 1

16-8885

16-8885

16-8885

REV.	DESCRIPTION OF CHANGE	DATE	BY
1	REV W/3 270 R	12/27/65	W/3



16-8885		QTY	
DESCRIPTION		PART NUMBER	
REMOVE BURRS - BREAK SHARP EDGES		WILLIAMS ELECTRONICS, INC.	
TOLERANCES UNLESS OTHERWISE SPECIFIED		CHICAGO, ILL.	
FRACTIONAL .005 MINIMUM		NAME	
DECIMAL .002 FOLETS		3016 V. G. S. CHEM.	
MATERIAL		SCALE	
FIRST PROJECT NO. 3016		PART NO. 16-8885	
DATE 1/14/66		REV. A	
APPROVAL C. H. D-9924		SMT 202	

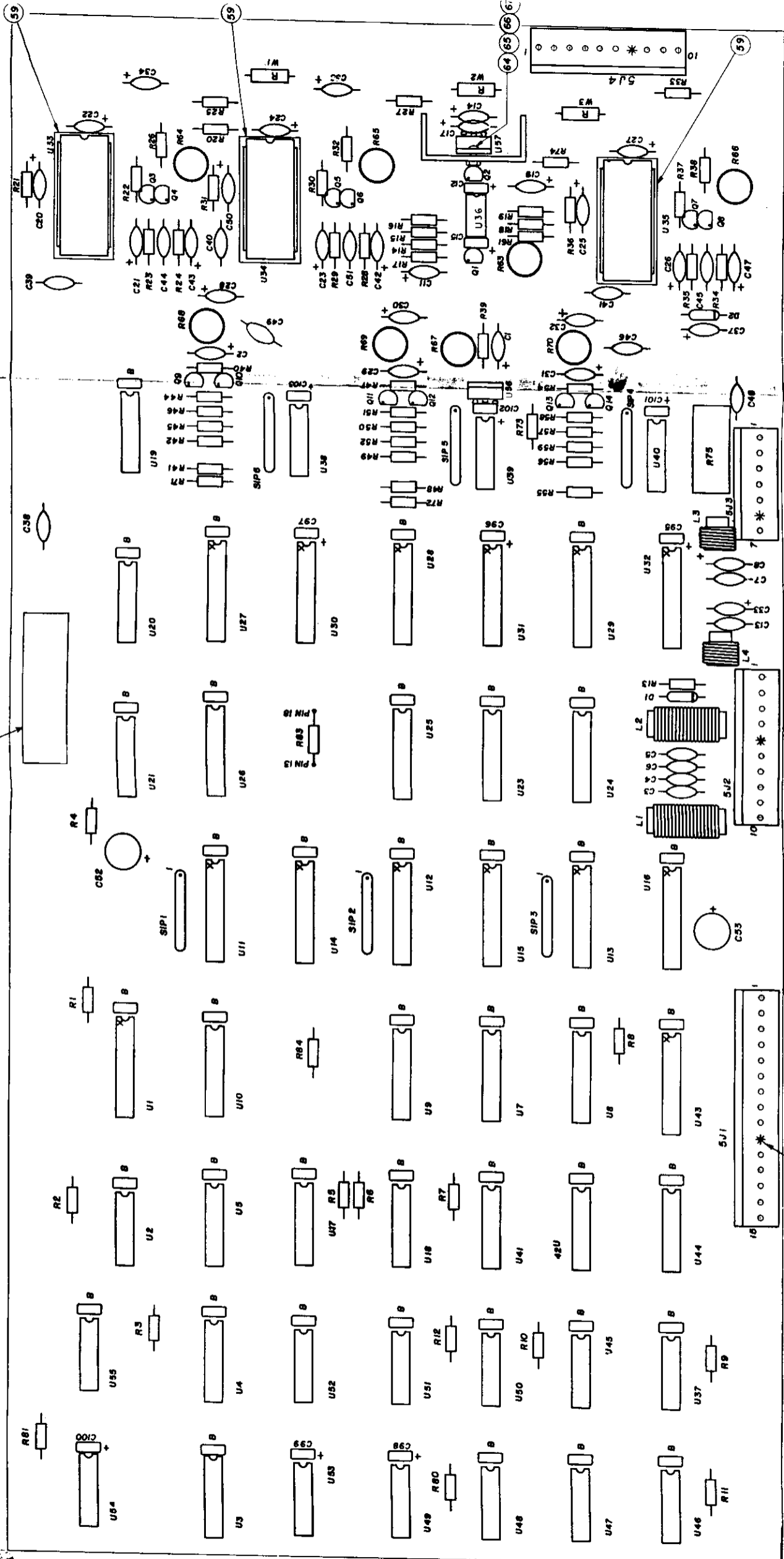
NOTES:

1. 1KPF CAPS.
C3, C4, C5, C6, C7, C13, C38, C39, C40, C41.
2. "B" BYPASS CAPS. .01MF ON IC'S NUMBER 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 46, 47, 48, 50, 51, 52, 53
3. 10MF CAPS.
C11, C17, C19, C20, C21, C22, C23, C24, C25, C26, C27, C37, C80.
4. 1MF CAPS.
C2, C12, C14, C15, C19, C23, C30, C31, C32, C34, C35, C42, C43, C47, C49, C56, C97, C98, C99, C100, C101, C102, C103, C1, C28, C35
5. TRANSISTORS 2N126.
Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q15, Q14, Q10
6. TRANSISTORS 10K 1/4W 5%
R17, R20, R23, R29, R35, R74, R83, R84
7. RESISTORS 4.7K 2%
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R21, R22, R26, R44, R51, R58, R80, R81
8. IC 2148 S. RAMS
U7, U8, U9, U10, U28, U29, U24, U25, U26.
9. IC 74F374
U11, U18, U19, U14, U15, U16, U27, U28, U29, U30, U31, U32.
10. IC 74F74
U2, U37, U45, U46, U47, U50, U51, U53, U54, U55

ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.	
55	5041-10588-00	CB, C33	CAPACITOR, 6.8M 25V 20%	2	25	5012-10586-00	R75	RESISTOR, 7 OHMS	1	2	5041-10588-00	CB, C33	CAPACITOR, 6.8M 25V 20%	2	
54	5041-09243-00	SEE NOTE 3	CAPACITORS, 10M 10V +/-10	13	24	5010-10206-00	R40, R41, R54	RESISTOR, 390 OHMS	3	13	5041-09243-00	SEE NOTE 3	CAPACITORS, 10M 10V +/-10	13	
53	5041-09031-00	SEE NOTE 4	CAPACITOR, 1M 25V +/-20	25	23	5010-10204-00	SEE NOTE 6	RESISTOR, 1.0K OHMS	8	25	5041-09031-00	SEE NOTE 4	CAPACITOR, 1M 25V +/-20	25	
52	5040-09421-00	C52, C53	CAPACITOR, 100M 25V +/-50-10	2	22	5010-09634-00	W1, W2, W3	RESISTOR, 0 OHMS	3	2	5040-09421-00	C52, C53	CAPACITOR, 100M 25V +/-50-10	2	
51	5075-10476-00	D1	DIODE, ZENER 1N5230B	1	21	---	---	---	---	1	5075-10476-00	D1	DIODE, ZENER 1N5230B	1	
50	5070-08919-00	D2	DIODE, SILICON 1N4148	1	20	5010-09212-00	R22, R30, R37	RESISTOR, 39 OHMS	3	1	5070-08919-00	D2	DIODE, SILICON 1N4148	1	
49	5190-10590-00	SEE NOTE 5	TRANSISTOR, 2N4126	11	19	5010-09187-00	R13	RESISTOR, 150 OHMS	1	11	5190-10590-00	SEE NOTE 5	TRANSISTOR, 2N4126	11	
48	5160-10569-00	Q9, Q11, Q13	TRANSISTOR, 2N4124	3	18	5013-10497-00	SEE NOTE 7	RESISTOR, 4.7K OHMS	20	3	5160-10569-00	Q9, Q11, Q13	TRANSISTOR, 2N4124	3	
47	5551-10161-00	L3, L4	COIL, 24H 3A	2	17	5010-08983-00	R61	RESISTOR, 3.3K OHM	1	2	5551-10161-00	L3, L4	COIL, 24H 3A	2	
46	5551-10952-00	L1, L2	COIL, 4.74H 3A	2	16	5280-09489-00	U17, U18	IC, 9316 CNTR	2	2	5551-10952-00	L1, L2	COIL, 4.74H 3A	2	
45	5019-10601-00	SIP1, SIP2, SIP3	SIP, 2.2K OHMS 7R 8P 5%	3	15	5521-10421-00	U53	IC, 08C 48MHE 1%	1	3	5019-10601-00	SIP1, SIP2, SIP3	SIP, 2.2K OHMS 7R 8P 5%	3	
44	5019-10600-00	SIP4, SIP5, SIP6	SIP, 1K OHMS 7R 8P 5%	3	14	5250-10478-00	U56	REGULATOR, LM317K ADJ POS	1	3	5019-10600-00	SIP4, SIP5, SIP6	SIP, 1K OHMS 7R 8P 5%	3	
43	5015-10587-00	R63	TRIM POT, 1.5K	1	13	5250-10477-00	U57	REGULATOR, 7906 1.0A 6V	1	1	5015-10587-00	R63	TRIM POT, 1.5K	1	
42	5015-10420-00	R68, R69, R70	TRIM POT, 1K OHMS	3	12	5372-10467-00	U33, U39, U39	IC, 70C1014J ADC	3	3	5015-10420-00	R68, R69, R70	TRIM POT, 1K OHMS	3	
41	5015-10419-00	R67	TRIM POT, 500 OHMS	1	11	5370-09321-00	U36	IC, 1458 OP-AMP	1	1	5015-10419-00	R67	TRIM POT, 500 OHMS	1	
40	5015-10418-00	R64, R65, R66	TRIM POT, 250 OHMS	3	10	5340-10423-00	SEE NOTE 8	S/DRAM, 1KX4 35NS	8	3	5015-10418-00	R64, R65, R66	TRIM POT, 250 OHMS	3	
39	5010-08998-00	R15	RESISTOR, 2.2K OHMS 1/4W 5%	1	9	5283-10551-00	U48, U52	IC, 74F00 NAND GATE	2	1	5010-08998-00	R15	RESISTOR, 2.2K OHMS 1/4W 5%	1	
38	---	---	---	---	8	5282-10189-00	U49	IC, 74S37 2/P	1	---	---	---	---	---	---
37	5013-10547-00	R14	RESISTOR, 11K OHMS 1/4W 2%	1	7	5283-10470-00	SEE NOTE 9	IC, 74F374 OCT LCH	12	1	5013-10547-00	R14	RESISTOR, 11K OHMS 1/4W 2%	1	
36	5013-10546-00	R45, R52, R59	RESISTOR, 10K OHMS 1/4W 2%	3	6	5282-10432-00	U41, U42, U44	IC, 74S161 CNTR	3	3	5013-10546-00	R45, R52, R59	RESISTOR, 10K OHMS 1/4W 2%	3	
35	5010-10022-00	R18	RESISTOR, 7.5K OHMS 1/4W	1	6	5282-10430-00	U41, U42, U44	IC, 74S161 CNTR	3	1	5010-10022-00	R18	RESISTOR, 7.5K OHMS 1/4W	1	
34	5013-10544-00	R19	RESISTOR, 5.1K OHMS 1/4W 2%	1	5	5283-10554-00	U41, U42, U44	IC, 74S161 SYNC CTR	3	1	5013-10544-00	R19	RESISTOR, 5.1K OHMS 1/4W 2%	1	
33	5013-10543-00	R71, R72, R73	RESISTOR, 39K OHMS 1/4W 2%	3	5	5283-10469-00	U3, U4, U5	IC, 74F257 2T01 MUX	6	3	5013-10543-00	R71, R72, R73	RESISTOR, 39K OHMS 1/4W 2%	3	
32	5013-10542-00	R16, R46, R50, R57	RESISTOR, 2.2K OHMS 1/4W 2%	4	4	5282-10431-00	SEE NOTE 10	IC, 74S257A MLTPX	9	4	5013-10542-00	R16, R46, R50, R57	RESISTOR, 2.2K OHMS 1/4W 2%	4	
31	5013-10541-00	R42, R49, R56	RESISTOR, 1.2K OHMS 1/4W 2%	3	4	5283-10468-00	U38, U39, U40	IC, 74F04 INVERTER	3	3	5013-10541-00	R42, R49, R56	RESISTOR, 1.2K OHMS 1/4W 2%	3	
30	5013-10540-00	R24, R28, R34	RESISTOR, 910 OHMS 1/4W 2%	3	3	5282-10190-00	U4, U43	IC, 74S04 HEX INV	2	3	5013-10540-00	R24, R28, R34	RESISTOR, 910 OHMS 1/4W 2%	3	
29	5013-10539-00	R25, R27, R33	RESISTOR, 750 OHMS 1/4W 2%	3	3	5283-10552-00	---	---	---	3	5013-10539-00	R25, R27, R33	RESISTOR, 750 OHMS 1/4W 2%	3	
28	5013-10538-00	R41, R48, R55	RESISTOR, 620 OHMS 1/4W 2%	3	3	5282-10186-00	---	---	---	3	5013-10538-00	R41, R48, R55	RESISTOR, 620 OHMS 1/4W 2%	3	
27	5013-10537-00	R26, R32, R38	RESISTOR, 240 OHMS 1/4W 2%	3	2	5281-0971-00	U4, U43	IC, 74LS273 OCT F/F	2	3	5013-10537-00	R26, R32, R38	RESISTOR, 240 OHMS 1/4W 2%	3	
26	5013-10536-00	R39	RESISTOR, 110 OHMS 1/4W 2%	1	1	5779-10366-00	---	---	---	1	5013-10536-00	R39	RESISTOR, 110 OHMS 1/4W 2%	1	

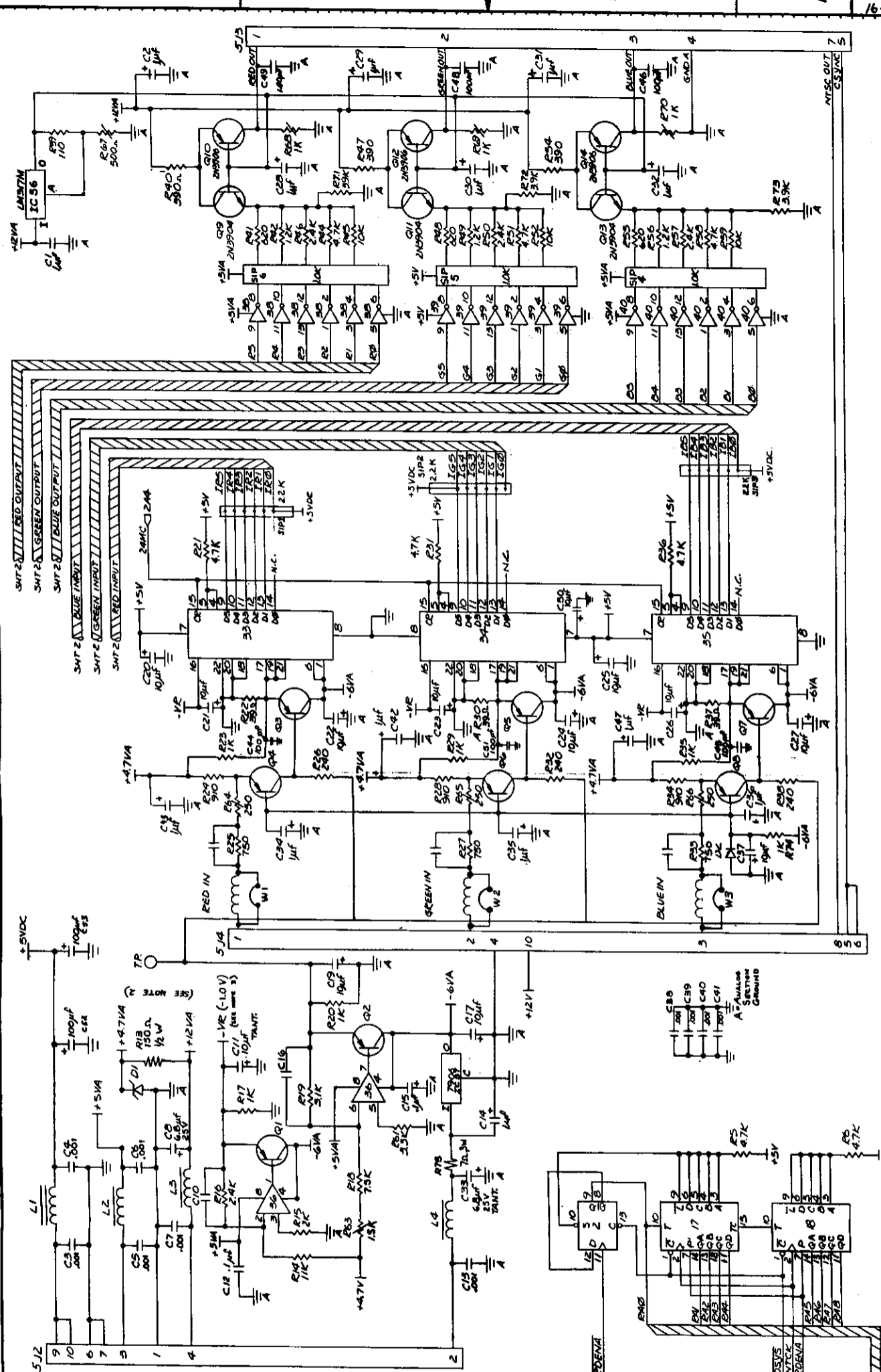
B I L L O F M A T E R I A L S

(APPROXIMATE LOCATION)



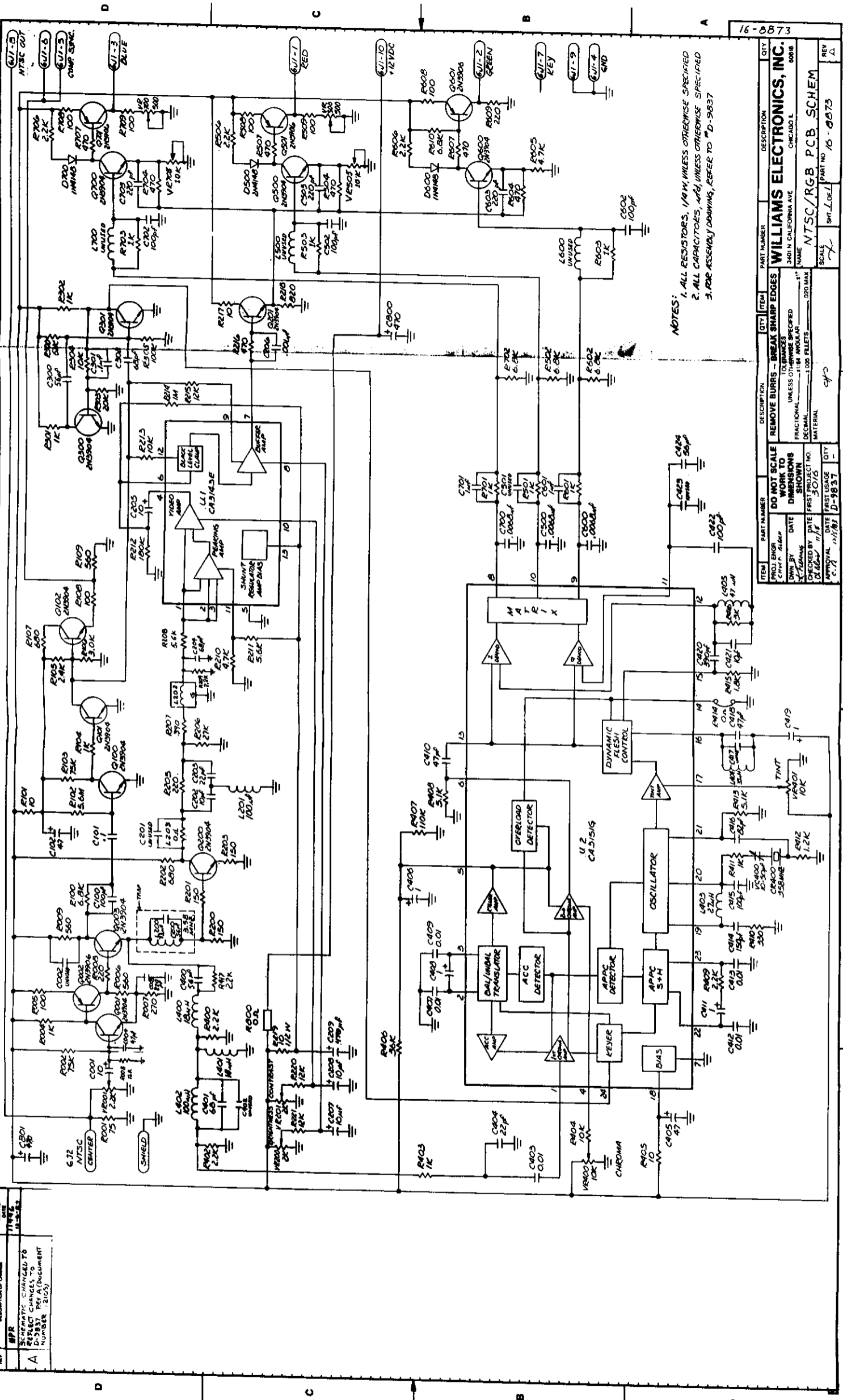
INDICATES KEYING PIN

REV	DESCRIPTION OF CHANGE	DATE
1	MPA	1/19/69
2		1-17-69



16-888	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
	REMOVE BURRS - BREAK SHARP EDGES				WILLIAMS ELECTRONICS, INC.	
	UNLESS OTHERWISE SPECIFIED				300 N. CALIFORNIA AVE.	
	FRACTIONAL				CHICAGO, ILL.	
	DECIMAL				NAME	
					3016 - EXPANDER SCHEM	
					SCALE	
					1/8" = 1"	
					PART NO.	
					16-888	
					REV	
					1	

NOTES:
 1) LAST REVISED
 2) VA = Volts for Analog Section
 3) VR = Variable Resistor



NOTES:
 1. ALL RESISTORS, 1/4 W, UNLESS OTHERWISE SPECIFIED
 2. ALL CAPACITORS, 40V, UNLESS OTHERWISE SPECIFIED
 3. FOR ASSEMBLY DRAWINGS, REFER TO "D-9837"

16-8873

ITEM	PART NUMBER	DESCRIPTION	QTY
1	6J1-2	6J1-2	1
2	6J1-6	6J1-6	1
3	6J1-3	6J1-3	1
4	6J1-10	6J1-10	1
5	6J1-7	6J1-7	1
6	6J1-9	6J1-9	1
7	6J1-4	6J1-4	1
8	6J1-1	6J1-1	1

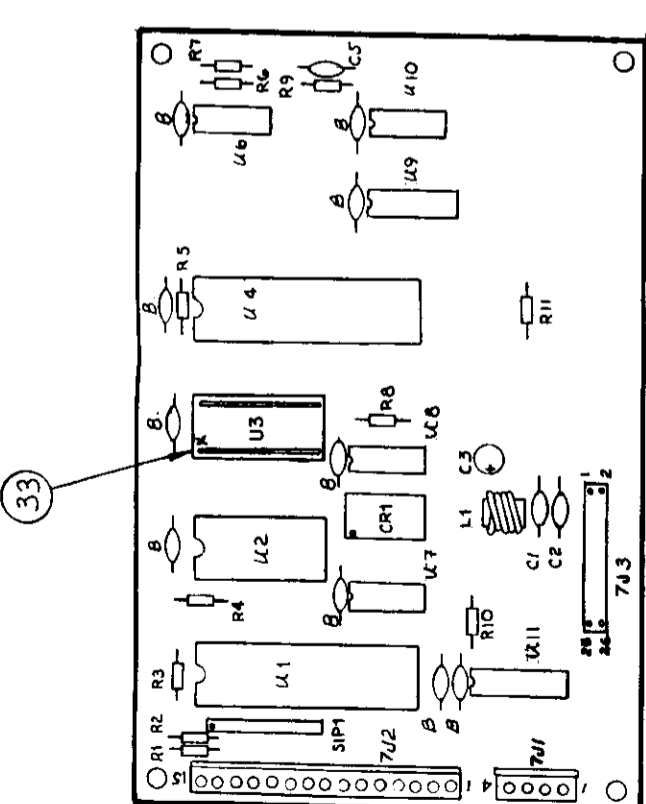
DESCRIPTION	QTY
REMOVE BURRS - BREAK SHARP EDGES	1
DO NOT SCALE TO WORKING DRAWINGS	1
UNLESS OTHERWISE SPECIFIED	1
FRACTIONAL	11
DECIMAL	020 MAX
MATERIAL	

WILLIAMS ELECTRONICS, INC.
 3401 N CALIFORNIA AVE
 CHICAGO, ILL 60618

NTSC/RGB PCB SCHEM
 PART NO 16-8873
 SMT LOCK

REV	DATE	DESCRIPTION OF CHANGE
A	11/18/83	SCHEMATIC CHANGED TO REFLECT CHANGES TO REV A (DOCUMENT NUMBER TEL03)

1
2
3
4



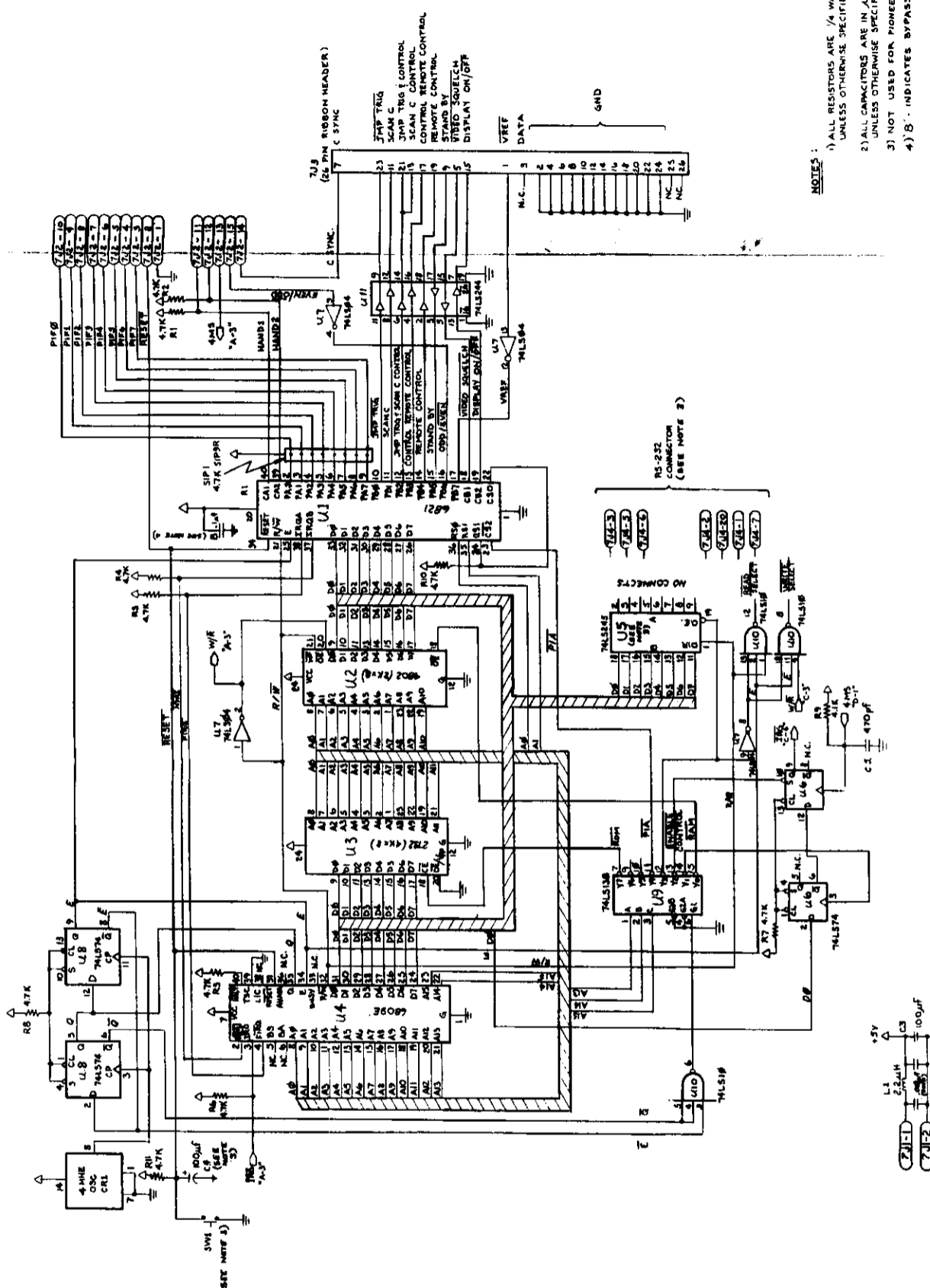
GAME NAME	STAR RIDER
ASSY NO.	C-9928
U3	A-5343-10636

NOTES:
 1) 'B' - INDICATES BYPASS CAPACITORS.
 2) FOR SCHEMATIC REFER TO DWG. 16-6867.

ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.
28	5521-10506-00	CR1	XTAL / OSC., 4MHE OSC.	1
27				
26				
25	5791-10604-00	J3	CONNECTOR, 26PIN RIB. HEADER/SHROUD	1
24	5791-09074-00	J2	CONNECTOR, 13P MALE MOLEX	1
23	5791-09028-00	J1	CONNECTOR, 4P MALE MOLEX	1
22				
21	5281-09215-00	U7	I.C. 74LS04	1
20	5281-09867-00	U11	I.C. 74LS244	1
19	5281-09235-00	U10	I.C. 74LS10	1
18	5281-09487-00	U6, U8	I.C. 74LS74	2
17	5340-09878-00	U2	I.C. 2KX8 RAM	1
16				
15				
14	5281-09745-00	U9	I.C. 74LS138	1
13	5430-08972-00	U1	I.C. 6821 PIA	1
12	5400-09490-00	U4	I.C. 6809E MPU	1
11				
10				
9	5043-09845-00	C1, C2	CAPACITOR, .001UF	2
8	5013-08980-00	B (SEE NOTE 1)	CAPACITORS, .01UF	10
7	5040-09421-00	C3	CAPACITOR, 100UF 25V	1
6	5043-09065-00	C5	CAPACITOR, 470PF	1
5				
4	5010-08991-00	R1 THRU R11	RESISTORS, 4.7K OHM 1/4 W	11
3	5019-09342-00	SIP1	RESISTOR, 4.7K OHM SIP SR	1
2				
1	5772-10365-00		BARE P.C. BOARD	1

ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.
33	5700-09004-00	IC3	SOCKET, 24PIN	1
32				
31				
30				
29	5551-10161-00	L1	COIL, 2.2UH	1

REV	DESCRIPTION OF CHANGE	DATE
1	NPR	11/17/63



- NOTES:
- 1) ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED.
 - 2) ALL CAPACITORS ARE IN μF UNLESS OTHERWISE SPECIFIED.
 - 3) NOT USED FOR PIONEER V.D. PLAYER.
 - 4) 'S' INDICATES BYPASS CAPACITOR, TYPICAL .01 μF

16-8887	
ITEM	DESCRIPTION
1	REMOVE BURRS - BREAK SHARP EDGES
2	DO NOT SCALE WORK TO DIMENSIONS SHOWN
3	TOLERANCES UNLESS OTHERWISE SPECIFIED
4	FRACTIONAL DIMENSIONS TO BE SHOWN
5	DECIMAL DIMENSIONS TO BE SHOWN
6	2.00 DIA. HOLES
7	2.00 DIA. HOLES
8	2.00 DIA. HOLES
9	2.00 DIA. HOLES
10	2.00 DIA. HOLES
11	2.00 DIA. HOLES
12	2.00 DIA. HOLES
13	2.00 DIA. HOLES
14	2.00 DIA. HOLES
15	2.00 DIA. HOLES
16	2.00 DIA. HOLES
17	2.00 DIA. HOLES
18	2.00 DIA. HOLES
19	2.00 DIA. HOLES
20	2.00 DIA. HOLES
21	2.00 DIA. HOLES
22	2.00 DIA. HOLES
23	2.00 DIA. HOLES
24	2.00 DIA. HOLES
25	2.00 DIA. HOLES
26	2.00 DIA. HOLES
27	2.00 DIA. HOLES
28	2.00 DIA. HOLES
29	2.00 DIA. HOLES
30	2.00 DIA. HOLES
31	2.00 DIA. HOLES
32	2.00 DIA. HOLES
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38	2.00 DIA. HOLES
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73	2.00 DIA. HOLES
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75	2.00 DIA. HOLES
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87	2.00 DIA. HOLES
88	2.00 DIA. HOLES
89	2.00 DIA. HOLES
90	2.00 DIA. HOLES
91	2.00 DIA. HOLES
92	2.00 DIA. HOLES
93	2.00 DIA. HOLES
94	2.00 DIA. HOLES
95	2.00 DIA. HOLES
96	2.00 DIA. HOLES
97	2.00 DIA. HOLES
98	2.00 DIA. HOLES
99	2.00 DIA. HOLES
100	2.00 DIA. HOLES

ITEM	PART NUMBER	DESCRIPTION	QTY
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2	74157A	74157A	1
3	74157A	74157A	1
4	74157A	74157A	1
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97	74157A	74157A	1
98	74157A	74157A	1
99	74157A	74157A	1
100	74157A	74157A	1

NOTES:
 1.-FOR SCHEMATIC REFER TO DWG.# 16-8890
 2.-RESISTOR, 4.7K, J1
 R6, R21, R27, R28, R43, R50, R64, R65
 R66, R113, R119, R121, R123, R125,
 R128, R140
 3.-RESISTOR, 1K, J1:
 R4, R5, R25, R26, R62, R63, R108, R109
 R141, R142, R145
 4.-CAPACITOR, 10MFD.:
 C2, C6, C7, C10, C15, C19, C20, C21, C22,
 C23, C24, C28, C31, C35

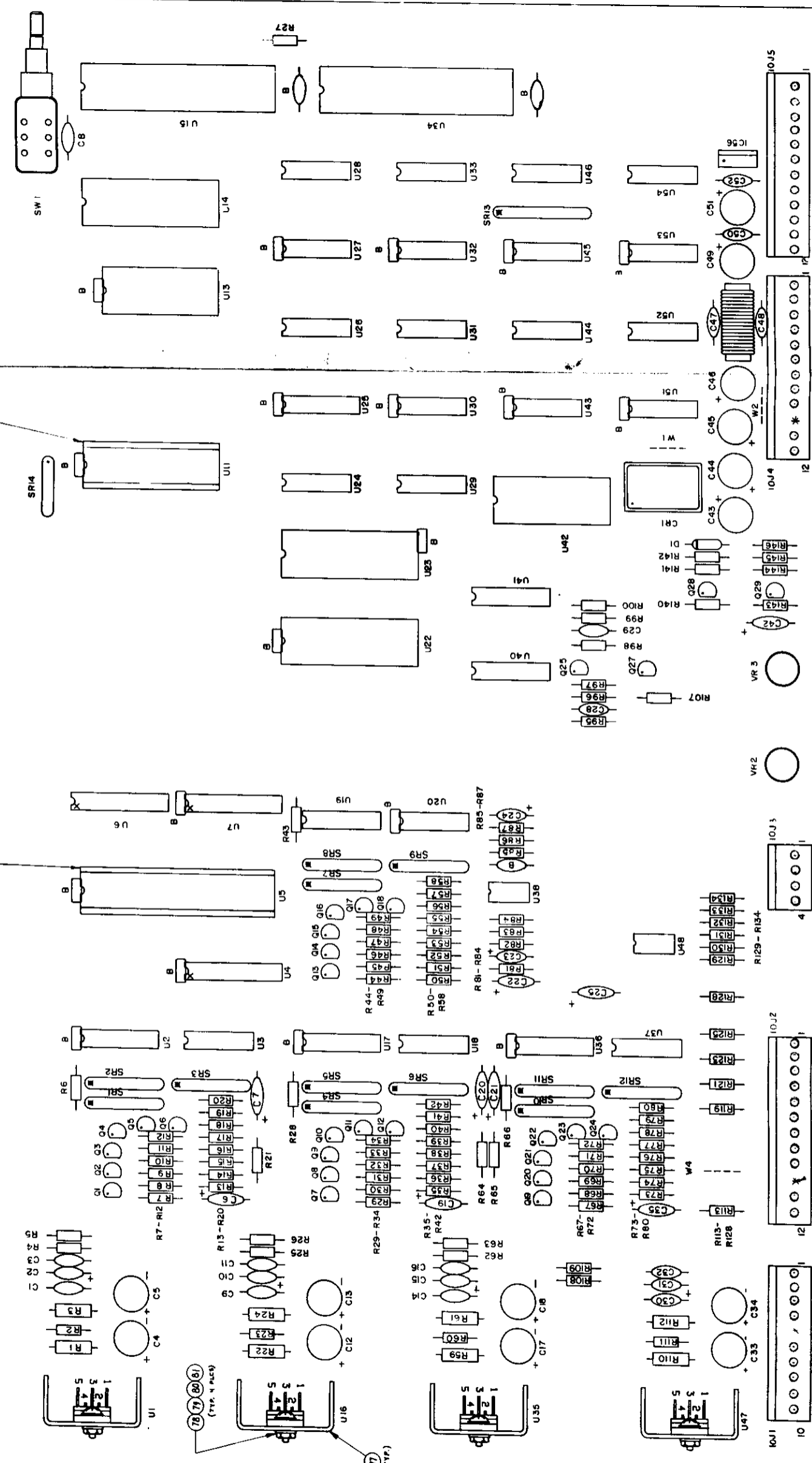
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82	5344- 10440-00 5344- 10429-00		IC, 2812 FIFO IC, 2812 FIFO 2 MHZ	2 0	54	10293-00	R43, R53, R72, R73 1/4W 2%	RESISTOR, 2.2K OHM	8	24	5370- 10320-00	U38, U48	IC, 1458 OP-AMP, DUAL	2
#				#	54	10293-00	R43, R53, R72, R73 1/4W 2%	RESISTOR, 2.2K OHM	8	24	5370- 10320-00	U38, U48	IC, 1458 OP-AMP, DUAL	2
81	20-9229		THERMAL COMPOUND	A/R	53	10497-00	R10, R20, R31, R41, R43, R53, R70, R80	RESISTOR, 4.7K OHM	8	23	5371- 09152-00	U40, U41	IC, 1408 D/A CONV	2
80	4703- 00007-00		LOCK WASHER, #6 EXT. TOOTH	4	52	10346-00	R12, R13, R40, R53, R56, R71, R78	RESISTOR, 10K OHM	8	22	5340- 09878-00	U13	IC, 2016 RAM/3 2K X 8	1
79	4406- 01117-00		HEX NUT G-32	4	51	10548-00	R6, R15, R30, R31, R43, R53, R63, R75	RESISTOR, 20K OHM	8	21	#			#
78	4008- 01003-06		SCREW 4-32 X 3/8" P-PH-5	4	50	5010- 09161-00	R2, R23, R60, R111	RESISTOR, 2.2 OHM	4	20	5433- 10439-00	U14	IC, 68840 PROG TIMER 2MHZ	1
77	5705- 09199-00		HEAT SINK THERMALLOY #6080	4	49	5010- 09534-00	W1, W2, W4	RESISTOR, 0 OHM 1/4W WIRE JUMPER	3	19	5430- 10322-00	U15, U14	IC, 68821 PIA 2MHZ	2
76	5791- 09028-00	U3	4-PIN HEADER 09-G5-1041	1	48	5010- 09039-00	R143	RESISTOR, 10 OHM 1/4W 5%	1	18	#			#
75	5791- 09444-00	J1	10-PIN HEADER 09-G5-1101	1	47	5010- 09358-00	SEE NOTE 3	RESISTOR, 1K 1/4W 5%	11	17	5281- 09633-00	U46	IC, 74LS333 4-BIT COUNTER	1
74	5791- 09043-00	U2, U4, U5	12-PIN HEADER 09-G5-1121	3	46	5010- 08983-00	R81, R83, R86, R96, R97, R99, R100, R107	RESISTOR, 3.3K 1/4W 5%	8	16	5281- 09308-00	U6	IC, 74LS245 OCY TRNCRV	1
73	5641- 09312-00 5641- 09371-00	SW1	SW P DPDT 100V 5A SW P SPDT 115V 25A	1 0	45 44	5010- 08991-00 5010- 09034-00	SEE NOTE 2 R144, R146	RESISTOR, 4.7K 1/4W 5%	16	15	5281- 09867-00	U9, U7	IC, 74LS244 OCTAL BUFFER	2
72	#			#	43	5010- 09325-00	R130, R131, R133, R134	RESISTOR, 100K 1/4W 5%	4	12	5281- 09246-00	U25	IC, 74LS139 2-4 DECODER	1
71	5043- 09844-00	C28, C29	CAPACITOR, 47PF 50V ±20%	2	42	5010- 09162-00	R129, R132	RESISTOR, 330K 1/4W 5%	2	11	5281- 09737-00	U29	IC, 74LS86 GUAD XOR	1
70	5043- 09845-00	C3, C11, C16, C32	CAPACITOR, .001MFD 50V ±20%	4	41	5010- 09442-00	R129, R132	RESISTOR, 330K 1/4W 5%	2	10	5281- 09487-00	U43, U51-U54	IC, 74LS174 DUAL D F/F	5
69	5043- 09860-00	C8, C47, C48 BYPASS (8)	CAPACITOR, .01 MFD 50V ±20%	25	40	5010- 09179-00	R95, R96	RESISTOR, 3.3M 1/4W 5%	#	9	5281- 09500-00	U26, U27, U31, U33	IC, 74LS32 GUAD OR	4
68	5043- 09896-00	C13, C14, C30, C50, C52	CAPACITOR, .1 MFD 50V ±20%	6	39	#			#	8	5281- 09850-00	U28	IC, 74LS11 TRIPLE AND	1
67	5041- 09163-00	C42	CAPACITOR, 2.2 MFD	1	38	5019- 09780-00	SRI-SR12	SIP, 1K 4R 8 5%	12	8	5281- 09850-00	U28	IC, 74LS11 TRIPLE AND	1
66	5040- 09343-00 5041- 09243-00	SEE NOTE 4	CAPACITOR, ELECT, AXIAL 10MFD 25V ±20%LL CAPACITOR, TANT, AXIAL 10MFD 10V	0 14	37 36	5019- 09786-00 5019- 09362-00	SRI4 SRI3	SIP, 4.7K SR 10 5%	1	7	5281- 09235-00	U45	IC, 74LS10 TRIPLE NAND	1
65	5040- 09422-00	C51	CAPACITOR, ELECT, RAD 47MFD 50V ±50-10%	1	35	#			#	5	5280- 09309-00	U3, U18, U20, U37	IC, 74LS08 GUAD AND	4
64	5040- 09421-00	C4, C12, C17, C33, C43, C44, C45, C46, C49	CAPACITOR, ELECT, RAD 100 MFD 25V, ±50-10%	9	34	5520- 10438-00	CR1	OSCILLATOR, 8 MHZ	1	4	5281- 09215-00	U24	IC, 74LS04 HEX INVERTER	1
63	5040- 09776-00	C5, C13, C18, C34	CAPACITOR, ELECT, RAD 470 MFD 16V ±50-10%	4	33	5075- 09018-00	D1	ZENER DIODE IN-5996A 6.8V	1	3	5281- 09247-00	U32	IC, 74LS02 GUAD NOR	1
62	#			#	32	5160- 10269-00	Q25, Q27, Q28, Q29	TRANSISTOR, NPN 2N3904	4	2	5281- 09499-00	U30	IC, 74LS00 GUAD NAND	1
61	5551- 09822-00	L1	INDUCTOR, 4.7MH 5A	1	31	5190- 10270-00	Q1-Q24	TRANSISTOR, PNP 2N3906	24	1	5178- 10369-00		BARE PC BOARD, SOUND	1

B I L L O F M A T E R I A L S

(24)

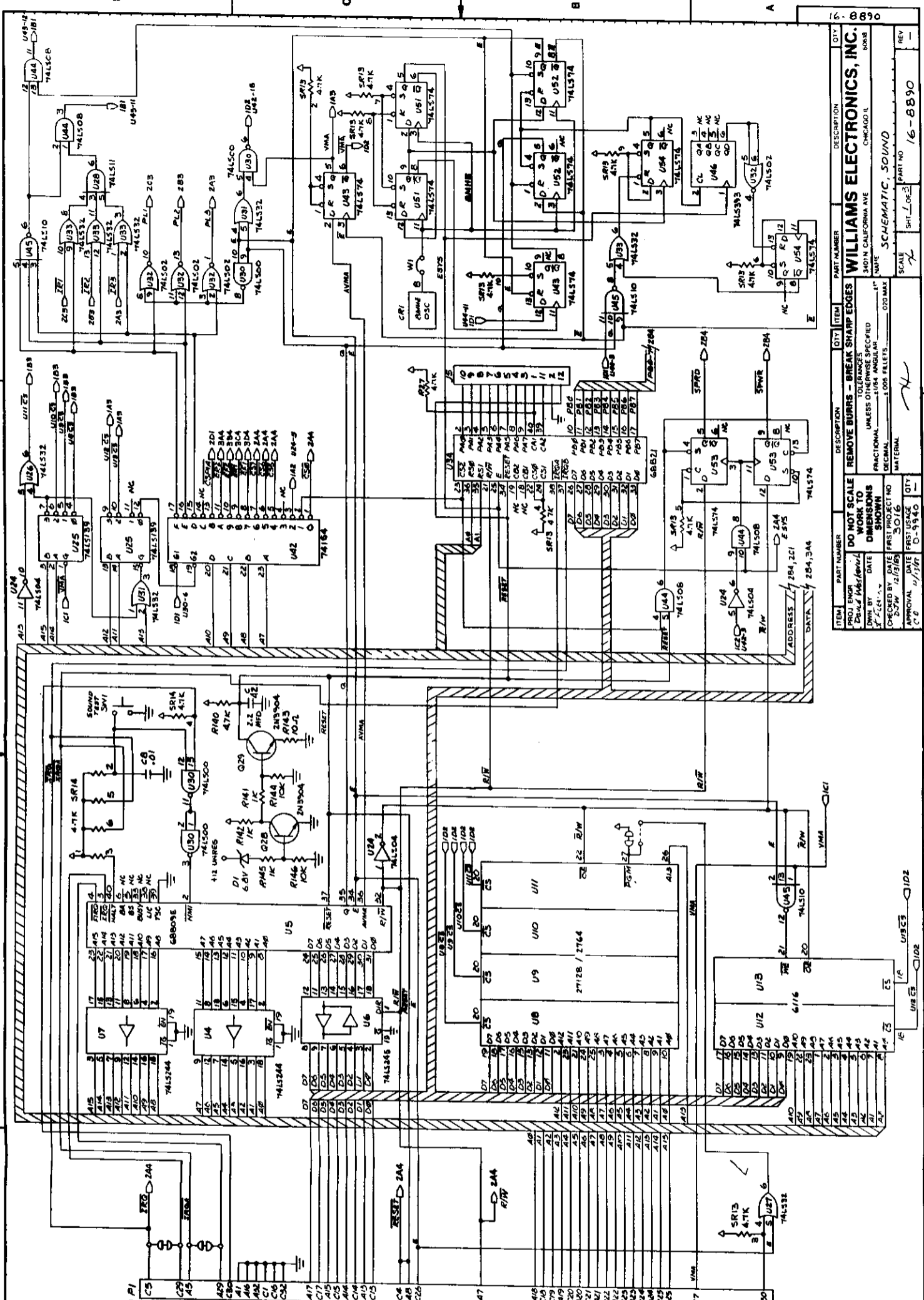
(23)

(27)



MO. GATES KEYING P/N

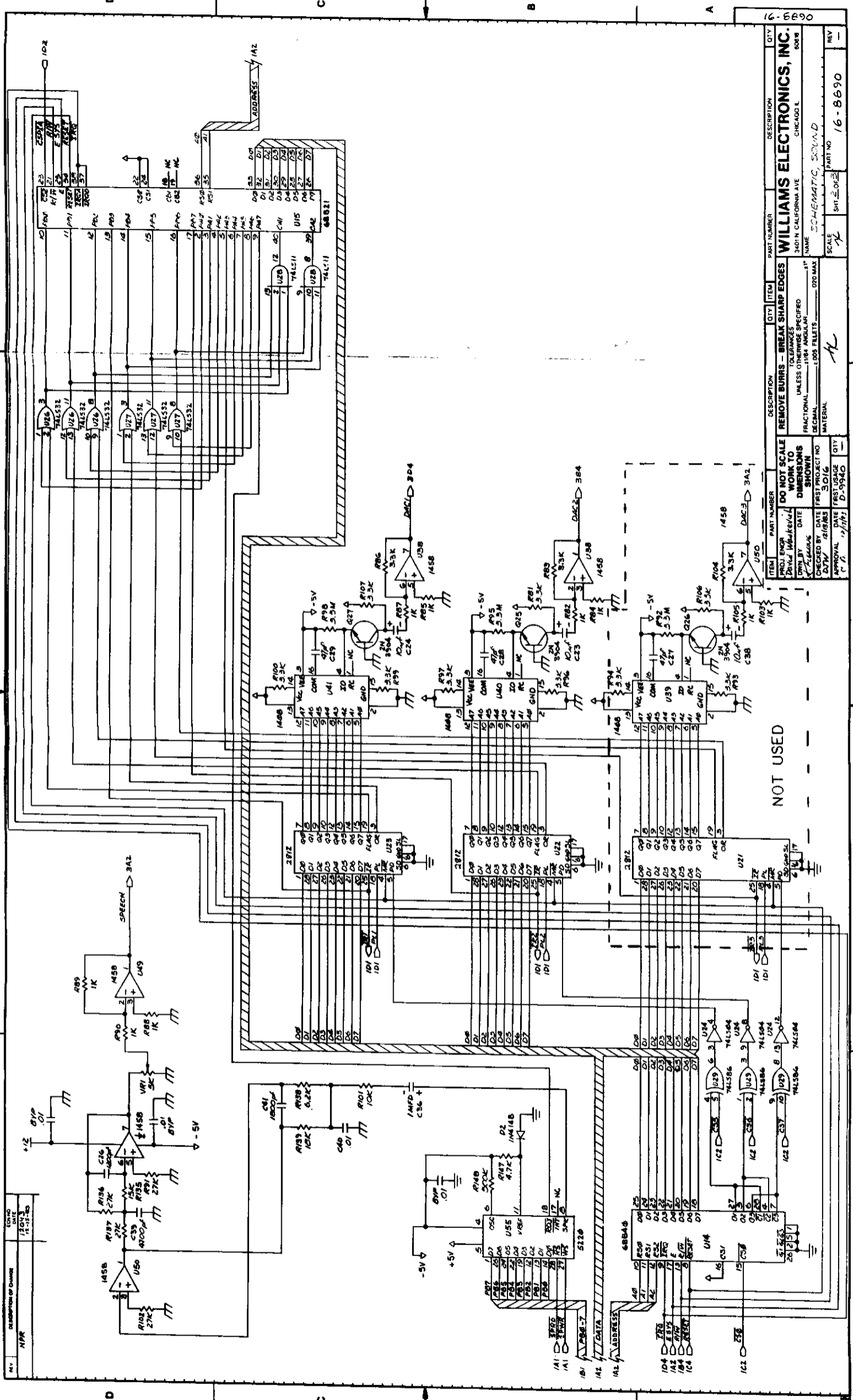
REV	DESCRIPTION OF CHANGE	DATE
1	NPR	12/13/83

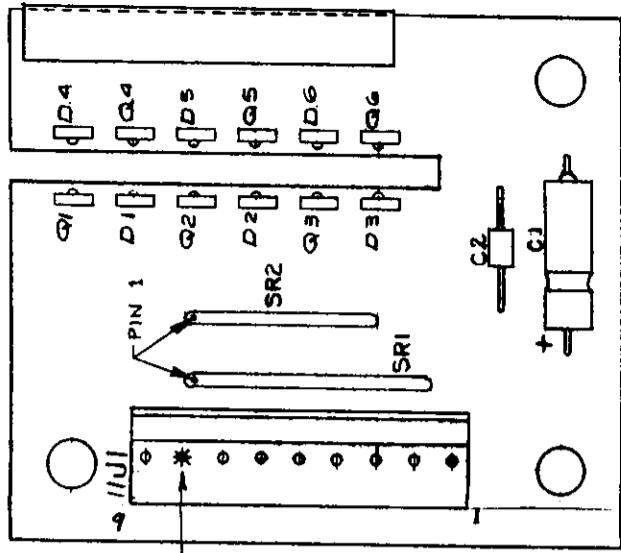


ITEM	PART NUMBER	DESCRIPTION	QTY
1	U1-U18	TAL500-TAL600	1
2	R1-R14	4.7K, 10K, 20K, 47K, 100K, 1M, 2.2M, 100Ω	1
3	C1-C7	100pF, 1nF, 10nF, 100nF, 1μF, 10μF, 100μF	1
4	SR13-SR100	4.7K	1

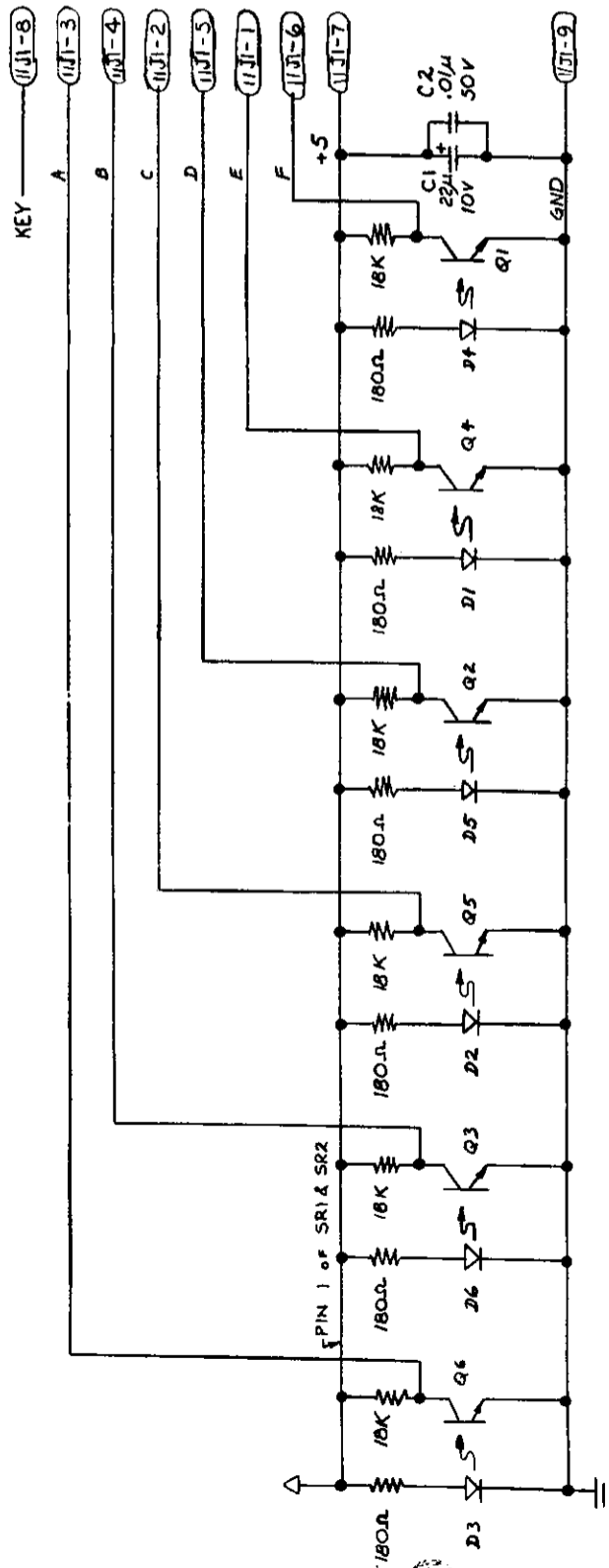
PROJ ENGR	DATE	DESCRIPTION	QTY
DRW BY	DATE	DESCRIPTION	QTY
CHECKED BY	DATE	DESCRIPTION	QTY
APPROVAL	DATE	DESCRIPTION	QTY

WILLIAMS ELECTRONICS, INC.
 3401 N. CALIFORNIA AVE.
 CHICAGO, IL 60638
 SCHEMATIC, SOUND
 PART NO 16-8890
 SCALE 1/8"





KEYING PIN → 5



NOTE:

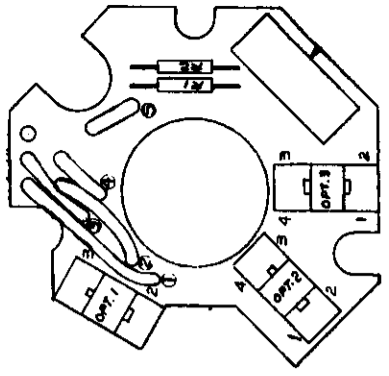
RESISTORS ARE IN SIPS.

SR2 180Ω
SR1 18K

ITEM	PART NUMBER	PART DESIGNATION	DESCRIPTION	QTY.
9	16-8850-76		LABEL - PCB ID	1
8	5791-09027-00	J1	CONNECTOR, 9P MALE	1
7	5043-08996-00	C2	CAPACITOR, 0.1μf 50V, +/-20	1
6	5040-09545-00	C1	CAPACITOR, 22μf 10V, +/-20	1
5	5019-10158-00	SR2	SIP, 180 OHMS 7R8P 5%	1
4	5019-10387-00	SR1	SIP, 18K OHMS 9R10P 5%	1
3	5163-10509-00	Q1, Q2, Q3, Q4, Q5, Q6	PHOTOTRANSISTOR NPN 3.4 mA	6
2	5671-10508-00	D1, D2, D3, D4, D5, D6	I.R. LED 40 mA .1W	6
1	5779-10435-00		BARE P.C.B.	1

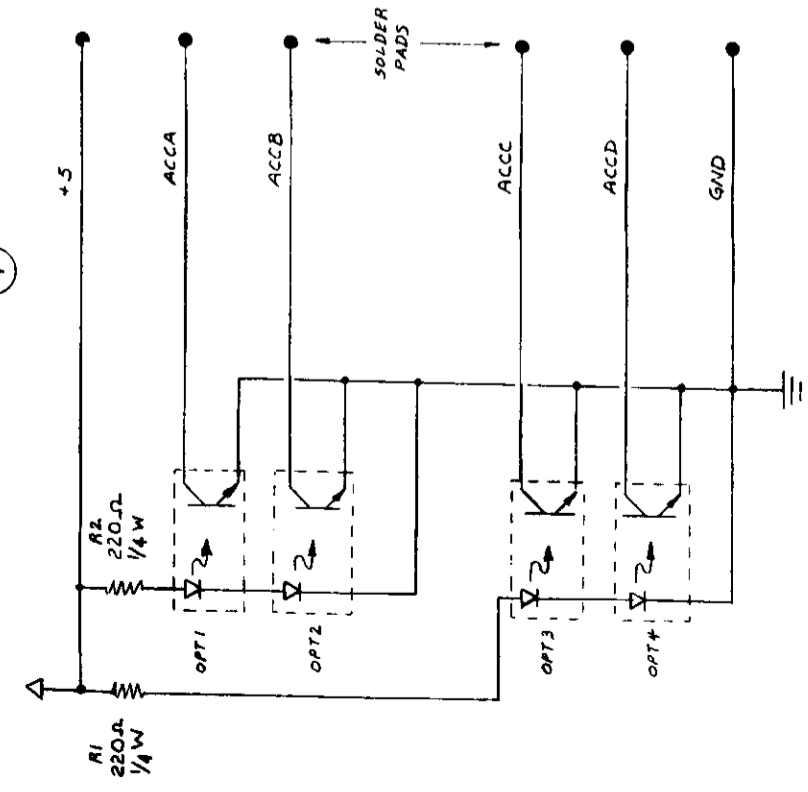
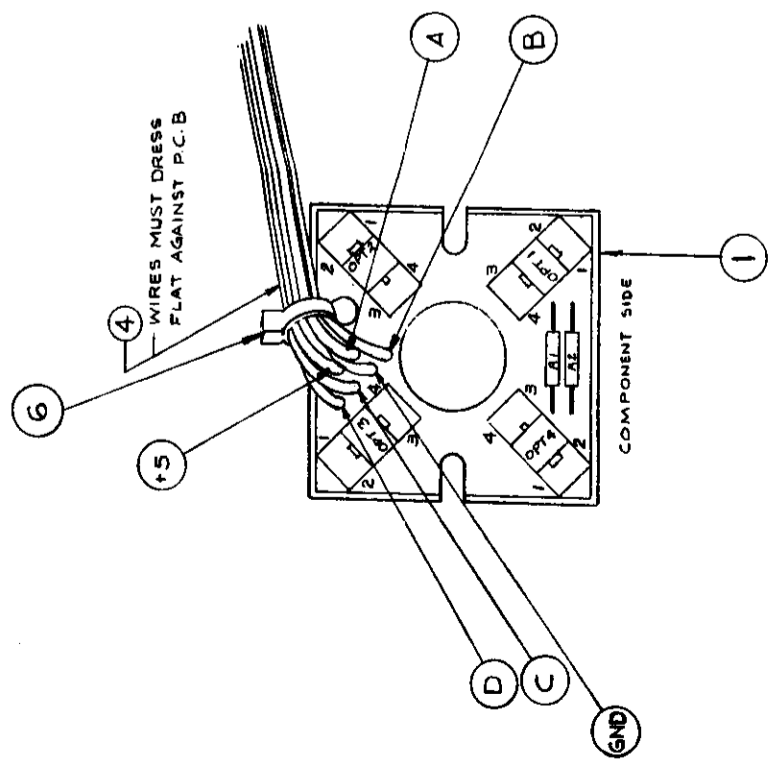
SOLDER PAD	WIRE COLOR	FUNCTION
+5V	GRAY	+5VDC
GND	BLACK	GROUND
A (OPT 1)	ORANGE/VIOLET	THROTTLE A (L.S.B.)
B (OPT 2)	ORANGE/BLUE	THROTTLE B
C (OPT 3)	ORANGE/GREEN	THROTTLE C
D (OPT 4)	ORANGE/YELLOW	THROTTLE D (M.S.B.)

ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.
5	H-10282		H/BAR BRAKE CABLE	1
4	16-8850-97		LABEL-PCB ID	1
3	5010-09160-00	R1, R2	RESISTOR, 220 OHM 5% 1/4 W	2
2	5490-10159-00	OPTO1, OPTO2, OPTO3	OPTO INTERRUPTER	3
1	5179-10436-00		BARE PC BOARD	1

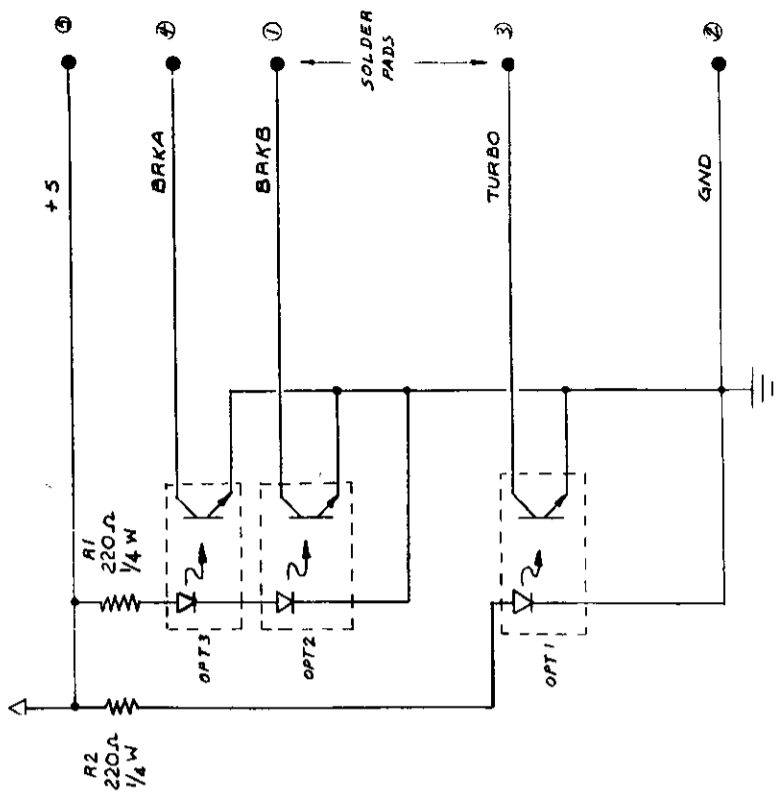


ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY.
G	03-7520-7		NYLON TY-WRAP	1
5	16-8850-95		LABEL-PCB ID	1
4	H-10283		H/BAR THROT CABLE	1
3	5010-09160-00	R1, R2	RESISTOR, 220 OHM 5% 1/4 W	2
2	5490-10159-00	OPT1, OPT2, OPT3, OPT4	OPTO INTERRUPTER	4
1	5179-10434-00		BARE PC BOARD	1

PAD SIGNAL	WIRE COLOR
1	ORG-RED
2	BLK
3	ORG-BLK
4	ORG
5	GREY

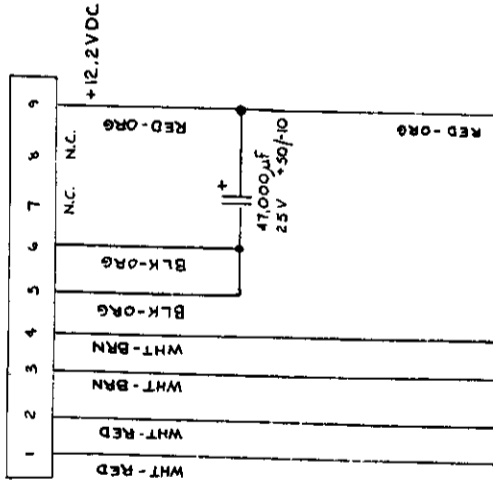


NOTE:
SEE ASSY DRAWING
C-9994 FOR LOCATIONS.



REV	DESCRIPTION OF CHANGE	DATE	BY
1	NPR	11/17/68	CH

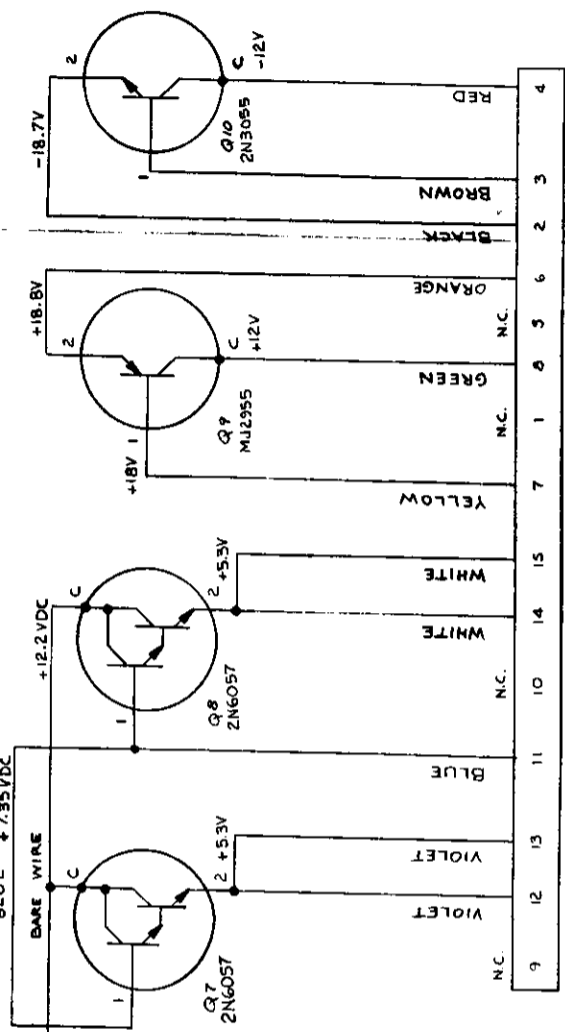
4P2



NOTES:

1. CAPACITOR MOUNTED TO PEM PLATE, OTHER COMPONENTS MOUNTED TO HEAT SINK.
2. SCHEMATIC REPRESENTS HEAT SINK SUB. ASSY. 5V 10A C-10069.

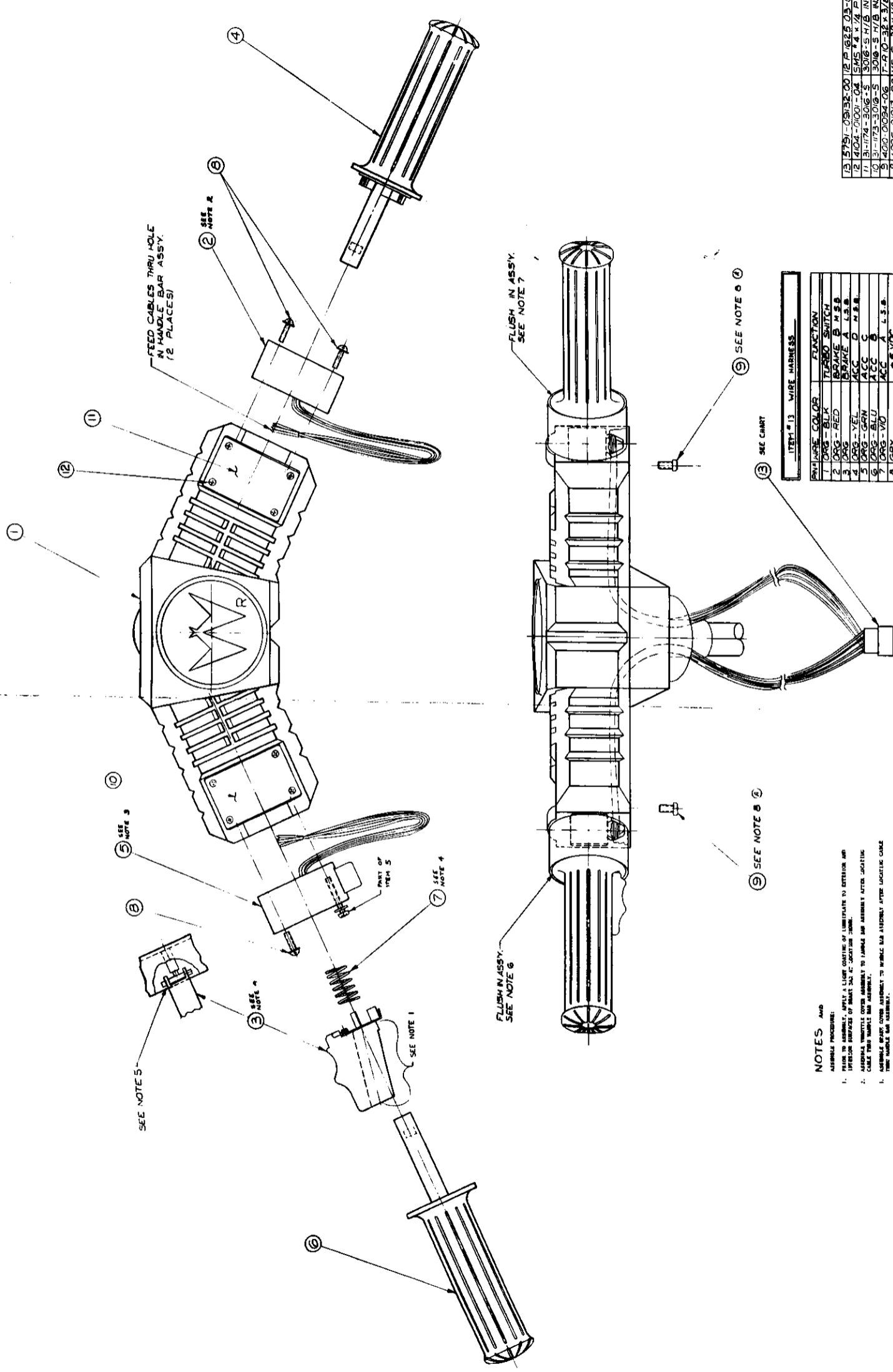
BLUE WIRE +7.55VDC



4P4

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	CH	DO NOT SCALE WORK TO DIMENSIONS SHOWN UNLESS OTHERWISE SPECIFIED		1	CH	REMOVE BURRS - BREAK SHARP EDGES	
2	CH	FRAC TIONAL DECIMAL		2	CH	TOLERANCES UNLESS OTHERWISE SPECIFIED	
3	CH	FIRST 301		3	CH	2.005 FILETS	
4	CH	DATE 12/15/68		4	CH	MATERIAL	
5	CH	DATE 11/17/68		5	CH	SCALE	
6	CH	DATE 11/17/68		6	CH	PART NO	
7	CH	DATE 11/17/68		7	CH	REV	
8	CH	DATE 11/17/68		8	CH	SCALE	
9	CH	DATE 11/17/68		9	CH	PART NO	
10	CH	DATE 11/17/68		10	CH	REV	
11	CH	DATE 11/17/68		11	CH	SCALE	
12	CH	DATE 11/17/68		12	CH	PART NO	
13	CH	DATE 11/17/68		13	CH	REV	
14	CH	DATE 11/17/68		14	CH	SCALE	
15	CH	DATE 11/17/68		15	CH	PART NO	
16	CH	DATE 11/17/68		16	CH	REV	
17	CH	DATE 11/17/68		17	CH	SCALE	
18	CH	DATE 11/17/68		18	CH	PART NO	
19	CH	DATE 11/17/68		19	CH	REV	
20	CH	DATE 11/17/68		20	CH	SCALE	

WILLIAMS ELECTRONICS, INC.
 3401N. CALIFORNIA AVE CHICAGO, ILL. 60648
 NAME P. S. PCB 5V 10A S.C.H.E.M.
 SCALE 1/2"=1" PART NO 16-8901
 REV 1



- NOTES AND ASSEMBLY PROCEDURE:**
1. PRIOR TO ASSEMBLY, APPLY A LIGHT COATING OF LUBRICANTS TO EXTERIOR AND INTERNAL SURFACES OF HANDLE BAR ASSEMBLY.
 2. ASSEMBLE HANDLE BAR ASSEMBLY TO HANDLE BAR ASSEMBLY AFTER LOCATING CABLE THRU HANDLE BAR ASSEMBLY.
 3. ASSEMBLE SPRING COVER ASSEMBLY TO HANDLE BAR ASSEMBLY AFTER LOCATING CABLE THRU HANDLE BAR ASSEMBLY.
 4. ASSEMBLE HANDLE BAR ASSEMBLY TO HANDLE BAR ASSEMBLY.
 5. ALSO ASSEMBLE GRIP WITH THIS TO COVER AS SHOWN.
 6. FROM HANDLE GRIP ASSEMBLY INTO COVER HOLE, PLACE END OF HANDLE GRIP IN FLUSH WITH COVER. GRIP MUST BE FLUSH WITH HANDLE GRIP ASSEMBLY.
 7. ASSEMBLE HANDLE GRIP ASSEMBLY TO HANDLE BAR ASSEMBLY AFTER LOCATING CABLE THRU HANDLE BAR ASSEMBLY.
 8. ASSEMBLE ITEM 9 TO ITEM 1 USING LOCUSTITE 248.

ITEM # 13 WIRE HARNESS

WIRE COLOR	FUNCTION
1 ORG - BLK	TURNO SWITCH
2 ORG - RED	BRAKE B M S.B
3 ORG - YEL	BRAKE A L.S.B
4 ORG - GRN	ACC C
5 ORG - BLU	ACC A
6 ORG - W/O	ACC B
7 ORG - W/O	ACC +5 VDC
8 GRV	ACC +5 VDC
9 GRV	GND
10 BLK	GND
11 BLK	GND
12	NOT USED

ITEM	PART NUMBER	QTY
13	13-1791-09132-00	1
12	12-1024-0001-04	1
11	11-1774-5016-03	1
10	10-1113-5019-03	1
9	9-1003-0017-08	1
8	8-1003-0017-08	1
7	7-1003-0017-08	1
6	6-1003-0017-08	1
5	5-1003-0017-08	1
4	4-1003-0017-08	1
3	3-1003-0017-08	1
2	2-1003-0017-08	1
1	1-1003-0017-08	1

DESCRIPTOR