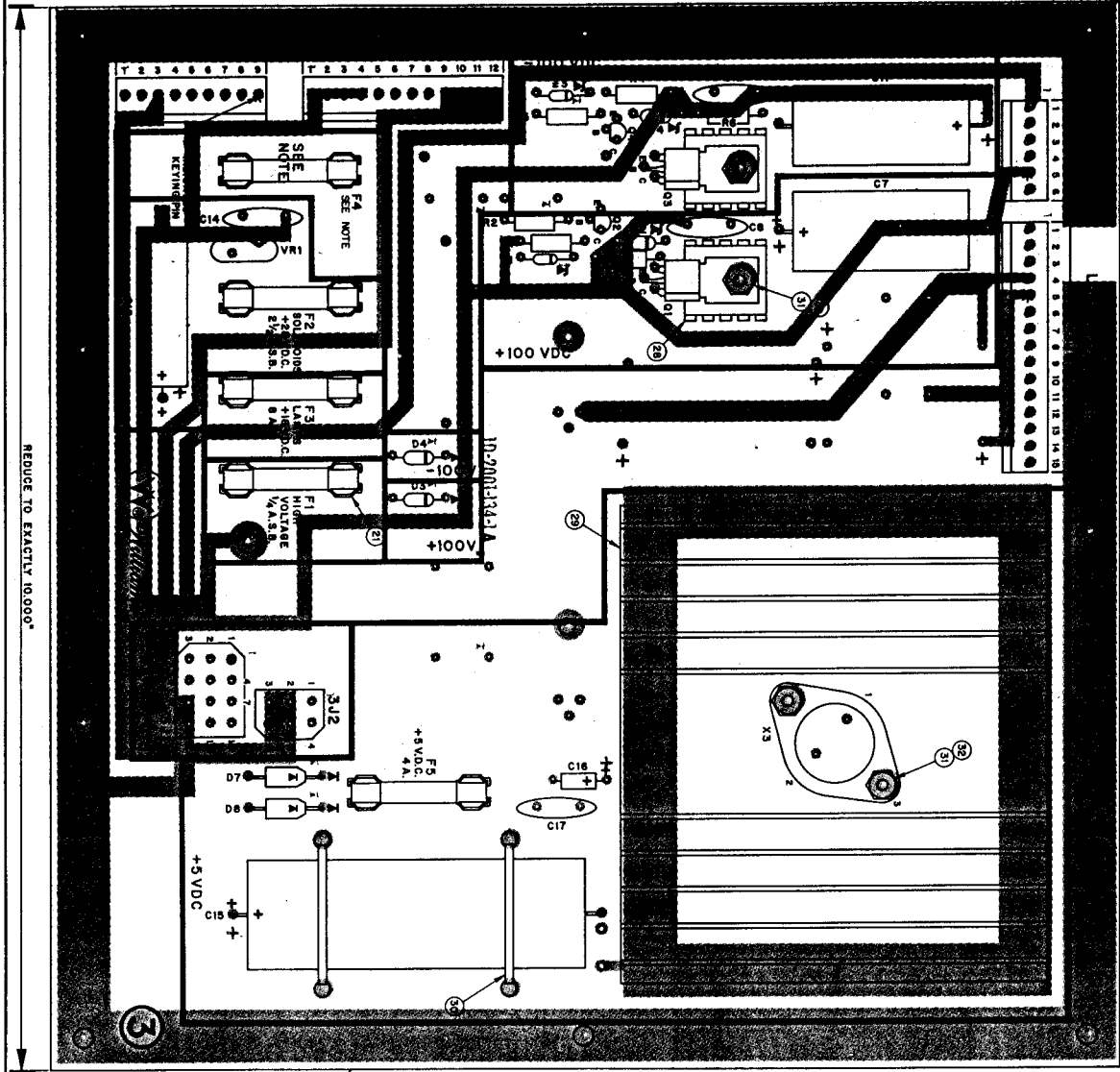


WILLIAMS ELECTRONICS, INC.
 SUBSIDIARY OF XCOM CORPORATION
 3401 N. CALIFORNIA CHICAGO, ILL. 60618 CORNELIA 7-2240

PART NAME: SCHEMATIC, CPU BOARD
 DWN. DATE: 2-15-79 APP'D. SCALE: 2:1 PART NO. 16D-8163

CPU Board Logic Diagram 9

REVISION	REVISION
REVISED AND REISSUED	REVISED AND REISSUED
NO. 1-1-63	NO. 1-1-63



REDUCE TO EXACTLY 10.000"

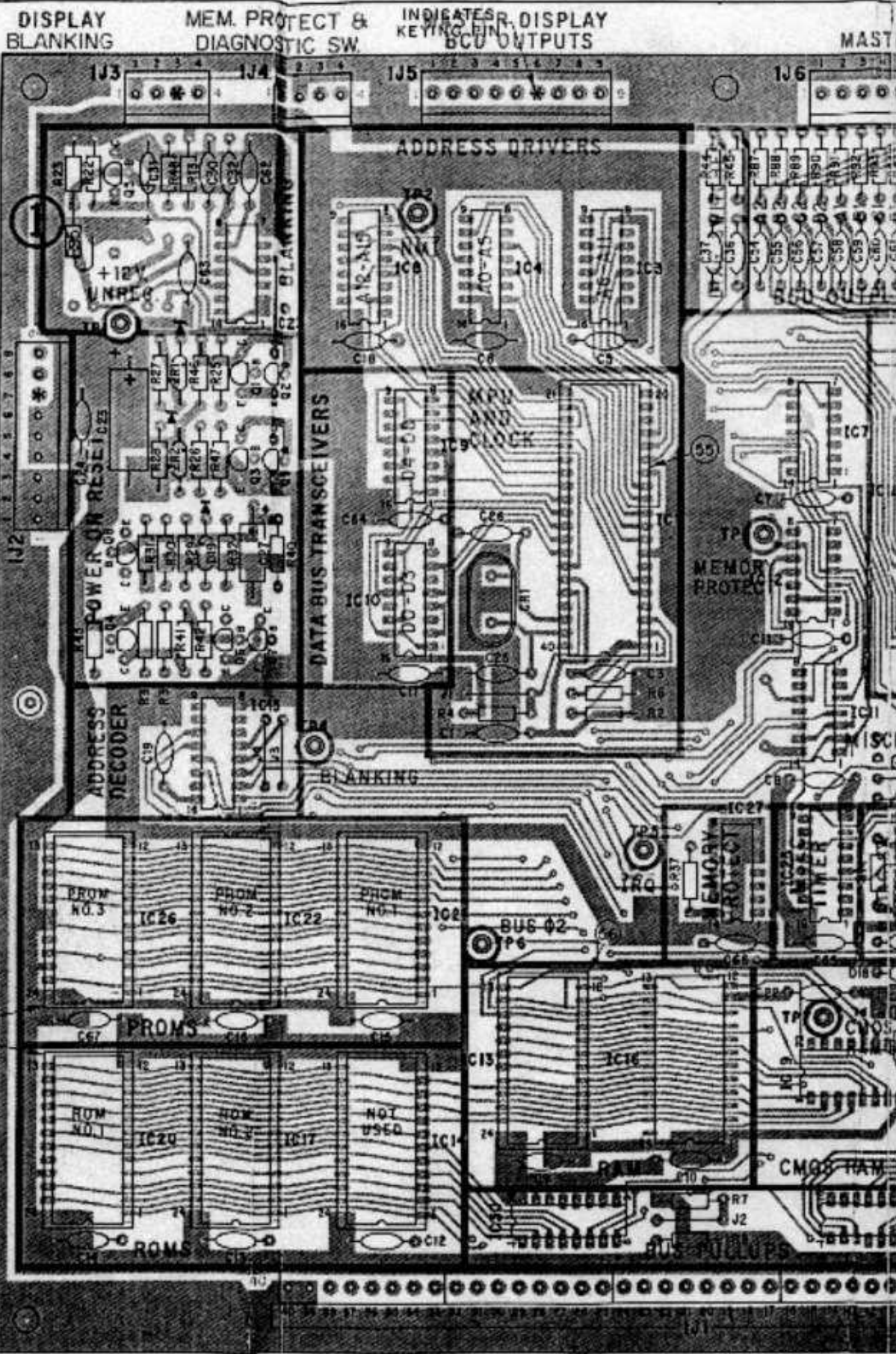
BILL OF MATERIAL

ITEM NO.	PART NO.	DESCRIPTION	QTY	REQD NO.
1	10-1001-134	PCB BOARD	1	1
2	5A-10048	3 AMP 5 VOLT POSITIVE VOLTAGE	1	1
3	5A-10027	100-200 PPM TRANSISTOR	1	1
4	5A-10025	100-200 PPM TRANSISTOR	1	1
5	5A-10028	500-1000 PPM TRANSISTOR	1	1
6	5A-10024	1N4001 DIODE	1	1
7	5A-10024	1N4001 DIODE	1	1
8	5A-10024	1N4001 DIODE	1	1
9	5A-10024	1N4001 DIODE	1	1
10	5A-10024	1N4001 DIODE	1	1
11	5A-10024	1N4001 DIODE	1	1
12	5A-10024	1N4001 DIODE	1	1
13	5A-10024	1N4001 DIODE	1	1
14	5A-10024	1N4001 DIODE	1	1
15	5A-10024	1N4001 DIODE	1	1
16	5A-10024	1N4001 DIODE	1	1
17	5A-10024	1N4001 DIODE	1	1
18	5A-10024	1N4001 DIODE	1	1
19	5A-10024	1N4001 DIODE	1	1
20	5A-10024	1N4001 DIODE	1	1
21	5A-10024	1N4001 DIODE	1	1
22	5A-10024	1N4001 DIODE	1	1
23	5A-10024	1N4001 DIODE	1	1
24	5A-10024	1N4001 DIODE	1	1
25	5A-10024	1N4001 DIODE	1	1
26	5A-10024	1N4001 DIODE	1	1
27	5A-10024	1N4001 DIODE	1	1
28	5A-10024	1N4001 DIODE	1	1
29	5A-10024	1N4001 DIODE	1	1
30	5A-10024	1N4001 DIODE	1	1
31	5A-10024	1N4001 DIODE	1	1
32	5A-10024	1N4001 DIODE	1	1
33	5A-10024	1N4001 DIODE	1	1
34	5A-10024	1N4001 DIODE	1	1
35	5A-10024	1N4001 DIODE	1	1
36	5A-10024	1N4001 DIODE	1	1
37	5A-10024	1N4001 DIODE	1	1

NOTE:
F4 IS FLIPPER FUSE ON FLIPPER
GAMES AND GENERAL ILLUMINATION
ON SHUFFLE ALLEYS.

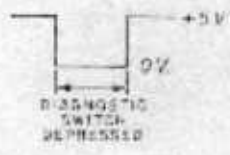
WILLIAMS ELECTRONICS, INC.
1301 N. CALIFORNIA CHICAGO, ILL. 60618
CORNELLIA 7-2820
POWER SUPPLY BOARD ASSEMBLY
PART NO. D-7999
REV. 10/62
D.B. 10/62

NO. REV. LETTER	REVISION
D	REVISED AND REDESIGNED BOARD TO CONFORM TO AIRWORK NO. 18-0001-AN LATEST ISSUE NO. 6. E. GAY, 1-9-74
E	ITEM NO. 3, MDC'S P. NO. W48 1A5991. E. GAY, 1-9-79

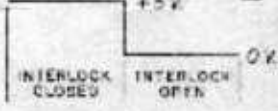


TP1 +12V UNREG

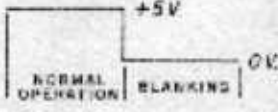
TP2 NM1



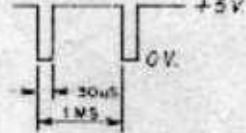
TP3 MEMORY PROTECT



TP4 BLANKING



TP5 \overline{RQ}



TP6 BUS $\Phi 2$



TP7 CMOS RAM B+

POWER ON 4.3V
POWER OFF 3.9V

TP8 RESET



TP9 +5V

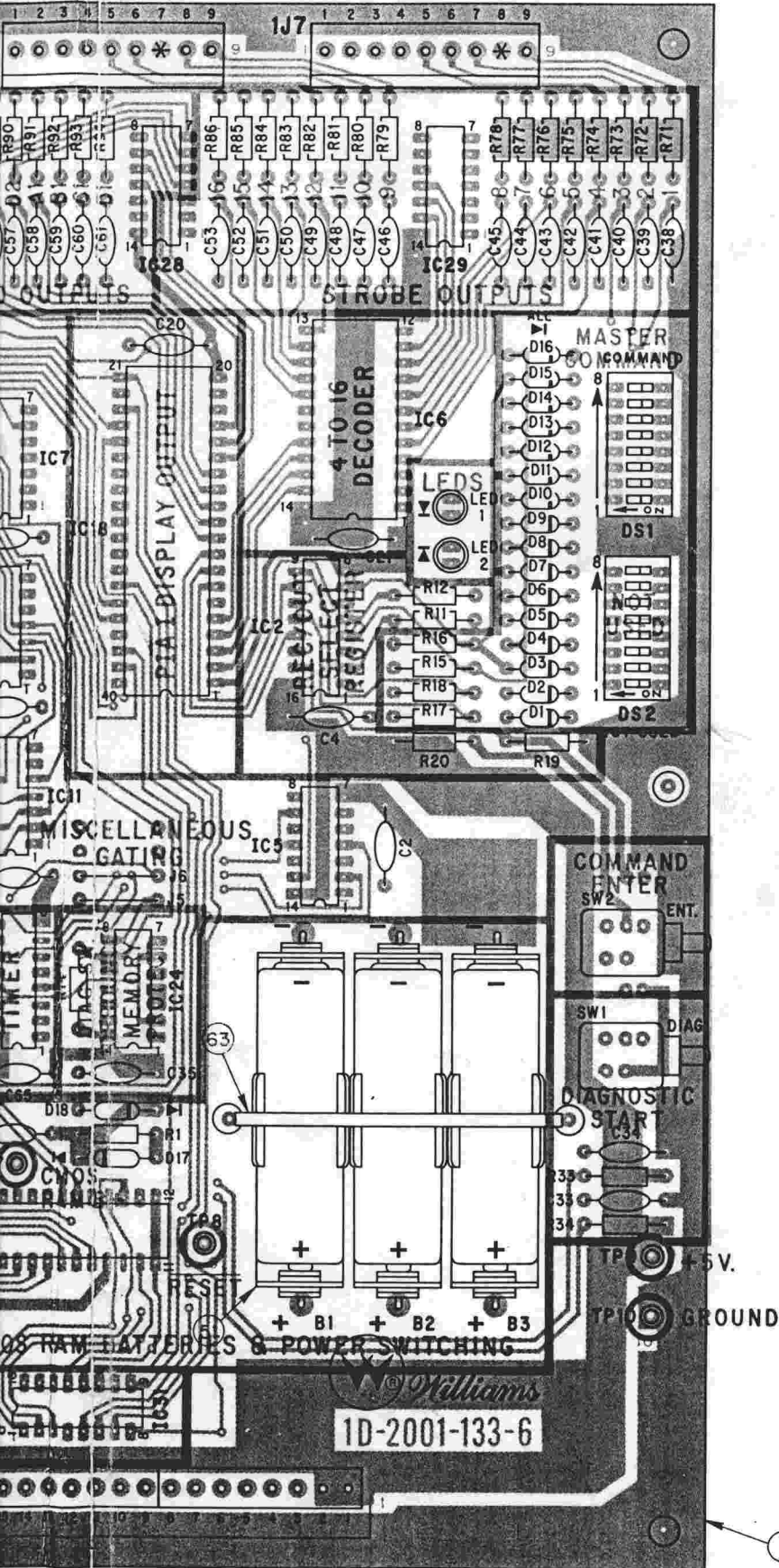
TP10 GND

LOGIC POWER BUS INPUT

(56)

INTERBOARD CONNECTOR

MASTER DISPLAY STROBE OUTPUTS



BILL OF MATERIAL

ITEM NO.	PART NO.	PART-DESIGNATION	DESCRIPTION	REQ'D NO.
1	1B-2001-133-6		BARE P.C. BOARD	1
2	5A-8990	IC2, IC9, IC10	8T28 QUAD BUFFER/RECEIVER	3
3	5A-8989	IC3, IC4, IC8	8T97 HEX. TS BUFFER	3
4	5A-9010	IC6	74154 4 TO 16 DECODER	1
5	5A-9013	IC7	7404 HEX. INVERTER	1
6	5A-9235	IC11	74LS10 TRIPLE 3 INPUT NAND	1
7	5A-8973	IC12	7408 QUAD AND	1
8	5A-9013	IC13, IC16	MC6810 RAM	2
9	5A-9246	IC15	74LS139 DUAL 2 TO 4 LINE DECODER	1
10	5A-9017	IC17	ROM 2K X 8 LOWER	1
11	5A-8972	IC18	MC6820 PIA	1
12	5A-9017	IC19	CMOS RAM 5101	1
13	5A-9017	IC20	ROM 2K X 8 UPPER	1
14	5C-9002	IC23	MC3456/556 DUAL TIMER	1
15	5A-9073	IC24	7400 QUAD 2 INPUT NAND	1
16	5A-9236	IC25	4020 CMOS 14 BIT COUNTER	1
17	5A-9237	IC27	4071 CMOS QUAD 2 INPUT NOR	1
18	5A-9247	IC5	74LS02 QUAD 2 INPUT NOR GATE	1
19	5A-9238	IC28, IC29	13 DIP RESISTOR/PACK, 4.7K OHM	2
20	5A-9239	IC30, IC31	15 DIP RESISTOR/PACK, 4.7K OHM	2
21	5B-9025	DS1, DS2	8 STN. DIP SWITCH	2
22	5A-9018	ZP1	1N5996 ZENER DIODE	1
23	5A-9240	ZR2	1N5990 ZENER DIODE	1
24	5A-8919	D1 THRU D17, D19	1N4148 DIODE, SILICON	19
25	5C-8938	Q1, Q2, Q3, Q6 THRU Q9	2N4401 TRANSISTOR	9
26	5C-9016	Q4, Q5	2N4403 TRANSISTOR	2
27	5A-9020	CR1	CRYSTAL, 3.58 MHZ	1
28	5B-8984	R20, R25, R26, R48, R71 THRU R94	RESISTOR, FC, 1K OHM 10% 1/4 W	28
29	5B-8983	R2, R6, R7, R8, R23, R30	RESISTOR, FC, 3.3K OHM 10% 1/4 W	6
30	5B-8991	R4, R13 THRU R19, R33, R34, R41	RESISTOR, FC, 4.7K OHM 10% 1/4 W	11
31	5A-9033	R1	RESISTOR, FC, 680 OHM 5% 1/4 W	1
32	5B-9036	R11, R12, R42	RESISTOR, FC, 100 OHM 10% 1/4 W	3
33	5B-9113	R22, R40	RESISTOR, FC, 33K OHM 5% 1/4 W	2
34	5B-9034	R27, R28,	RESISTOR, FC, 10K OHM 10% 1/4 W	2
35	5A-9241	R29, R38, R46, R47	RESISTOR, FC, 22K OHM 10% 1/4 W	4
36	5A-8998	R31	RESISTOR, FC, 2.2K OHM 10% 1/4 W	1
37	5A-9039	R32	RESISTOR, FC, 10 OHM 10% 1/4 W	1
38	5A-9242	R37	RESISTOR, FC, 300K OHM 10% 1/4 W	1
39	5A-8997	R39, R43	RESISTOR, FC, 2.7K OHM 10% 1/4 W	2
40	5B-9083	R44, R45	RESISTOR, FC, 470 OHM 10% 1/4 W	2
41	5A-8980	C1, THRU C2, C30, C33 THRU C37, C63 THRU C67	CAPACITOR, CERAMIC, .01 MFD. 50V.	30
42	5A-8986	C23	CAPACITOR, ELECT., 100 MFD. 10V.	1
43	5A-8996	C22, C24	CAPACITOR, CERAMIC, .1 MFD. 50V.	2
44	5A-9169	C25, C26	CAPACITOR, CERAMIC, 27 PFD. 1K V.	2
45	5A-9243	C27	CAPACITOR, TANT., 10 MFD. 10V.	1
46	5A-9031	C31	CAPACITOR, TANT., .1 MFD. 25V.	1
47	5A-9030	C32	CAPACITOR, CERAMIC, .047 MFD 50V.	1
48	5A-9065	C38 THRU C62	CAPACITOR, CERAMIC, 470 PFD. 50V.	25
49	5A-9019	LED1, LED2	LED, RED	2
50	5A-9024	SW1, SW2	SWITCH, SPDT MOMENTARY	2
51	5A-9021		BATTERY HOLDER # 171	1
52	5A-9026	1J1	HEADER 09-64-1083	5
53	5A-9028	1J3, 1J4	HEADER 09-65-1041	2
54	5A-9027	1J2, 1J5, 1J6, 1J7	HEADER 09-65-1091	4
55	5A-8985		40 PIN IC SOCKET	1
56	5A-9004		24 PIN IC SOCKET	7
57		J1 THRU J6	WIRE JUMPER 22 GAUGE WIRE WITH INSULATION	6
58		-TP1 THRU TP10	TERMINAL # 1502-1	10
59	5A-9250	IC1	MC6800 MICROPROCESSOR	1
60	5A-9367	IC14	GORGAR GAME ROM	1
61	5A-9015	IC21, IC22, IC26	PROM 512 X 8 7641/6341	3
62	5A-9022	B1, B2, B3	BATTERY, ALKALINE, 1.5 V.	3
63	3A-7520-1		TIE WRAP	1
64	5A-9266	D18	1N5817 DIODE	1
65	5A-9086	R95	RESISTOR, 6.8K OHM 10% 1/4 W	1

★ - WHEN USED, IC14 REPLACES IC21, IC22, AND IC26.

WILLIAMS ELECTRONICS, INC.				
SUBSIDIARY OF XCOR CORPORATION				
3401 N. CALIFORNIA CHICAGO, ILL. 60618 CORNELIA 7-2240				
PART NAME				
CPU BOARD ASSEMBLY				
DWN.	DATE	APP'D.	SCALE	PART NO.
R. Gay	1-11-79		2=1	D-8161