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02-30072A

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King & Balloon



KING & BALLOON

INSTALLATION

1. Visually inspect all connectors to insure none have become loose or broken in shipment.
2. Install 4 provided leg levelers to bottom of cabinet and level cabinet.
3. The power is controlled by a switch located on top of the cabinet plug into A.C. only 115 volt 60 cycle.

CAUTION

1. Do not install this game in places directly exposed to sunlight or excessive heat, to prevent rising internal temperatures.
2. High voltage runs the monitor. Therefore only persons familiar with safety measures should make any adjustments.
3. As with any solid state games the power should be turned off before replacing any parts or disconnecting any plugs.
4. Always take boards to distributor for repair, do not attempt to make any repairs with volt-ohmmeter or other test equipment as the internal voltage of such equipment may damage the circuitry.

TO REMOVE CONTROL PANEL FOR SERVICE

1. Open coin box door.
2. Unplug control panel jack located to the left of coin box opening.
3. Unlatch (2) clamps located on each side of cabinet.
4. Remove control panel for service.

GAME PLAY

- * One or two players can play.
- * Coinage & number of kings (gametime) operator adjustable (see change of option switch.
- * Attract mode.

The attract mode-informs new players about the game, to entice them to play and to enhance repeat-play.

The scoring values of the various balloons are displayed along with a King with the words G U A R D - M E .

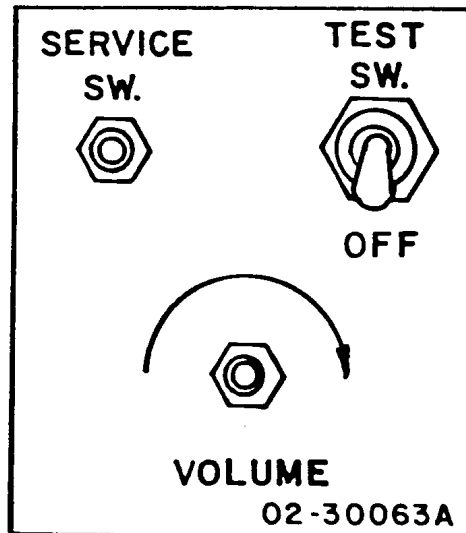
Next is a simulated game display showing the various colored balloons dropping their bombs while the defenders move to the left and right trying to evade being hit while shooting at the attacking balloons. When the king gets picked up by the balloon the word H E L P is displayed and when the king reaches the top of the screen the words B Y E - B Y E are displayed.

The entire attract mode then repeats itself.

HOW TO PLAY & SCORE

- * The player battles with attacking colored balloons, protecting his king while destroying as many balloons as he can.
- * The player can move the kings guard left and right with the 2 way lever.
- * The player can fire one missile at a time. He cannot fire again while his last missile is still on the screen.
- * The players missile stays visible on the screen until:
 1. It hits a balloon.
 2. It disappears off the top of the screen.
- * The attacking balloons descend in an irregular pattern while dropping bombs. The mission of the balloons is to drop below the defender and pick-up the king and carry the king off.
- * Each round is complete when all 42 balloons have been destroyed.
- * The number of remaining kings is displayed in the lower left hand of the screen.
- * The score for destroying an attacking balloon increases as the balloon, gets closer to the defender-and higher yet, if the balloon is carrying off the king.

	COLOR OF BALLOON				
	WHITE	YELLOW	ORANGE	RED	STRIPED
NUMBER AT START of EACH ROUND:	8	10	12	12	
FLOATING:	20	30	40	50	
DESCENDING:	40	60	80	100	?
CARRING KING AWAY:	60	90	120	150	



1. SERVICE BUTTON

For purposes of repair or adjustment the game can be test-played without advancing the coin counter by use of this button.

2. SELF-TEST

A self-test function is installed in this game. Preferably, the tests should be performed on a regular basis.

3. AUTOMATIC SELF-TEST

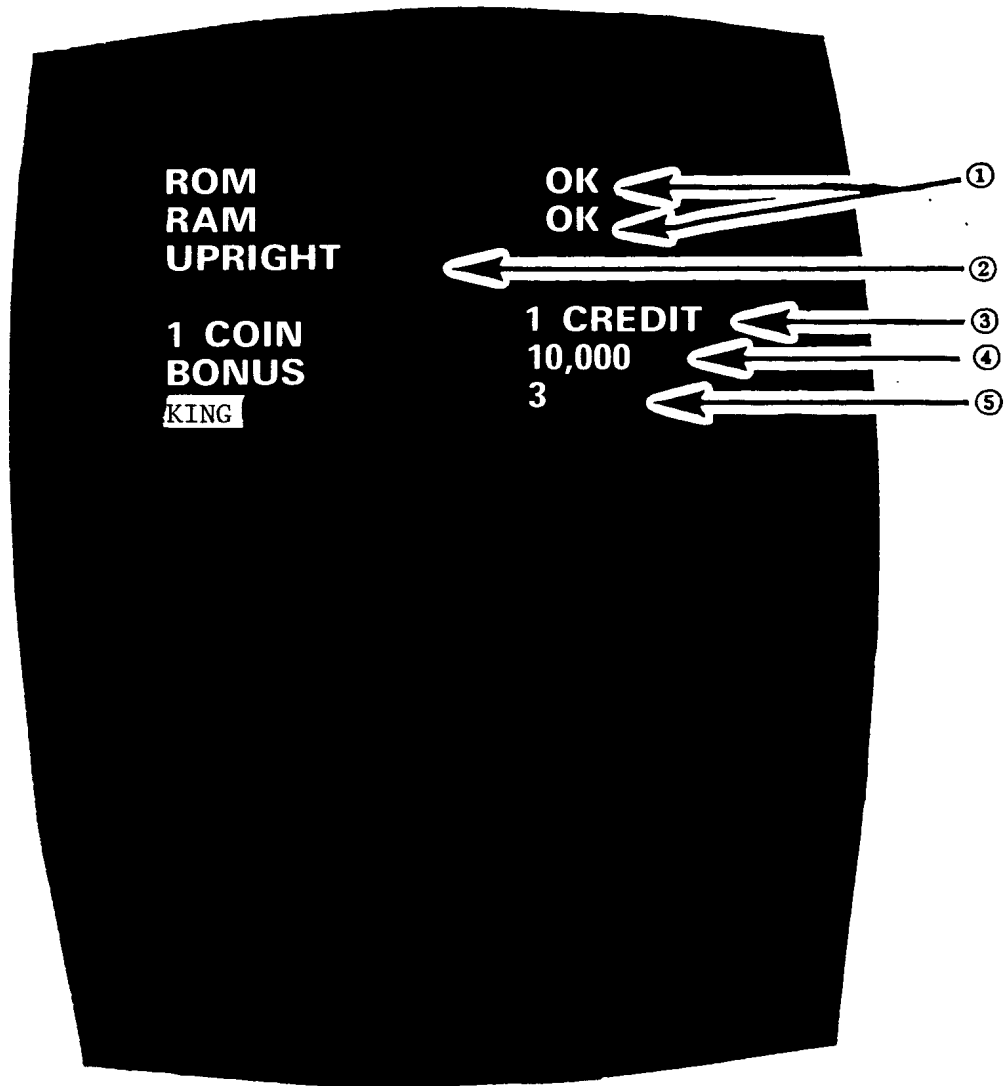
A test of the PCB is automatically performed every time the game's power supply is turned on. If there are no irregularities, the game goes immediately into the attract mode, but otherwise, the test repeats itself and the words "BAD ROM" or "BAD RAM" appear on the screen. As explained below, further tests should be performed for volume and on the assorted switches, etc.

* Contact your dealer if the self-test shows any defects.

2. FURTHER TESTS BY SELF-TEST SWITCH

The test switch is a toggle switch located behind the front door. Self-test series begins automatically when switch is pushed to "ON".

A. Numbers of letters will flash on the screen for approximately 3 seconds during the test mode. During this period the PCB test is being performed. if the PCB is good the following information will be displayed on the screen.



Test Mode DISPLAY

- ① Ram/Rom Test
If the Rams and Roms are good, "OK" will be displayed on the screen, but if any of the Rams or Roms are faulty, a number indicating the faulty, a number indicating the faulty Rams or Rom will be displayed.
- ② UPRIGHT-type
- ③ Game Fee Setting
In the above, 1 coin per 1 play.
- ④ Bonus Adjustment
- ⑤ Number of Kings per Game

NOTE: The above ③, ④, and ⑤ are operator-adjustable.

B. SWITCH TEST

The(2) Two position control, start buttons (1 player, 2 player), and fire bottom can be checked at this stage. Each switch, if normal, should produce a game sound when pressed or moved.

Return the self-test switch to the OFF POSITION.

C. VOLUME ADJUSTMENT (see p. 10)

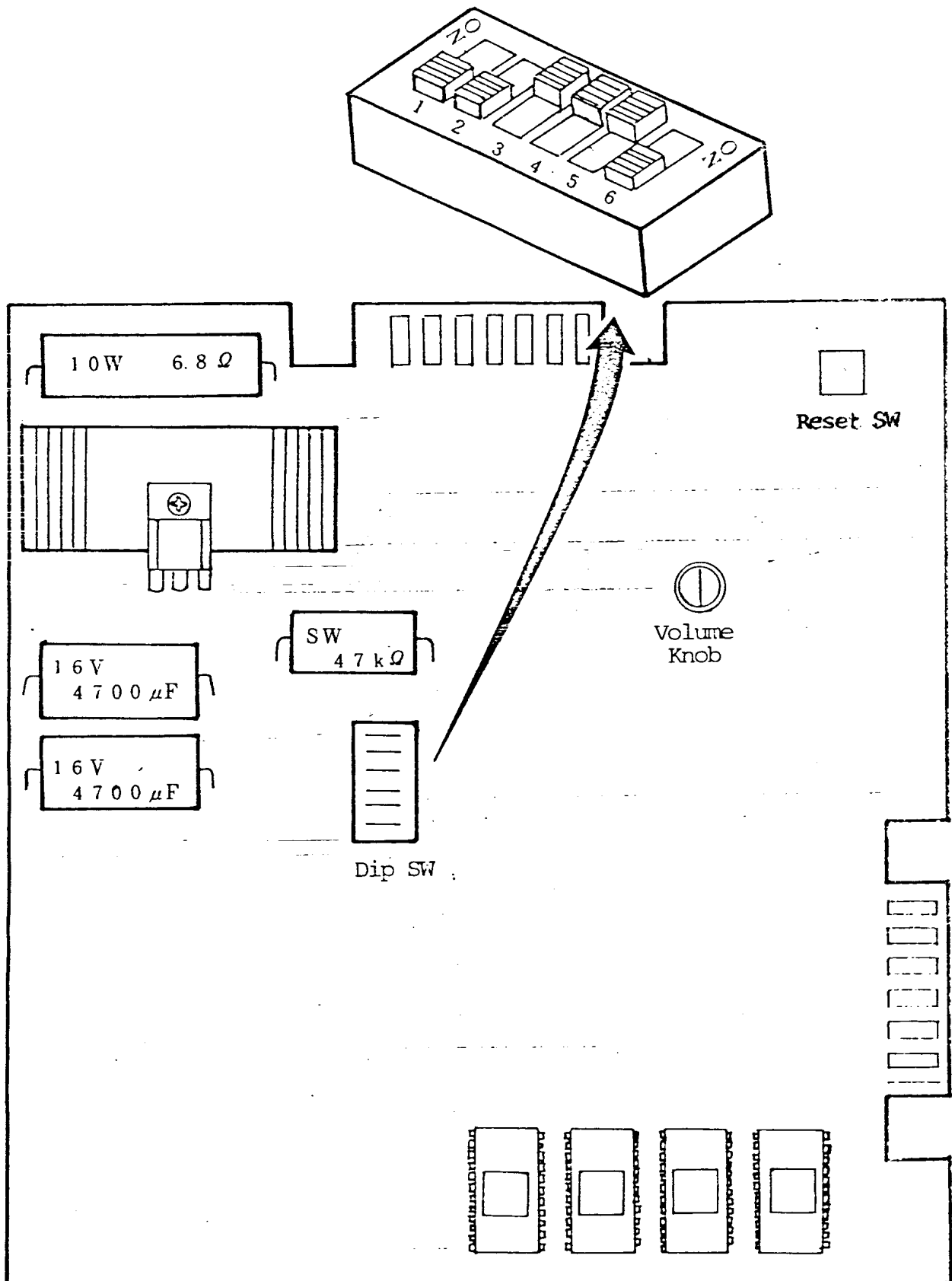
Volume can be adjusted by either one of two knobs-- one on the PCB and one behind the selector door.

D. OPTION SWITCH

The option switch is mounted on the PCB. The number of Kings per game, the game fee, and the bonus points can be changed with this switch. This switch should not be used while the game is connected to its power source. After changing options, the test described in 3(2) above should be performed and the changes confirmed. There is also a game-reset switch on the PCB.

OPTION	POSITION OF SWITCHES					
	1	2	3	4	5	6
GAME FEE 1 coin/1 play 1 coin/2 play 2 coin/1 play FREE GAME	ON	OFF				NOT USED
	OFF	ON				
	ON	ON				
	OFF	OFF				
BONUS POINTS zero 10,000 12,000 15,000			ON	ON		
			OFF	OFF		
			ON	OFF		
			OFF	ON		
# of Kings GAME 2 3					OFF	
					ON	
Situation at Delivery	ON	OFF	OFF	OFF	ON	OFF

PCB Board



(1) Power Supply

Use only on 110V AC (50/60 Hz) outlet.

Transformer A supplies 117V AC to TV monitor.

Transformer B supplies 7V AC CT to logic power and 12V AC CT to audio power.

CAUTION: Power supplied to machine must be within 95V - 110V AC.

If other large electrical machines or appliances use the same AC outlet, game may be affected or caused to malfunction.

(2) Game PCB

There are many ICs, semi-conductors, resistors and capacitors on the Game PCB. Also included is the picture forming circuitry, signal receiving circuitry (signal input) from all switches, lamp and solenoid driver, sound circuit, and control circuit for all circuitry listed above. Also included is the power supply circuit. This game is using a color monitor so the Game PCB sends three kinds of video signal (red, green & blue) and composite sync signal to the monitor.

(3) Monitor

Monitor displays picture on CRT of color video signal and composite sync signal from Game PCB. Monitor makes horizontal and vertical scanning signals from composite sync signal and supplies the power to the horizontal and vertical scanning coils and scans the electric beam. The electric beam shot from CRT electric gun is controlled by color video signal and creates picture on CRT. CRT has de-magnetizing coil for stabilizing the video colors (red, green & blue) on CRT.

CAUTION: There are many detailed electronic parts on the Game PCB and monitor. Take the following precautions when handling:

(Game PCB)

1. Power must be turned off before changing position of DIP switch and disconnecting edge connector.
2. Power must be turned off before using metal screw driver or other metal implements to adjust volume and/or re-set switch.

(Game & Monitor PCB)

1. When shipping PCBs, pack carefully in thick card-board boxes, using styrofoam or plastic air bags within to insure minimum PCB damage.
2. If the machine is not cleaned regularly (at least once a year), the accumulated dust will cause high voltage leaks. To clean, use a soft brush or spray lightly with air.
3. Never put game where it is exposed to very high or very cold temperatures or high levels of moisture/humidity. For example, do not place game under direct sunshine, beside heaters or outdoors.
4. When electrical check of PCB is made, it should be done by an experienced electrician. Take special care when checking monitor with volt-ohmmeter, as monitor contains many high voltage parts.

B. Voltage Check

1. Measurement of AC voltage

Set switch to AC range. Attach one volt-ohmmeter lead to transformer CT and attach other volt-ohmmeter lead to the place you wish to measure. The voltage at the end of the harness must be the same as that of the transformer.

2. Measurement of DC voltage

Set switch to DC range. Attach black lead from volt-ohmmeter to the ground (earth) and attach red lead from volt-ohmmeter to the place you wish to measure. The voltage must be the same on both ends of the harness.

(2) Testing Techniques

1. How to test control panel & coin mechanism

Self-test switch enables you to test all switches, speaker, coin counter, lock-out coil and start lamps. If there should be any problems, test further as follows:

(A) Switch Check

The (2) two-position control, start buttons (1 player, 2 player), and fire bottom can be checked at this stage. Each switch, if normal, should produce a game sound when pressed or moved.

Measure the VOM's resistance range (X10, X100) referring to the wiring diagram schematic.

If the self-test switch is mal-functioning, the problem will probably be found in the self-test switch, lamp, wiring, PCB or speaker.

Measure the VOM's resistance range between the contact pin which is connected to each switch and to the ground.

In switch 'ON' position resistance is about 0Ω .
In switch 'OFF' position resistance is about $\infty\Omega$.

Unless the above resistance rate is indicated, either the wiring or the switch is probably mal-functioning.

TROUBLE-SHOOTING

Q: Check the following points before trouble-shooting or before contacting the distributor;

This video game consists of a monitor assembly, a game PCB assembly, control panel assembly and a power supply assembly. Each part is connected by wiring.

The game will not function normally when there is a malfunctioning part. Therefore check the game thoroughly before contacting the distributor if there is anything wrong. At that time, you may find that the machine is not set-up as per instructions, and you may be able to repair the malfunction yourself.

First of all, in the case of a malfunctioning machine, check each component when trying to locate the problem. Check all related electrical components unless you are sure that the problem is one particular part.

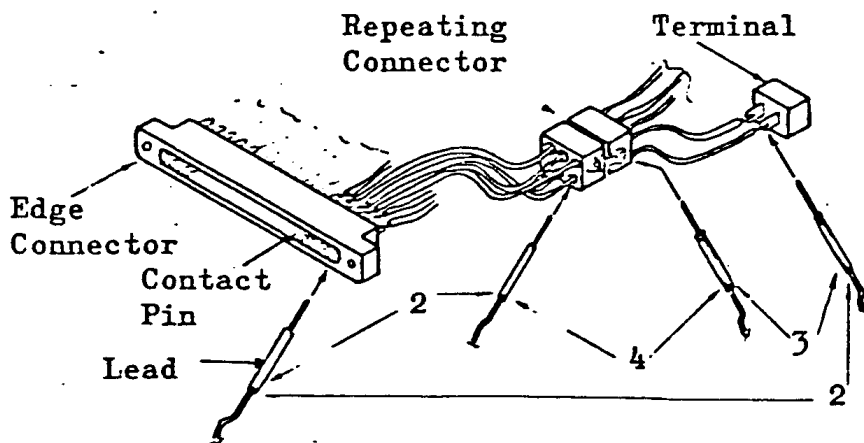
(1) VOM or volt-ohmmeter

Check the edge connector number, the repeating connector number and the wiring color, referring to the wiring diagram or schematic. The volt-ohmmeter can be used to check line voltage, transformer secondary windings, continuity, resistance and power supply voltage.

A. Wiring Check

Each electric component and edge connector on the PCB is connected by wiring and repeating connectors.

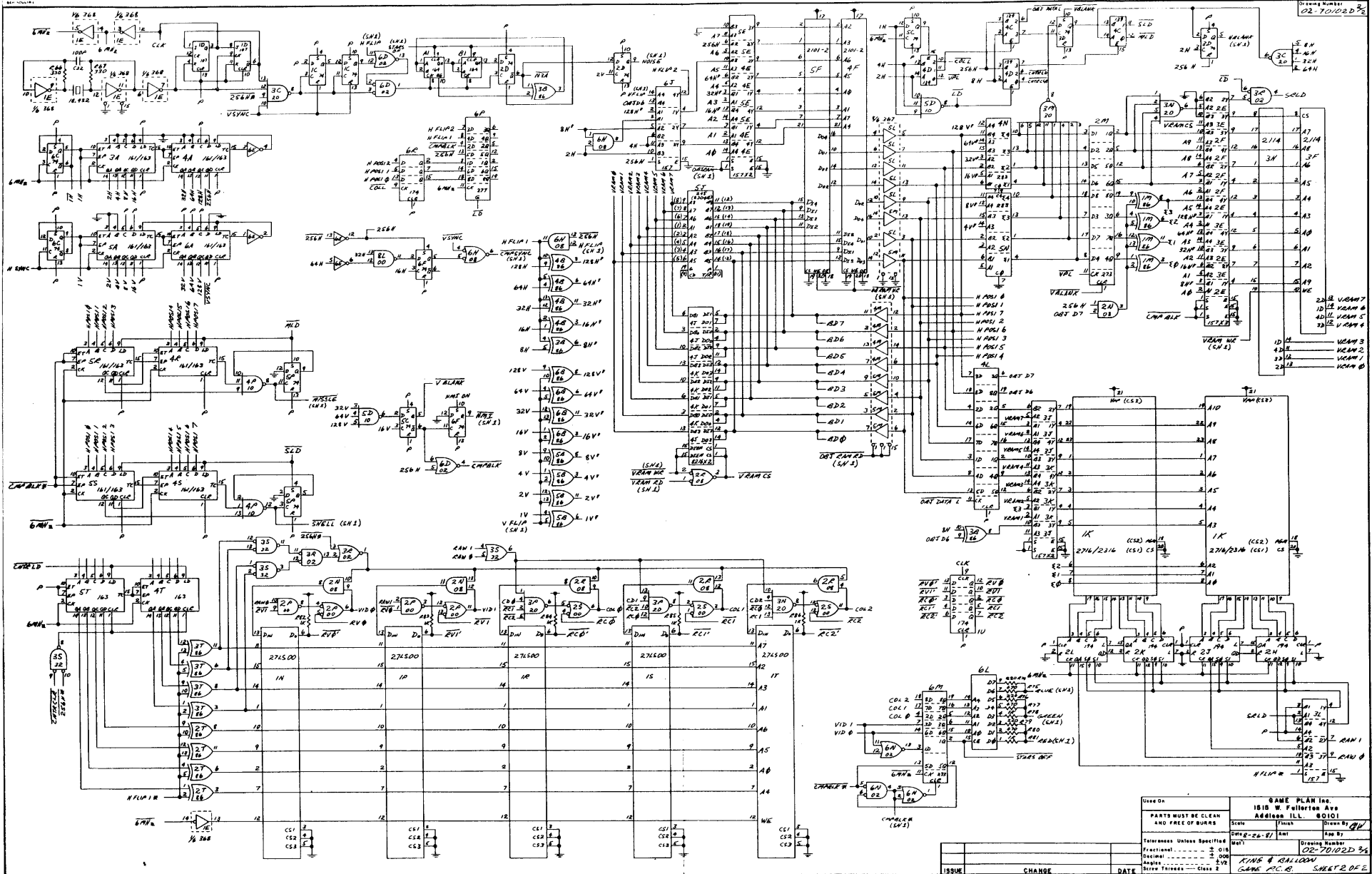
1. VOM (volt-ohmmeter) should be used. (resistance range of X10, X100)
2. Measure the resistance range between the edge connector and terminal. (Range should be 0Ω)
3. Measure the resistance range between the edge connector and the repeating connector; also between the repeating connector and the terminal.
4. If the wiring is normal, the contact of the repeating connector is probably defective.



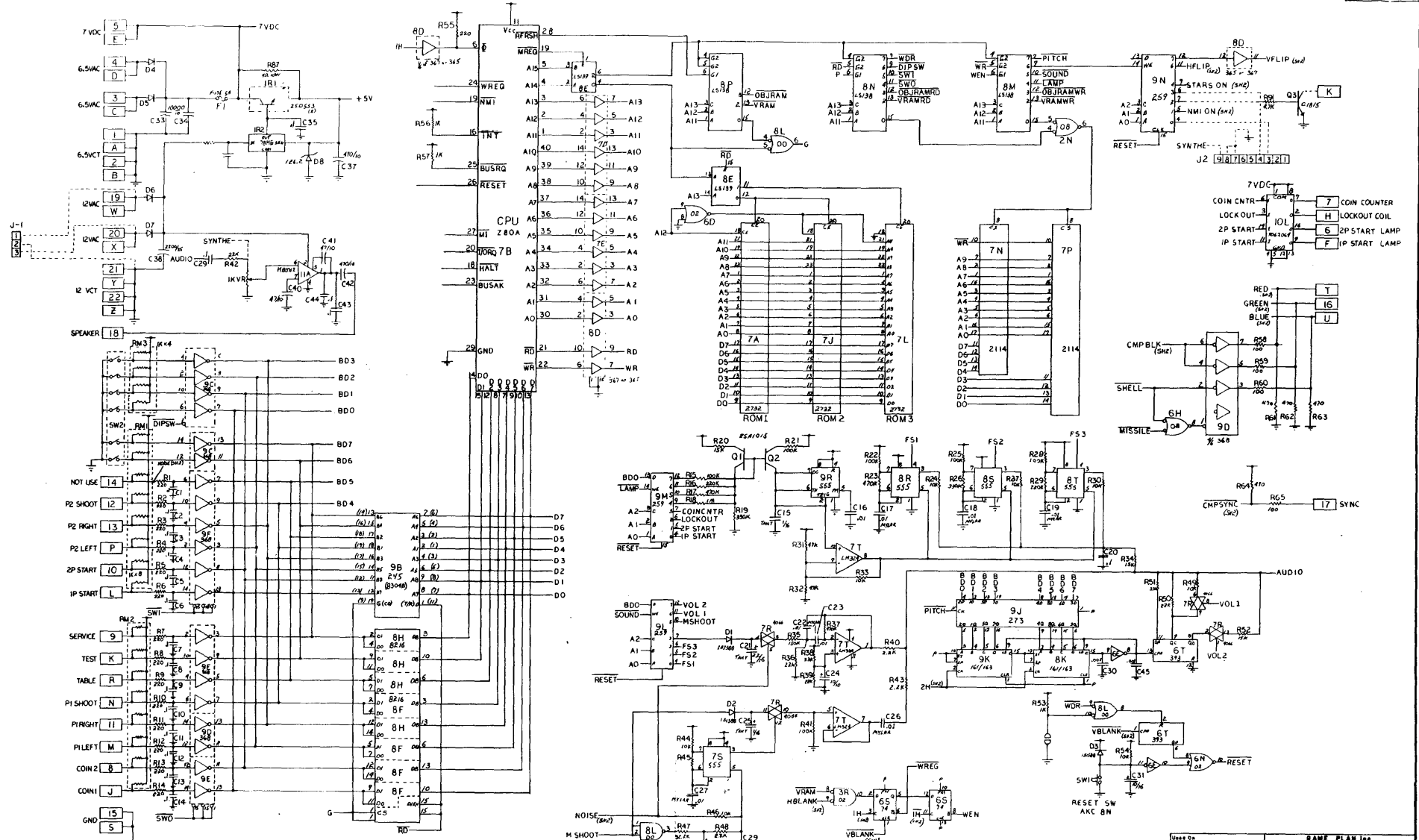
Game PCB check

	How to check	Description	Condition
Remove connector J8 from Game PCB	<p>Connector J8 terminal #:</p> <p>A(1) - C(3) A(1) - D(4)</p> <p>Measure both terminals (7V AC)</p>	<p>If 6.0V - 7.0V AC is not indicated, check F2, F3 & harness.</p> <p>If okay, check below</p>	<p>—normal play impossible</p> <p>—no picture</p>
	<p>Connector J8 terminal #:</p> <p>Z(22) - X(20) Z(22) - W(19)</p> <p>Measure both terminals (12V AC)</p>	<p>If 11V - 13V AC is not indicated, check transformer.</p> <p>If okay, check below</p>	<p>—normal game impossible</p> <p>—no sound</p> <p>—abnormal sounds</p>
Connect connector J8 to Game PCB	<p>Connector J8 terminal #:</p> <p>A(1) - C(3) A(1) - D(4)</p> <p>Measure both terminals (6.5V DC)</p>	<p>If 6.5V - 7.5V DC is not indicated, check PCB.</p> <p>If okay, check below</p>	<p>—no picture</p> <p>—no sound</p> <p>—abnormal sound</p>
	<p>Connector J8 terminal #:</p> <p>Z(22) - X(20) Z(22) - W(19)</p> <p>Measure both terminals (12V AC)</p>	<p>If 11V - 13V AC is not indicated, check PCB.</p> <p>If okay, check below</p>	<p>—normal game impossible</p> <p>—no sound</p> <p>—abnormal sounds</p>
	<p>Secondary fuse(s) (F2, F3, F4, F5) are broken</p>	<p>Check to see if something is touching PCB and causing a chort.</p> <p>Check PCB</p> <p>If okay, check below</p>	<p>—no picture</p>
	<p>Capacitor C37 (470 uF)</p> <p>Measure voltage of both leads (+5V DC)</p>	<p>If +4.8V - 5.2V DC is not indicated, check PCB.</p> <p>If okay, check below</p>	<p>—no picture</p> <p>—normal game impossible</p>

If PCB is found to be mal-functioning, BAD ROM or BAD RAM will appear on the screen.

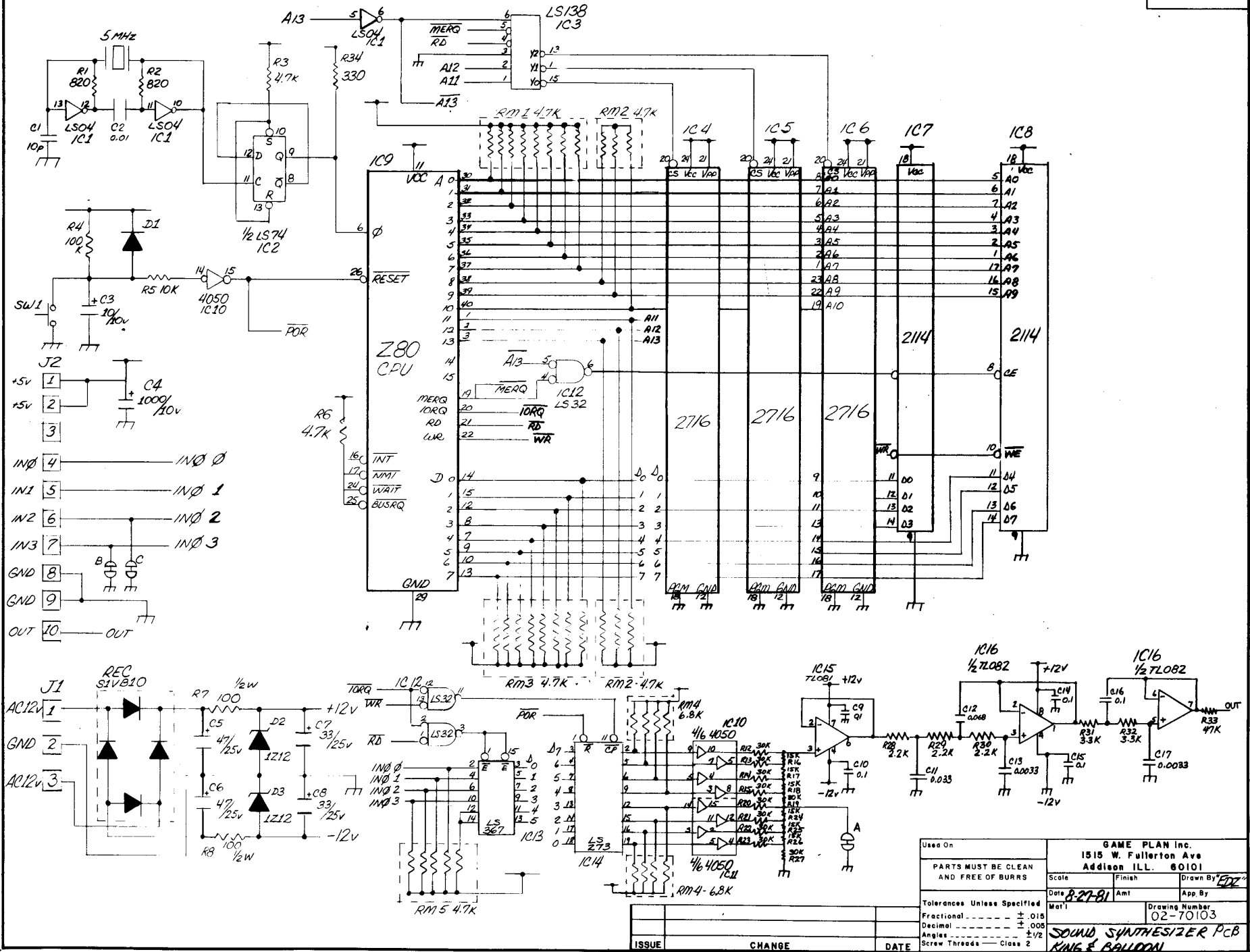


<p>Use on</p> <p>PARTS MUST BE CLEAN AND FREE OF BURRS</p> <p>Tolerances Unless Specified</p> <p>Fractional: ± 018</p> <p>Decimal: ± 010</p> <p>Whole: ± 010</p> <p>Three Threads: Class 2</p>	<p>1818 W. Fullerton Ave Addison, ILL. 60101</p> <p>State: _____ Plant: _____</p> <p>Drawn By: <i>AW</i></p> <p>Checked: _____</p> <p>Approved: _____</p> <p>DATE: _____</p>
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Use on	GAME PLAN Inc.		
PARTS MUST BE CLEAN AND FREE OF BURRS	1818 W. Fullerton Ave Arlington, ILL. 60101		
Tolerance unless specified	Scale	Sheet	Drawn By
Fractional ± 0.01	Date 2/20/72	AM	App By
Decimal ± 0.001	Part	Rev	Drawing Number
Whole ± 0.001	Rev	Class	02-70102 D
Basic Thread - Class 2	Rev	Class	KING & BALDWIN
			R.C.B. SCHAFFALIC
			1/17/72

ISSUE	CHANGE	DATE



Used On	GAME PLAN Inc. 1515 W. Fullerton Ave Addison ILL. 60101		
PARTS MUST BE CLEAN AND FREE OF BURRS	Scale	Finish	Drawn By <i>EDZ</i>
Tolerances Unless Specified	Date <i>8-27-81</i>	Am't	App. By
Fractional	Drawing Number 02-70103		
Decimal	SOUND SYNTHESIZER PCB		
Angles	KING & BALDWIN		
Screen Threads	Class 2		

ISSUE	CHANGE	DATE

