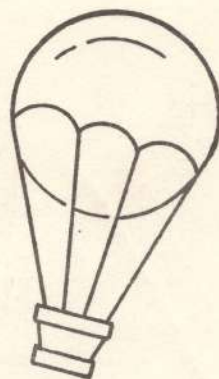


ROCK-OLA



SERVICE MANUAL

AND

PARTS

CATALOG



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INTRODUCTION

HOW TO OPERATE FANTASY

Fantasy is an exciting pursuit game which consists of eight scenes. In the first scene, the girl 'Cheri' is kidnapped by pirates. The boy 'Tom' chases the pirates to their ship using a balloon. Tom must land on a clear spot on the ship without being shot by a cannon.

In scene II, 'Tom' is armed with a sword and must kill the pirates with it or lure them to their death by cannon shots while himself avoiding both the pirates knives and the cannon shots. This scene ends when all pirates are dead and 'Tom' enters the room where 'Cheri' is being held. A bird then takes 'Cheri'.

In scene III 'Tom' is again in his balloon. He must avoid the birds flying at him and go 3000 Km. He must also avoid coconuts being thrown by a gorilla. At 3000 Km 'Tom' appears in Scene IV.

In scene IV 'Tom' must climb alternating ladders to the bird nest where 'Cheri' is being held. A baboon drops coconuts and 'Tom' must avoid them. A small fox appears sporadically and can kill him. The bird can also drop coconuts on 'Tom'. When 'Tom' is successful on reaching the bird nest then a Native takes 'Cheri'.

In scene V 'Tom' must avoid a Tiger and Natives dropping from trees. 'Tom' must travel 2000 Km to the Native village.

In scene VI 'Tom' is armed with a sword and must kill the Native warriors. When 'Tom' kills the Natives and reaches 'Cheri', she is taken away by a helicopter.

In scene VII 'Tom' must fly 3000 Km in his balloon and avoid the helicopters. At 3000 Km, 'Tom' arrives at London Bridge and must lure the helicopters into the fire of a cannon on the bridge without being killed. After all helicopters are destroyed, an opening appears on the upper level of the bridge. 'Tom' lands on the lower level of the bridge and rescues 'Cheri'.

'Tom' and 'Cheri' ride off together in the balloon. The game then goes to Round 2 and begins again at scene I. Round 2 is faster and more difficult than Round 1.

RECEIVING AND INSTALLATION (VIDEO GAMES)

RECEIVING INSPECTION

Your game was shipped in ready-to-play condition. However, after removal of the shipping carton, a brief visual examination is suggested.

Naturally, you'll want to make note of any physical damage to the game cabinet and its external components for freight claim purposes. Considering the quality of the shipping carton, any damage to the exterior would indicate possible interior damage as well.

The interior of the game should also undergo a brief examination for: loose mounting hardware (check to be sure that the major components are still securely mounted); disconnected or loose wires, cables or harnesses; electronic devices loose in their sockets; etc.

At this time the game serial number should be logged. Please remember that the game serial number will be required if you need service from your distributor.

ELECTRICAL REQUIREMENTS

A good earth ground is essential for the proper operation of this game or for that matter any electronic device. Problems with instability and erratic operation of computer-type devices can usually be traced to an ineffective ground system. Therefore, plug the game into a properly wired 3 prong outlet. If a 3 prong to 2 prong AC adaptor must be used, an alternate method of grounding the third prong must be used.

INITIAL ADJUSTMENTS

When the game is connected to AC power, one of the game sounds may be heard. This is normal.

The audio level (volume) can be easily adjusted. This is achieved by rotation of the volume control located on the coin door. The audio level should compete with other machines "on the floor" to maximize play time.

OPERATOR OPTIONS

The option switches allow you to select how many credits per coin, how many chances to play per game & bonus scoring. If your machine DOES NOT have multiple pricing capability, refer to page 2-2. If it DOES have multiple pricing capability, skip 2-2 and refer to page 2-3.

CREDIT BUTTON. When you push this button you can increase credits without affecting the counter. It's the red button on the coin door.

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. As temporarily permitted by regulation it has not been tested for compliance pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. 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.

FANTASY OPTION SWITCHES

(LOCATED ON GAME BOARD BETWEEN PLUGS)

CHANGE OF DIP SWITCH								
DESCRIPTION	5P. DIP, SW. POSITION (DS1)							
MAN	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
3					OFF	OFF		
4					ON	OFF		
5					OFF	ON		
COIN NO 1								
1 coin / 1 play							OFF	
2 coins / 1 play							ON	
COIN NO 2								
1 coin / 1 play		OFF	OFF	OFF				
1 coin / 2 play		OFF	OFF	ON				
1 coin / 3 play		OFF	ON	OFF				
1 coin / 6 play		OFF	ON	ON				
2 coins / 1 play		ON	OFF	OFF				
COCKTAIL TABLE	OFF							
UPRIGHT	ON							
EXTENDED PLAY-OFF								ON
	6P. DIP, SW. POSITION (DS2)							
LANGUAGE	SW1	SW2	SW3	SW4	SW5	SW6		
JAPANESE	ON							
ENGLISH		ON						
GERMAN			ON					

Note: Turn off power to game before changing switch positions.
New switch positions become effective on power up.

FANTASY OPTION SWITCHES

(MULTI-PRICE OPTIONS)

LOW DENOMINATION - LEFT REJECTOR

SET GAME BOARD SWITCHES

COLUMN 1 2 3

COINS	2 - (SW 2 ON)	1 - (SW 2 OFF)	1 - (SW 2 OFF)
PLAYS	1 - (SW 3 OFF)	2 - (SW 3 OFF)	1 - (SW 3 OFF)
	(SW 4 OFF)	(SW 4 ON)	(SW 4 OFF)

HIGH DENOMINATION - RIGHT REJECTOR

SET MULTI-PRICE BOARD SWITCHES

COINS	PLAYS	1	2	3	4	1	2	3	4	1	2	3	4
1	2	ON	ON	OFF	ON				ON	ON	OFF	ON	ON
1	3	ON	OFF	OFF	ON				OFF	OFF	OFF	ON	ON
1	4	ON	ON	ON	OFF	ON	OFF	ON	ON	ON	ON	OFF	ON
1	5	ON	OFF	ON	OFF				OFF	OFF	ON	OFF	ON
1	6	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	ON
1	7	ON	OFF	OFF	OFF				OFF	OFF	OFF	OFF	ON
1	8					ON	ON	OFF	ON	ON	ON	ON	OFF
1	9									OFF	ON	ON	OFF
1	10					OFF	ON	OFF	ON	OFF	ON	ON	OFF

NOTE: 1ST coin gives some credit

For Example:

5 plays for 2 coins gives

2 plays for 1st coin

3 plays for 2nd coin

CIRCUIT DESCRIPTION OF MULTI-PRICING BOARD

The purpose of the multi-pricing board is to establish a pricing scheme for the left rejector that is dependent on but different from that of the right rejector.

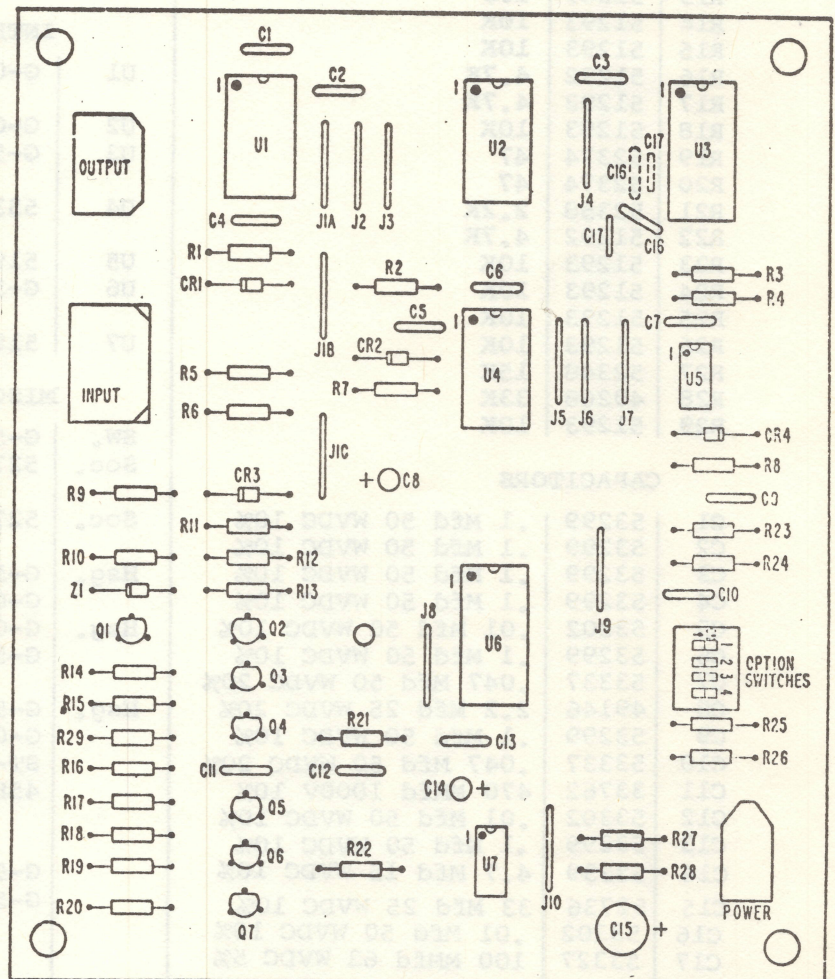
In the case of the right rejector, a coin deposited in the rejector will cause a pulse to be transmitted to the C.P.U. (via the distribution P.C. board) where it is processed as a single coin. Coins deposited in the left rejector are handled by the multi-pricing board to produce more than one pulse per coin — the exact number depending on the setting of the multi-pricing switch. When a coin is deposited in the left rejector, U1-5 will go low and be latched to U1 pin 6 as a high until the coin passes the contacts causing U1-6 to go low again. This positive pulse just created, will be integrated and shaped as it arrives at U3-5 as a negative

pulse. U3 counts "up" on the positive-going edge and stores the number of coins deposited. As long as any coin remains upprocessed a high will be seen at U1-13 and if U1-12 is also high, a low will be seen at U1-11. This low gets inverted by U4 and applied as a high to the preset enable of counter U6. U6 had been held in the preset mode until this point but is now ready to count down from the value set in by the DIP switch.

The pulses to count down U6 come from oscillator U7 which is enabled shortly after U6-11 goes high. To make sure that U6 doesn't count down until the pre load has gone high, a time delay is introduced by R21, C12, and U2. U7 will oscillate sending pulses to U6 causing its output to count down. These pulses are also the same pulses sent to the CPU board as "coins."

When U6 counts down to zero, a borrow is sent to one-shot U5. U5 will produce a positive pulse at pin 3. U4 will invert this signal and apply it to U3-4 subtracting one coin from the accumulated count. The one-shot will also cause U1-12 to go low for the duration of the pulse. U1-12 going low pre-loads the counter to the DIP switch value again. If another coin is awaiting processing, we will go again; if not U3 outputs 2, 3, 6, 7 will be low keeping oscillator U7 from running and keeping U6-11 low.

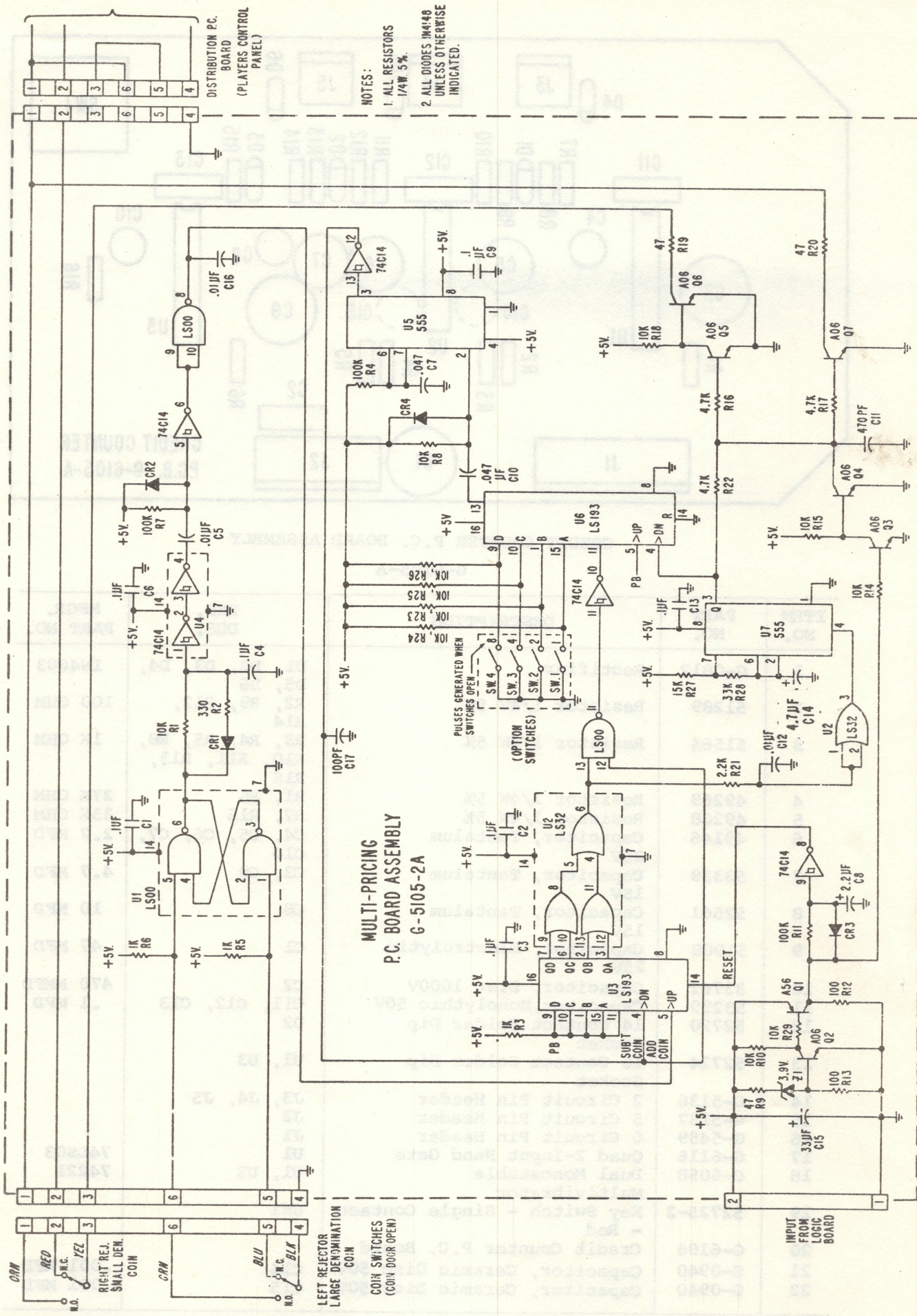
The power on reset signal appears on U3-14. Its purpose is to hold U3 reset until the 5 volts has come up and stabilized, preventing U3 from coming up in any configuration other than all lows on its output. This circuit also prevents erroneous pulses to be sent to the C.P.U. board by holding the collector of Q3 low until Q1 turns off.

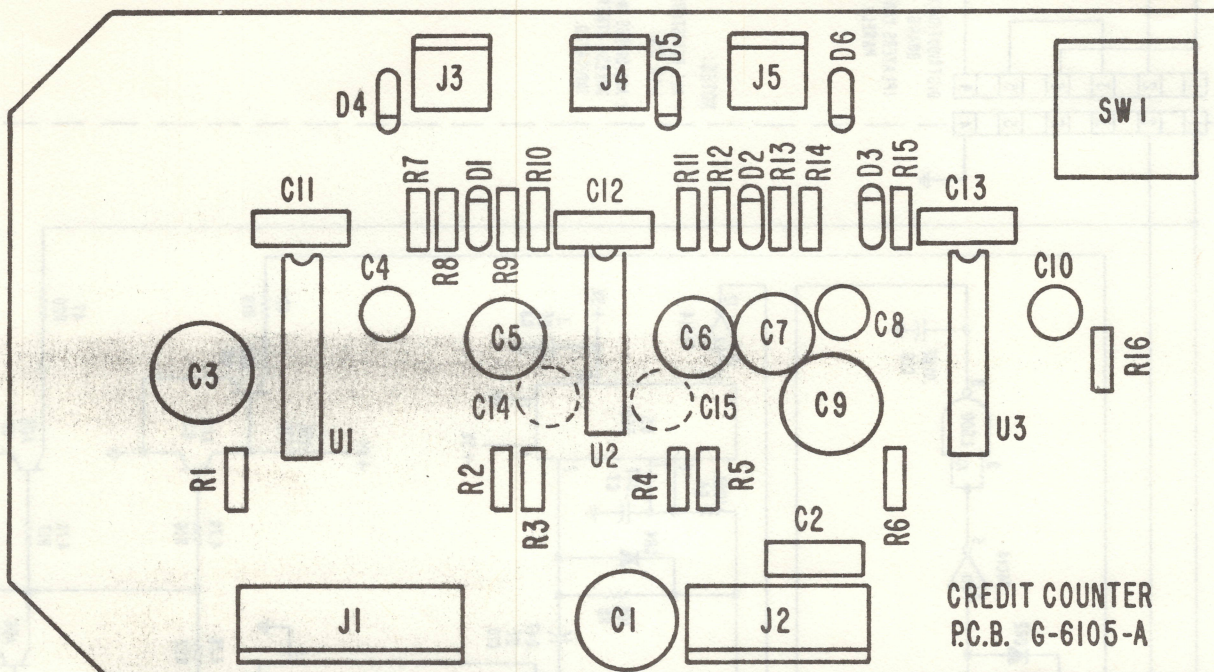


MULTI-PRICING P.C. BOARD ASSEMBLY G-5105-1A
(C16 & C17 IN DASHED LINES ARE FOR G-5105-2A)

**MULTI-PRICING
P.C. BOARD ASSEMBLY
G-5105-2A**

Item	Part No.	Description	Item	Part No.	Description
RESISTORS			DIODES		
Note: All Resistors 1/4 Watt 5%					
R1	51293	10K	CR1	51498	IN4148
R2	52344	330	CR2	51498	IN4148
R3	51564	1K	CR3	51498	IN4148
R4	50966	100K	CR4	51498	IN4148
R5	51564	1K	Z1	G-5106	Zener 3.9V 400MW IN478A
R6	51564	1K	TRANSISTORS		
R7	50966	100K	Q1	47831	MPS-A56 (PNP)
R8	51293	10K	Q2	49415	MPS-A06 (NPN)
R9	52374	47	thru		
R10	51293	10K	Q7		
R11	50966	100K	INTEGRATED CIRCUITS		
R12	51289	100	U1	G-0677	IC Quad NAND Gate 74LS00
R13	51289	100	U2	G-0683	IC Quad OR Gate 74LS32
R14	51293	10K	U3	G-5107	4 Bit Binary Counter 74LS193
R15	51293	10K	U4	53338	IC Hex Schmitt Trigger 74C14
R16	51292	4.7K	U5	51991	IC Timer LM555
R17	51292	4.7K	U6	G-5107	4 Bit Binary Counter 74LS193
R18	51293	10K	U7	51991	IC Timer LM555
R19	52374	47	MISCELLANEOUS		
R20	52374	47	SW.	G-5108	4 Station Dip Switch
R21	52358	2.2K	Soc.	52720	14 Contact Solder Dip Socket
R22	51292	4.7K	Soc.	52724	16 Contact Solder Dip Socket
R23	51293	10K	Hsg.	G-5117	2 Circ. Plug Housing
R24	51293	10K		G-0614	.093 Pin
R25	51293	10K	Hsg.	G-0657	6 Circ. Receptacle Hsg
R26	51293	10K		G-5110	.093 Socket Solder Tail
R27	52348	15K	Hsg.	G-5109	6 Circ. Plug Hsg.
R28	49268	33K		G-0613	.093 Pin Solder Tail
R29	51293	10K		ST-10759	Standoff - P.C.B.
CAPACITORS				45816	Rubber Cushion (1/4 X 3/8 X 3 3/4 Lg)
C1	53299	.1 Mfd 50 WVDC 10%		G-5095	P.C. Board for G-5105-A
C2	53299	.1 Mfd 50 WVDC 10%		G-5095-1	P.C. Board for G-5105-1A
C3	53299	.1 Mfd 50 WVDC 10%			
C4	53299	.1 Mfd 50 WVDC 10%			
C5	53302	.01 Mfd 50 WVDC 10%			
C6	53299	.1 Mfd 50 WVDC 10%			
C7	53337	.047 Mfd 50 WVDC 20%			
C8	49146	2.2 Mfd 25 WVDC 20%			
C9	53299	.1 Mfd 50 WVDC 10%			
C10	53337	.047 Mfd 50 WVDC 20%			
C11	33762	470 MMfd 1000V 10%			
C12	53302	.01 Mfd 50 WVDC 10%			
C13	53299	.1 Mfd 50 WVDC 10%			
C14	53339	4.7 Mfd 15 WVDC 10%			
C15	52736	33 Mfd 25 WVDC 10%			
C16	53302	.01 Mfd 50 WVDC 10%			
C17	53327	100 MMfd 63 WVDC 5%			





CREDIT COUNTER P.C. BOARD ASSEMBLY
G-6105-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-0812	Rectifier	D1, D2, D3, D4, D5, D6	IN4003
2	51289	Resistor 1/4W 5%	R2, R9, R12, R14	100 OHM
3	51564	Resistor 1/4W 5%	R3, R4, R5, R8, R10, R11, R13, R15	1K OHM
4	49269	Resistor 1/4W 5%	R1, R6	27K OHM
5	49268	Resistor 1/4W 5%	R7, R16	33K OHM
6	49146	Capacitor, Tantalum 25V	C4, C5, C6, C7, C10	2.2 MFD
7	53339	Capacitor, Tantalum 15V	C3, C9	4.7 MFD
8	52561	Capacitor, Tantalum 15V	C8	10 MFD
9	51988	Capacitor, Electrolytic 25V	C1	47 MFD
10	33762	Capacitor, Disc 1000V	C2	470 MMFD
11	53299	Capacitor, Monolithic 50V	C11, C12, C13	.1 MFD
12	52720	14 Contact Solder Dip Socket	U2	
13	52724	16 Contact Solder Dip Socket	U1, U3	
14	G-5136	2 Circuit Pin Header	J3, J4, J5	
15	G-5137	5 Circuit Pin Header	J2	
16	G-5459	6 Circuit Pin Header	J1	
17	G-6116	Quad 2-Input Nand Gate	U1	74LS03
18	G-6058	Dual Monostable Multivibrator	U1, U3	74221
19	52725-2	Key Switch - Single Contact - Red	SW1	
20	G-6106	Credit Counter P.C. Board		
21	G-0940	Capacitor, Ceramic Disc 50V	C14	.001 MFD
22	G-0940	Capacitor, Ceramic Disc 50V	C15	.001 MFD

GENERAL INFORMATION AND PERIODIC MAINTENANCE

Your video game contains the same basic building blocks as any other video game.

THE POWER SUPPLY provides all the necessary voltages for the CPU, audio section, monitor and fluorescent light. Always unplug the game before replacing a fuse.

THE CENTRAL PROCESSING UNIT (CPU) is the "brain" of the game. It senses when a coin is dropped in the coin meter, and gives credit. It then reads what is happening at the operator controls, interprets and computes to make the game play according to what buttons the player pushes. It tells the monitor what to draw on the screen. And it tells the audio section when to make appropriate sound effects.

THE AUDIO SECTION generates all the sound effects for the game and powers the loudspeaker.

THE COLOR MONITOR is the picture tube. It draws pictures on the tube screen according to the instructions it receives from the CPU.

THE MAIN WIRING HARNESS carries power from the power supply to the CPU, audio section and monitor. It connects to each section through the Molex plugs. NEVER CONNECT OR DISCONNECT THE MOLEX POWER PLUGS UNLESS THE GAME IS UNPLUGGED.

PERIODIC MAINTENANCE - The only Periodic Maintenance required is an occasional cleaning. The very high voltage used on the picture tube attracts dust that gradually degrades picture quality. To clean: unplug game and let sit for at least 5 minutes to let voltages "bleed-off".

To clean the face of the picture tube and associated plastic parts, remove the control panel by loosening clamps on each side of panel on inside of cabinet. These clamps are accessible thru coin door. Remove the plexiglas window being careful not to scratch clear or painted areas. Window, gray filter and picture tube may now be cleaned with a mild solution of dish detergent. Dry all parts and reassemble.

REPLACEMENT PARTS LIST FOR WELLS-GARDNER COLOR MONITOR

These are Wells-Gardner parts with Wells-Gardner part numbers. Please order these parts from them.

2701 N. Kildare Ave., Chicago, IL. 60639

⚠ ★ SAFETY CRITICAL PARTS LIST

This receiver contains circuits and components included specifically for safety purposes. For continued protection no changes should be made to the original design and components shown in shaded areas of schematic, or ⚠ ★ on parts list should be replaced with exact factory replacement parts. The use of substitute parts may create a shock, fire, x-radiation or other hazard. Service should be performed by qualified personnel only.

MAIN BOARD (MQ-29)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
----------	----------	-------------	----------	----------	-------------

RESISTORS

R605	203X9014-584	1k Ohm, ± 5%, 1W M.O.
R606	204X1425-021	470 Ohm, ± 10%, 5W W.W.
★ R607	204X1450-508	2.7k Ohm, ± 10%, 5W W.W.
R608	203X9014-603	1.2k Ohm, ± 5%, 1W M.O.
R610	203X6500-246	22 Ohm, ± 5%, 1/8W Carbon
R611	203X6700-562	1k Ohm, ± 5%, 1/2W Carbon
R612	340X3471-944	470 Ohm, ± 10%, 1/2W Carbon
R613	203X9010-757	1.2k Ohm, ± 5%, 1W M.O.
R614	203X5202-320	680k Ohm, ± 5%, 1/2W Comp.
R615	203X5602-156	270k Ohm, ± 5%, 1/2W Comp.
R616	203X6500-741	2.7k Ohm, ± 5%, 1/8W Carbon
R617	203X6501-088	68k Ohm, ± 5%, 1/8W Carbon
R620	203X6500-508	270 Ohm, ± 5%, 1/8W Carbon
R622	203X6500-689	1.5k Ohm, ± 5%, 1/8W Carbon
R624	203X6205-843	1k Ohm, ± 5%, 1/2W Carbon
R630	203X5601-906	68k Ohm, ± 5%, 1/2W Carbon
R631	203X9015-087	2.2 Ohm, ± 10%, 5W M.O.
R632	340X8111-731	110 Ohm, ± 5%, 5W Carbon
R632	340X8121-731	120 Ohm, ± 5%, 5W Carbon
R634	203X6000-002	2.2 Ohm, ± 5%, 1/8W Carbon
R635	203X9014-842	12k Ohm, ± 5%, 1W M.O.
R636	203X6500-645	1k Ohm, ± 5%, 1/8W Carbon
R640	203X6500-762	3.3k Ohm, ± 5%, 1/8W Carbon
R641	203X6501-002	33k Ohm, ± 5%, 1/8W Carbon
R642	203X6500-927	15k Ohm, ± 5%, 1/8W Carbon
R643	203X5602-648	3.9M Ohm, ± 5%, 1/2W Comp.
R646	203X6500-468	180 Ohm, ± 5%, 1/8W Carbon
R647	340X5150-841	15 Ohm, ± 10%, 2W Carbon
R648	340X2225-934	2.2M Ohm ± 5%, 1/4W Carbon

*For Model K4603 Only

SEMICONDUCTORS

TR601	200X3189-304	Transistor, 2SC1893
X601	201X3130-109	Rectifier, (SI) RM-2AV 600V
X605	200X8130-171	Diode (HS) SB-2CGL 1200V min.
X606	201X2010-144	Diode (SI) IS2473-772
X607	201X2100-119	Diode (HS) RC-2V 0.8 US
X608	201X2130-234	Diode (HS) RU-2V
X609	201X2130-234	Diode (HS) RU-2V
X610	66X0023-009	Rectifier, Power (SI) 500V PIV
X611	66X0023-009	Rectifier, Power (SI) 500V PIV

TRANSFORMERS & COILS

△ L601	201X6000-112	Coil, Line Filter R-3
L602	201X4600-042	Coil, Filter, 10 uH
L603	201X4100-024	Coil, Peaking, 22 uH
L607	201X4710-134	Coil, R-F Choke
T601	201X9500-337	Transformer, Audio Output
T602	201X1300-080	Transformer, Hor. Drive
T603	202X1210-191	Transformer, Side PC
L702	9A2795-001	Horiz. Size

CAPACITORS

△ C601	203X1800-451	0.1 uF, 125V, ± 20% MM
△ C603	202X7810-214	2200 pF, 125V Ceramic
C608	203X0220-043	330 uF, 200V Electrolytic
C605	203X1205-165	.0068 uF, 600V, ± 10% PP
C607	203X0040-020	10 uF, 160V Electrolytic
C608	203X0040-052	47 uF, 160V Electrolytic
C609	202X7050-366	.0033 uF, 500V, ± 10% Ceramic
C610	202X7050-483	.01 uF, 500V, ± 10% Ceramic
C611	202X8140-022	100 pF, 3KV, ± 10% Ceramic
C612	203X1201-047	.022 uF, 200V, ± 10% PP
C613	203X0015-035	220 uF, 25V Electrolytic
C614	203X0015-006	33 uF, 25V Electrolytic
C615	203X1201-288	0.39 uF, 200V, ± 10% PP
C616	202X8065-499	47 pF, 500V Ceramic
C617	203X0025-019	1 uF, 50V Electrolytic
C618	202X8000-577	82 pF, 50V, ± 5% Ceramic
C619	203X0025-019	1 uF, 50V Electrolytic
C620	203X1107-038	0.1 uF, 100V, ± 10% Mylar
C621	202X9040-155	0.1 uF, 1.5KV, ± 20% Paper
C622	203X0020-099	1000 uF, 35V Electrolytic
C623	203X0015-053	470 uF, 25V Electrolytic
C624	203X0015-021	100 uF, 25V Electrolytic
C625	203X0040-020	10 uF, 160V Electrolytic
C626	202X7050-009	100 pF, 500V, ± 10% Ceramic
C627	202X8065-461	39 pF, 500V, ± 10% Ceramic
C628	202X7000-327	2200 pF, 50V, ± 10% Ceramic
★ C629	203X1270-470	6900 pF, 1.5KV, ± 5% PP
C630	202X7810-214	2200 pF, 125V Ceramic
C632	203X0005-029	470 uF, 6.3V Electrolytic
C633	203X0315-033	2.2 uF, 50V Electrolytic
C634	202X8000-164	6 pF, 50V, ± 0.5 pF Ceramic
C637	202X8105-014	3 pF, 2 kV, ± 0.5 pF Ceramic
C638	342X5632-040	.056 uF, 10% Mylar

MISCELLANEOUS

△ F601	204X7120-062	Fuse (UL/CSA) 3A-125
J607	206X5003-960	Socket, 6 Pin
P602	204X9600-260	Plug, 3 Pin (GT)
P603	204X9600-254	Plug, 3 Pin (NM)
P604	204X9600-298	Plug, 4 Pin (NM)
P606	204X9600-351	Plug, 6 Pin (NM)
P607	204X9600-380	Plug, 6 Pin (GT)
P608	204X9600-254	Plug, 3 Pin (NM)
P610	204X9600-249	Plug, 2 Pin (GT)
P611	204X9600-670	Plug, 2 Pin (NM)
TH601	201X011-034	Thermistor
TH602	201X022-007	Varistor

VERT/HOR BOARD (MT/QJ)

WELLS-GARDNER PARTS...ORDER FROM THEM...SEE PAGE 6-9

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
RESISTORS			CAPACITORS (CONT.)		
R301	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon	C313	203X0025-087	47 uF, 50V Electrolytic
R302	203X6500-902	12k Ohm, $\pm 5\%$, 1/8W Carbon	C315	203X0015-082	10 uF, 25V Electrolytic
R303	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon	C316	203X1100-220	3300 uF, 50V, $\pm 10\%$ Mylar
R304	203X6500-886	10k Ohm, $\pm 5\%$, 1/8W Carbon	C317	202X8000-616	100 pF, 50V, $\pm 10\%$ Ceramic
R305	203X6501-241	330k Ohm, $\pm 5\%$, 1/8W Carbon	C351	202X7000-281	1500 pF, 50V, $\pm 10\%$ Ceramic
R306	203X6500-645	1k Ohm, $\pm 5\%$, 1/8W Carbon	C352	202X7000-247	1000 pF, 50V, $\pm 10\%$ Ceramic
R307	203X6500-689	1.5k Ohm, $\pm 5\%$, 1/8W Carbon	C353	203X1100-573	0.022 uF, 50V, $\pm 10\%$ Mylar
R309	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon	C355	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
R310	203X6501-285	470k Ohm, $\pm 5\%$, 1/8W Carbon	C356	203X0015-105	4.7 uF, 25V Electrolytic
R311	203X6501-065	56k Ohm, $\pm 5\%$, 1/8W Carbon	C357	203X1201-013	0.015uF, 200V $\pm 10\%$ PP
R312	203X6501-126	100k Ohm, $\pm 5\%$, 1/8W Carbon	C358	203X1201-034	0.018 uF, 200V, $\pm 10\%$ PP
R313	203X6001-326	10k Ohm, $\pm 5\%$, 1/8W Carbon	C359	203X0040-013	4.7 uF, 160V Electrolytic
R314	203X6501-044	47k Ohm, $\pm 5\%$, 1/8W Carbon	C360	202X7000-482	0.01 uF, 50V, $\pm 10\%$ Ceramic
R315	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon	C361	203X1100-509	0.015 uF, 50V, $\pm 10\%$ Mylar
R316	203X6500-420	120 Ohm, $\pm 5\%$, 1/8W Carbon	C362	203X0025-058	10 uF, 50V Electrolytic
R317	203X6206-441	2.2 Ohm, $\pm 5\%$, 1/2W Carbon	C363	203X1205-487	0.01 uF, 630V, $\pm 10\%$ PP
R319	203X6500-169	100 Ohm, $\pm 5\%$, 1/8W Carbon	C364	202X7000-482	0.01 uF, 50V, $\pm 10\%$ Ceramic
R320	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon			
R321	203X6700-509	560 Ohm, $\pm 5\%$, 1/2W Carbon			
R322	203X9100-121	22 Ohm, $\pm 5\%$, 2W M.O.			
R323	203X6500-689	1.5K Ohm, $\pm 5\%$, 1/8W Carbon			
R324	203X6500-988	27k Ohm, $\pm 5\%$, 1/8W Carbon	TR301	200X4082-614	Transistor, 2SA826Q
R325	203X6500-326	47 Ohm, $\pm 5\%$, 1/8W Carbon	TR302	200X3174-006	Transistor, 2SC1740Q
R328	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon	TR303	200X3174-006	Transistor, 2SA1740Q
R330	203X6500-886	10k Ohm, $\pm 5\%$, 1/8W Carbon	TR304	200X3174-006	Transistor, 2SC1740Q
R331	203X6501-209	220k Ohm, $\pm 5\%$, 1/8W Carbon	TR305	200X4049-081	Transistor, 2SA490YLBGLI
R351	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon	TR306	200X3162-538	Transistor, 2SC1625YLBGLI
R352	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon	TR307	200X3174-014	Transistor, 2SC1740R
R353	203X6500-944	18k Ohm, $\pm 5\%$, 1/8W Carbon	TR308	200X3174-006	Transistor, 2SC1740Q
R354	203X6500-783	3.9k Ohm, $\pm 5\%$, 1/8W Carbon	TR351	200X4085-415	Transistor, 2SA854Q
R355	203X6500-902	12k Ohm, $\pm 5\%$, 1/8W Carbon	TR352	200X3172-208	Transistor, 2SC1722BKS
R356	203X6500-561	470 Ohm, $\pm 5\%$, 1/8W Carbon	TR353	200X3174-006	Transistor, 2SC1740Q
R357	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon	TR354	200X4082-614	Transistor, 2SA826Q
R358	203X6500-666	1.2k Ohm, $\pm 5\%$, 1/8W Carbon	X301	201X2010-144	Diode, (SI) IS2473-T72
R359	203X6501-088	68k Ohm, $\pm 5\%$, 1/8W Carbon	X302	201X2010-144	Diode, (SI) IS2473-T72
R360	203X5500-471	27 Ohm, $\pm 5\%$, 1/4W Comp.	X303	200X8000-026	Diode, (GE), IN60TVGL
R361	203X6000-998	1.2k Ohm, $\pm 5\%$, 1/8W Carbon	X304	200X8010-165	Diode (SI) ISS81
R363	203X6500-666	1.2k Ohm, $\pm 5\%$, 1/8W Carbon	X305	201X2010-165	Diode (SI) ISS81
R364	203X9014-988	47k Ohm, $\pm 5\%$, 1W M.O.	X306	201X2010-165	Diode (SI) ISS81
R365	203X6700-989	56k Ohm, $\pm 5\%$, 1/2W Carbon	X307	200X8010-102	Diode (SI) MA26W
R366	203X6001-148	3.3k Ohm, $\pm 5\%$, 1/8W Carbon	X308	200X8010-094	Diode (SI) IS2473
R367	340X2222-734	2.2k Ohm, $\pm 5\%$, 1/2W Carbon	X351	201X2010-144	Diode (SI) IS2473-T72
R368	203X6500-785	3.9k Ohm, $\pm 5\%$, 1/8W Carbon	X352	201X2010-144	Diode (SI) IS2473-T72
R369	203X6500-762	3.3k Ohm, $\pm 5\%$, 1/4W Carbon	X353	201X2010-144	Diode (SI) IS2473-T72
R370	302X6100-961	1k Ohm, $\pm 5\%$, 1/4W Carbon	X354	201X2010-144	Diode (SI) IS2473-T72
R371	203X6104-751	2.7k Ohm, $\pm 5\%$, 1/4W Carbon	X355	200X8220-851	Diode (Zener) RD10EBI
VR301	204X2122-093	Varistor, 250K Ohm, Vert. Hold	X366	200X8100-130	Diode (HS) RU-1 0.3 US
VR302	204X2114-065	Varistor, 20K Ohm, Vert. Size			
VR351	204X2114-059	Varistor, 50K Ohm, Hor. Hold			

SEMICONDUCTORS

CAPACITORS

C301	203X1100-928	0.15 uF, 50V, $\pm 10\%$ Mylar
C302	203X1100-573	0.022 uF, 50V, $\pm 10\%$ Mylar
C304	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
C306	203X0025-026	2.2 uF, 50V, Electrolytic
C307	203X1100-928	0.15 uF, 50V, $\pm 10\%$ Mylar
C309	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
C310	203X0010-011	22 uF, 16V Electrolytic
C311	203X0020-099	1000 uF, 35V Electrolytic
C312	202X7000-469	0.0082 uF, 50V, $\pm 10\%$ Ceramic

MISCELLANEOUS

J301	204X9300-958	Socket, 6 Pin
J302	204X9300-958	Socket, 6 Pin
P301	204X9601-195	Plug, 6 Pin
P302	204X9601-195	Plug, 6 Pin
TH301	201X0000-534	Thermistor

TRANSFORMERS & COILS

L351	201X5200-091	Coil, Horiz. Osc.
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POWER BOARD (MV)

RESISTORS

R501	204X1725-052	180 Ohm, $\pm 10\%$, 15W WW
R502	203X6000-608	100 Ohm, $\pm 5\%$, 1/8W Carbon
R503	203X6000-960	1k Ohm, $\pm 5\%$, 1/8W Carbon
R504	203X6000-879	560 Ohm, $\pm 5\%$, 1/8W Carbon
R505	203X9014-965	39k Ohm, $\pm 5\%$, 1W M.O.
R506	203X6500-842	6.8k Ohm, $\pm 5\%$, 1/8W Carbon
R551	203X6500-420	120 Ohm, $\pm 5\%$, 1/8W Carbon
VR501	204X2050-001	Varistor Vert. Adj.

C503	203X0010-011	22 uF, 16V Electrolytic
C551	203X0005-046	220 uF, 10V Electrolytic

SEMICONDUCTORS

TR501	200X3174-006	Transistor, 2SC1740Q
★ TR502	200X3145-404	Transistor, 2SC1454
TR551	200X3172-305	Transistor, 2SC1723
X501	201X2230-042	Diode, (SI) Zener EQB01-06V
X502	201X2010-144	Diode, (SI) IS2473-T72

CAPACITORS

C501	203X0040-020	10 uF, 160V Electrolytic
C502	202X7000-281	1500 pF, 50V, $\pm 10\%$ Ceramic

MISCELLANEOUS

J501	204X9300-958	Socket, 6 Pin
P501	204X9601-195	Plug, 6 Pin
TH501	201X0000-618	Thermistor

NECK BOARD (MS/QG)

WELLS-GARDNER PARTS...ORDER FROM THEM...SEE PAGE 6-9

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
RESISTORS					
R401	203X6500-709	1.8k Ohm $\pm$ 5% 1/8W Carbon	C403	202X7000-247	1000 pF, 50V, 10% Ceramic
R402	203X6500-709	1.8k Ohm $\pm$ 5% 1/8W Carbon	C404	202X7110-019	1500 pF, 2kV $\pm$ 10% Ceramic
R403	203X6500-709	1.8k Ohm $\pm$ 5% 1/8W Carbon	C405	202X7150-018	100 pF, 12kV, $\pm$ 10% Ceramic
R404	203X6500-447	150 Ohm $\pm$ 5% 1/8W Carbon	C406	202X7050-483	.01 uF, 500V, $\pm$ 10% Ceramic
R405	203X6500-447	220 Ohm $\pm$ 5% 1/8W Carbon	C407	202X7110-019	1500 pF, 2kV $\pm$ 10% Ceramic
R406	203X6500-447	150 Ohm $\pm$ 5% 1/8W Carbon	C408	202X8000-550	68 pF, 50V, $\pm$ 10% Ceramic
R407	203X6500-508	270 Ohm $\pm$ 5% 1/8W Carbon	C409	202X8000-550	68 pF, 50V, $\pm$ 10% Ceramic
R408	203X6500-508	270 Ohm $\pm$ 5% 1/8W Carbon	C410	202X8000-550	68 pF, 50V, $\pm$ 10% Ceramic
R409	203X6500-800	4.7k Ohm $\pm$ 5% 1/8W Carbon	SEMICONDUCTORS		
R410	203X6500-800	4.7k Ohm $\pm$ 5% 1/8W Carbon	TR401	200X3206-800	Transistor, 2SC2068, 2SC1514 (R output)
R411	203X6500-800	4.7k Ohm $\pm$ 5% 1/8W Carbon	TR402	200X3206-800	Transistor, 2SC2068, 2SC1514 (G output)
R412	203X9104-809	12k Ohm $\pm$ 5% 2.0W Metal Oxide	TR403	200X3206-800	Transistor, 2SC2068, 2SC1514 (B output)
R413	203X9104-809	12k Ohm $\pm$ 5% 2.0W Metal Oxide	X404	201X2100-126	Diode, IS2367 (protector)
R414	203X9104-809	12k Ohm $\pm$ 5% 2.0W Metal Oxide	X405	201X2100-126	Diode, IS2367 (protector)
R415	203X5601-313	2.7k Ohm $\pm$ 10% 1/2W Comp.	X406	201X2100-126	Diode, IS2367 (protector)
R416	203X5601-313	2.7k Ohm $\pm$ 10% 1/2W Comp.	MISCELLANEOUS		
R417	203X5601-313	2.7k Ohm $\pm$ 10% 1/2W Comp.	J401	206X5003-729	Socket, 5 Pin
R418	203X5602-254	470k Ohm $\pm$ 10% 1/2W Comp.	J402	206X5003-983	Socket, 3 Pin
R419	203X5602-185	330k Ohm $\pm$ 10% 1/2W Comp.	P401	204X9600-329	Plug, 5 Pin
R422	203X9105-117	1.0 Ohm $\pm$ 10% 2W Metal Oxide	P402	204X9600-254	Plug, 3 Pin
R423	203X5102-155	270k Ohm $\pm$ 5% 1/4W Carbon			
VR401	204X2115-014	500 Ohm Varistor R Drive			
VR402	204X2115-014	500 Ohm Varistor B Drive			
VR403	204X2115-006	5k Ohm Varistor R Cutoff			
VR404	204X2115-006	5k Ohm Varistor G Cutoff			
VR405	204X2115-006	5k Ohm Varistor B Cutoff			
VR406	204X2000-025	1M Ohm Varistor Screen			

CAPACITORS

C401	202X7000-247	1000 pF, 50V, 10% Ceramic
C402	202X7000-247	1000 pF, 50V, 10% Ceramic

★ 297X2000-072 HIGH VOLTAGE ASSEMBLY (T701)

★ R701	204X1625-058	3.3 Ohm, $\pm$ 10% 10W WW Resistor
VR702	204X3901-125	Focus Control
X701		Diode (SI HV) } Part of T701
X702		Diode (SI HV) }
X703		Diode (SI HV) }

FINAL ASSEMBLY PARTS

★ 88X-0129-506	19VJTP22 Pix Tube
38A5554-000	Assy, Purity Shld/Degaussing
205X9800-256	Lateral/Purity Assembly
★ 202X1110-810	Yoke, Deflection
208X2000-946	CRT Socket
297X2000-072	HV Unit (T701)
6A0397	Plug, Line Cord
9A2753-003	Degaussing Coil (L701)

INTERFACE BOARD

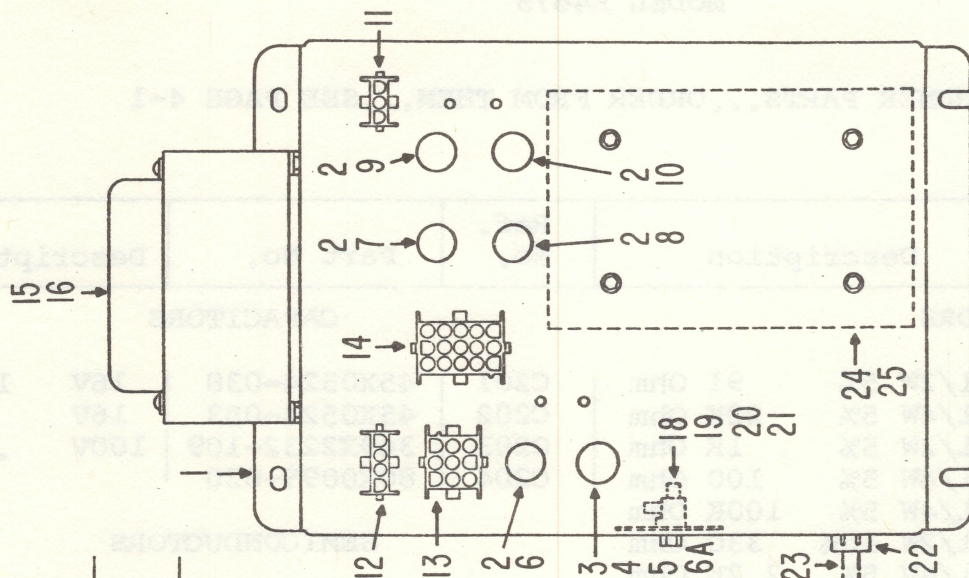
MODEL K4675

WELLS-GARDNER PARTS...ORDER FROM THEM...SEE PAGE 4-1

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
RESISTORS			CAPACITORS		
R201	340X3910-934	1/2W 5% 91 Ohm	C201	45X0524-038	16V 1000mf
R202	340X2223-934	1/4W 5% 22K Ohm	C202	45X0524-053	16V 470mf
R203	340X3102-934	1/2W 5% 1K Ohm	C203	349X2232-109	100V .022mf
R204	340X2101-934	1/4W 5% 100 Ohm	C204	80X0099-020	680pf
R205	340X2104-934	1/4W 5% 100K Ohm	SEMICONDUCTORS		
R206	340X3331-944	1/2W 10% 330 Ohm	TR201	86X0113-001	Transistor NPN
R207	340X2222-934	1/4W 5% 2.2K Ohm	TR202	86X0113-001	Transistor NPN
R208	340X2222-934	1/4W 5% 2.2K Ohm	TR203	86X0113-001	Transistor NPN
R209	340X2104-934	1/4W 5% 100K Ohm	TR204	86X0066-001	Transistor PNP
R210	340X2101-934	1/4W 5% 100 Ohm	TR205	86X0066-001	Transistor PNP
R211	340X2471-934	1/4W 5% 470 Ohm	TR206	86X0066-001	Transistor PNP
R212	340X2471-934	1/4W 5% 470 Ohm	TR207	86X0113-001	Transistor NPN
R213	340X2471-934	1/4W 5% 470 Ohm	TR208	86X0113-001	Transistor NPN
R214	340X2151-934	1/4W 5% 150 Ohm	TR209	86X0113-001	Transistor NPN
R215	340X2151-934	1/4W 5% 150 Ohm	TR210	86X0113-001	Transistor NPN
R216	340X2151-934	1/4W 5% 150 Ohm	X201	66X0046-001	Diode, Silicon
R217	340X2101-934	1/4W 5% 100 Ohm	X202	66X0046-001	Diode, Silicon
R218	340X3102-934	1/4W 5% 1K Ohm	X203	66X0046-001	Diode, Silicon
R219	340X3102-934	1/2W 5% 1K Ohm	X204	66X0046-001	Diode, Silicon
R220	340X3681-934	1/2W 5% 680 Ohm	ZD201	66X0040-019	Diode, Zener
R221	340X3271-934	1/2W 5% 270 Ohm	MISCELLANEOUS		
R222	340X3271-934	1/2W 5% 270 Ohm	J201	204X9300-958	Socket, 6 Pin
R223	340X2104-934	1/4W 5% 100K Ohm	J202	204X9300-958	Socket, 6 Pin
R224	340X3102-934	1/2W 5% 1K Ohm	J203	206X5019-207	Socket, 4 Pin
R225	340X2822-934	1/2W 5% 8.2K Ohm	P201	204X9601-195	Plug, 6 Pin
R226	340X2822-934	1/2W 5% 8.2K Ohm	P202	204X9601-195	Plug, 6 Pin
R227	340X2822-934	1/2W 5% 8.2K Ohm	P203	204X9600-845	Plug, 4 Pin
			P204	6A393-003	Plug, 3 Pin
			P205	6A0393-006	Plug, 6 Pin

POWER SUPPLY ASSEMBLY

G-6060-A



ITEM NO.	PART NO.	DESCRIPTION
1	G-6063-A G-6071-A	Power Supply Chassis Weld Assembly Power Supply Chassis Weld Assembly Canada only
2	49250	Shock Safe Fuseholder
3	G-5403-A	Fuseholder Assembly - Canada only
4	44935	Snap-in Steel Clip - Canada only
5	ST-9843	Tapered Caplug #5 - Red
6	ST-3090	3 Amp 250V Slo-Blo Fuse
6A	44930	Fusetron GMQ 3.2A Fuse (F1) Canada only
7	ST-9631	5 Amp 250V Slo-Blo Fuse
8	ST-4332	1 Amp 250V Slo-Blo Fuse
9	ST-4323	0.8 Amp 250V Slo-Blo Fuse
10	ST-10703	0.5 Amp 250V Slo-Blo Fuse
11	ST-10589	3 Circuit Universal Socket Housing
12	ST-10588	4 Circuit Universal Socket Housing
13	ST-10570	9 Circuit Universal Socket Housing
14	ST-10500	15 Circuit Universal Socket Housing
15	G-6059-A	Power Transformer Assembly
16	G-6059-CA	Power Transformer Assembly Canada only
17	ST-8722	10-32 Hex Flg Whiz-Lock Nut
18	ST-10062	8-36 X 5/16 M.S. Brass - Green Iridite
19	49007	Input Terminal Insulator
20	47827	3 Pole Input Terminal
21	ST-4518	6-32 X 1/2 Mach. Screw
22	ST-8715	6-32 Nut, Hex Flange - Serrated
23	ST-10762	Universal Strain Relief
24	G-5357	3 Conductor Cord & Plug - Domestic, Canada
25	G-5377	3 Conductor Cord & Plug - Australia
	G-5378-A	3 Conductor Cord & Plug - England
	G-5376	Cordset - Germany, Belgium, France
	G-6062-A	Switching Regulator MC014A
	ST-8267	8-32 X 1/4 Tapping Screw

FANTASY

PARTS LIST

G-202

OVERALL ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION
1	G-6055-A	Cabinet Assembly
2	G-6065-A	Control Panel Assembly
3	G-6100-A	Monitor Assembly - Complete
4	G-6070-A	Game P.C. Board Assembly
5	G-6060-A	Power Supply - Complete - Domestic
6	G-6048	Parts Catalog
CABINET ASSEMBLY - FANTASY		
G-6055-A		
1	G-24182-A	Cabinet - Wood
2	G-6043	Decal - Fantasy
3	G-6115-A	Coin Door - Complete - Canada & Domestic
	G-6115-AA	Coin Door - Complete - Australia
	G-6115-BA	Coin Door - Complete - Belgium
	G-6115-FA	Coin Door - Complete - France
	G-6115-GA	Coin Door - Complete - Germany
	G-6115-JA	Coin Door - Complete - Japan
4	G-6108-A	Counter #1 - Complete (Single Price)
5	G-6109-A	Counter #1 & #2 - Complete (Multi-Price)
6	G-5419-A	Counter Assembly Only
7	G-6072-A	Coin Switch Cable
8	G-5092-A	Braided Shield - Short
9	G-5693	Bracket - Volume Control
10	G-5694	Potentiometer (Small)
11	G-5664	Pointer Knob
12	G-5454	Bracket - Volume Control
13	G-5422	Potentiometer (Large)
14	33463	Pointer Knob
15	G-6105-A	Credit Counter P.C.B. Only (w/o Brkt)
16	ST-10539	Circuit Board Support (5/8")
17	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
18	ST-4813	.203 I.D. X 1/2 O.D. X .032 Fl. Washer - Z.P.
19	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
20	G-5282	Speaker Grille - Blk
21	G-5022	Speaker - 6 X 9
22	G-5199	Mounting Rail - 19"
23	ST-1443-D	1/4-20 X 1 1/4 Carriage Bolt - Blk Ox
24	ST-301	1/4 Int. Lock Washer
25	ST-1376	1/4-20 Wingnut
26	G-6060-A	Power Supply - 120V.
		Note Suffixes -CA Canada, -EA England,
		-AA Australia, -GA Germany, Belgium, France
27	G-5012-1	Tongue Brkt - C.B.
28	G-5048-A	Coin Box & Handle Assy
29	G-5014	Coin Box Cover
30	G-5439	Retainer - P.C.B. (Runner - R.H. Top)
31	ST-9741	8 X 1/2 Hex Flg (Type A) Z.P.
32	G-6100-A	Monitor - 19" Raster - Complete (w/Guard & Cable)
33	G-6101-A	Monitor - 19" Raster (Monitor only)
34	G-5428-A	Monitor Power Cable Assy
35	G-5638	Guard - CRT

CABINET ASSEMBLY - FANTASY

G-6055-A

ITEM NO.	PART NO.	DESCRIPTION
36	G-24073	Monitor Platform Rail (Wood)
37	G-5441	End Mounting Bracket
38	ST-10904	10-32 X 1 Hex Flg Swageform - Z.P.
39	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
40	ST-3139	.203 I.D. X 5/8 O.D. X .031 Fl. Wshr - Z.P.
41	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
42	G-0831	Bezel - CRT (Blk)
43	G-5436	CRT Filter - Gray
44	G-5413-A	Light Assembly - 120V
	G-5414-A	Light Assembly - 220/240V
45	ST-3341-D	8-32 X 1 Carriage Bolt - Blk Ox
46	ST-8721	8-32 Hex Flg Whiz Lock Nut - Z.P.
47	49557	Ballast Plate
48	49554-2	Ballast Insulator
49	11556	14-15-20 Watt Starter (FS-2)
	49301	Insulated Starter 20 Watt 220/240V
50	G-5043	Fluorescent Lamp (F15T12) CW 15 Watt
51	G-6041	Top Window - Fantasy
52	G-5254	Retainer - Inner Top (Blk)
53	G-5253	Retainer - Top (Blk)
54	ST-10753-D	8 X 5/8 Pan Hd. Box Dr. (Type A) Blk Ox
55	G-5342	Clamp Fastener (Cabinet)
56	G-6065-A	Control Panel - Fantasy - Complete
57	G-6042	Control Panel - Screened (Fantasy)
58	G-0623	Switch & Mtg. Assembly
59	G-0624	Button Assembly - Long
60	G-5341	Control Panel Clip
61	G-6046-A	Joystick Assembly - 8 Way
62	G-5433-1	Cover Plate - Joystick - Green
63	G-6067-A	Control Panel Cable Assy
64	G-5469	Retainer - Front (Blk)
65	G-5252	Retainer - Center (Blk)
66	G-5249	Retainer - Rear
67	G-5247-1	CRT Window - Vertical (Green)
68	G-5031-1	Price Card - 25¢
	G-5032-1	Price Card - Germany
	G-5033-1	Price Card - Belgium
	G-5034-1	Price Card - France
	G-5037-1	Price Card - England
69	G-5654	Label "Enter Initials"
70	G-6155-A	On/Off Interlock Sw. Cable Assembly -A (Canada and Domestic - 120V) White Plug -EA (England - 240V) Green Plug -GA (Germ - Belg - France - 220V) Blue Plug
71	G-6070-A	Game P.C.B. (Complete) 3 Boards (see breakdown of individual Boards)
72	G-5409-A	Braided Shield Assembly
73	G-6068-A	Main Cable Assembly (Cab)
74	G-5257-2A	Back Door Assembly - Complete
75	G-24085-2A	Back Door Assembly - Blue (Wood Only)
76	G-5126	Lock Bracket
77	ST-10760	Lock, Cam Bolts & Keys

FANTASY
GAME P.C. BOARD ASSEMBLY
G-6070-A

ITEM NO.	PART NO.	DESCRIPTION	REQ'D
1	G-6130-A	SK-6 Voice P.C. Board Assembly	1
2	G-6135-A	SK-7 P.C. Board Assembly	1
3	G-6140-A	SK-8 P.C. Board Assembly	1
4	G-6145-A	50 Conductor Ribbon Cable Assembly	2

SK-6 VOICE P.C. BOARD
G-6130-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	51991	Timer	IC1	555
2	G-6020	Quad Analog Switch	IC2	MC14066B
3	G-6009	Hex D Type Flip/Flop	IC3	74LS174
4	G-0681	Triple 3-Input Nand Gate	IC4	74LS10
5	G-6142	Low Power Quad Oper. Ampl.	IC5	LM324
6	G-6005	1 of 8 Decoder/Demultiplexer	IC6	74LS138
7	G-6143	Voice PROM 1	IC7	2716
8	G-6144	Voice PROM 2	IC8	2716
9	G-6146	Speech Synthesizer	IC9	HD38880
10	G-6147	E-PROM Interface	IC10	HD38882
11	G-6148	Voice PROM 3	IC11	2716
12	G-6149	Hex Bus Driver	IC12	74LS365
13	51289	Resistor 1/4W 5%	R3	100 OHM
14	51564	Resistor 1/4W 5%	R16	1K OHM
15	52358	Resistor 1/4W 5%	R6	2.2K OHM
16	51568	Resistor 1/4W 5%	R13	5.1K OHM
17	52348	Resistor 1/4W 5%	R15	15K OHM
18	51291	Resistor 1/4W 5%	R9, R10, R11, R12	22K OHM
19	49268	Resistor 1/4W 5%	R14	33K OHM
20	50966	Resistor 1/4W 5%	R2, R7, R8	100K OHM
21	50968	Resistor 1/4W 5%	R4, R5	150K OHM
22	52734	Resistor 1/4W 5%	R1	1 MEG OHM
23	G-6134	P.C. Trim Control	VR1	50K OHM
24	42319	Capacitor, Disc 1000V.	C5, C6	100 MMFD
25	G-0940	Capacitor, Disc 50V.	C11, C13	.001 MFD
26	53993	Capacitor, Disc 50V.	C10, C12	.0022 MFD
27	G-6137	Capacitor, Disc 25V.	C14, C16	.1 MFD
28	G-6138	Capacitor, Tantalum 25V.	All PC	
29	G-6139	Capacitor, Tantalum 25V.	C7, C15	1 MFD
30	G-6157	Capacitor, Electrolytic 16V.	C8, C9	2.2 MFD
31	G-0811	Signal Diode	C3, C4	470 MFD
32	G-6133	Crystal	D1	IN914
33	52722	24 Contact Solder Dip Socket	X-TAL	640 KHZ
34	52721	28 Contact Solder Dip Socket		
35	G-6132	42 Contact Solder Dip Socket		
36	G-6156-A	20 Conductor Ribbon Cable Assy		
37	G-6150	PCB Bead Pin		

SK-7 P.C. BOARD ASSEMBLY

G-6135-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-6121	Octal Buffer, Invert	IC1, IC2, IC3, IC4	74LS244
2	G-0686	Exclusive Or	IC5	74LS86
3	G-6124	4 To 16 Decoder/ Demultiplexer	IC6	74LS154
4	G-6182	Game Program No. 1	IC7	2732
5	G-6183	Game Program No. 2	IC8	2732
6	G-6184	Game Program No. 3	IC9	2732
7	G-6186	Game Program No. 4	IC10	2732
8	G-6187	Game Program No. 5	IC12	2732
9	G-6188	Game Program No. 6	IC14	2732
10	G-6189	Game Program No. 7	IC15	2732
11	G-6191	Game Program No. 8	IC16	2732
12	G-6192	Game Program No. 9	IC17	2732
13	G-6129	CPU	IC11	6502
14	G-6128	1024 X 8-Bit Static Ram	IC13	4118
15	G-6127	Monostable Multivibrator	IC18	74121
16	51991	Timer	IC19	555
17	G-6126	Hex Inverter	IC20	74LS05
18	G-6117	Quad Bus Buffer Gate	IC21	74LS125
19	G-0679	Hex Inverter	IC22, IC27, IC39, IC40	74LS04
20	G-0678	Nor Gate	IC23	74LS02
21	G-0681	Nand Gate	IC24	74LS10
22	53706	Dual D Latch	IC25	74LS74
23	G-0690	Binary Counter	IC26	74LS163
24	G-6120	Octal Bus Driver Invert	IC28, IC29, IC30	74LS240
25	G-6012	Octal D Type Flip-Flop	IC31, IC32, IC33, IC34	74LS273
26	G-6125	Dual 2-4 Line Decoder	IC35	74LS155
27	G-0677	Quad 2-Input Nand Gate	IC36, IC42	74LS00
28	G-6020	Quad Analog Switch	IC37, IC47, IC55	4066
29	G-0697	Dual 4 Bit Counter	IC41, IC48, IC49, IC54	74LS393
30	52560	Dual Timer	IC43	556
31	G-0683	Or Gate	IC44	74LS32
32	G-6181	Sound Generator	IC45	SN76477
33	G-6142	Low Power Quad Oper. Amplifier	IC46	LM324
34	G-6197	Sound Program No. 2	IC51	2716
35	G-6196	Sound Program No. 1	IC52	2716
36	G-6198	Sound Program No. 3	IC53	2716
37	G-6008	4 Bit Binary Counter	IC38, IC56, IC57, IC58, IC59, IC60, IC61	74LS161
38	52358	Resistor 1/4 Watt 5%	R1, R2, R3, R4, R5, R6, R14	2.2K OHM
39	51291	Resistor 1/4 Watt 5%	R7, R46, R57, R58, R59	22K OHM
40	50966	Resistor 1/4 Watt 5%	R8, R52	100K OHM
41	53982	Resistor 1/4 Watt 5%	R9, R10	220 OHM
42	52563	Resistor 1/4 Watt 5%	R11	560 OHM
43	53863	Resistor 1/4 Watt 5%	R12	1.8K OHM
44	51294	Resistor 1/4 Watt 5%	R13, R56	47K OHM
45	51564	Resistor 1/4 Watt 5%	R15, R23, R30, R31, R32, R35	1K OHM

SK-7 P.C. BOARD ASSEMBLY

G-6135-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
46	51568	Resistor 1/4 Watt 5%	R16, R17, R18	5.1K OHM
47	49264	Resistor 1/4 Watt 5%	R19, R20, R21 R22, R29, RA3, RA4, RA5, RA6	470 OHM
48	50968	Resistor 1/4 Watt 5%	R24	150K OHM
49	51293	Resistor 1/4 Watt 5%	R28, R49, R61 Thru R70, R84	10K OHM
50	51292	Resistor 1/4 Watt 5%	R33, R55	4.7K OHM
51	52380	Resistor 1/4 Watt 5%	R36	18K OHM
52	51571	Resistor 1/4 Watt 5%	R37	6.8K OHM
53	53838	Resistor 1/4 Watt 5%	R39, R40	150 OHM
54	52348	Resistor 1/4 Watt 5%	R41, R83	15K OHM
55	49268	Resistor 1/4 Watt 5%	R47, R53	33K OHM
56	53593	Resistor 1/4 Watt 5%	R48, R50, R54	470K OHM
57	53883	Resistor 1/4 Watt 5%	R51	1.5 MEG OHM
58	52734	Resistor 1/4 Watt 5%	R60	1 MEG OHM
59	53978	Resistor Pack	RA1, RA2	1K OHM X 8
60	53892	Capacitor, Electrolytic 25V	C1, C2, C3	1000 MFD
61	G-6173	Capacitor, Electrolytic 16V	C53	47 MFD
62	G-6169	Capacitor, Electrolytic 16V	C57	100 MFD
63	G-6174	Capacitor, Film 25V	C52	.1 MFD
64	G-6178	Capacitor, Film 50V	C25	.033 MFD
65	G-0940	Capacitor, Disc 50V	C4, C32, C33, C34, C35, C51	.001 MFD
66	53994	Capacitor, Disc 50V	C6, C41, C42, C45	.01 MFD
67	G-6176	Capacitor, Disc 50V	C54, C55	470 PF
68	G-6177	Capacitor, Disc 50V	C40	220 PF
69	53993	Capacitor, Disc 50V	C46	2200 PF
70	G-6137	Capacitor, Disc 25V	C8 Thru C23, C31, C37, C39, C48, C50, C56 All PC	.1 MFD
71	G-0805	Capacitor, Tantalum 35V	C5	.47 MFD
72	52561	Capacitor, Tantalum 16V	C7	10 MFD
73	G-6179	Capacitor, Tantalum 16V	C29, C30	22 MFD
74	52359	Capacitor, Tantalum 35V	C24, C38	1 MFD
75	G-0811	Signal Diode	D1, D2, D3	IN914
76	G-6166	Crystal, 11.289 MHZ	X-TAL	
77	G-6167	Trim Control	VR1	1K OHM
78	G-6168	Heat Sink		
79	G-6021	Audio Amplifier		MB3712
80	52722	24 Contact Solder Dip Skt		
81	53711	40 Contact Solder Dip Skt		
82	G-6171	20 Circ. Right Angle Header w/Extractor		
83	G-6172	50 Circ. Right Angle Header w/Extractor	CN1, CN2	
84	ST-10945	P.C. Board Support (5/8")		
85	G-0940	Capacitor, Disc 50V	PIN U To Z	1000 PF

SK-8 P.C. BOARD ASSEMBLY

G-6140-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-6016	Octal D Flip-Flop	IC1, IC2, IC52, IC55, IC59, IC60	74LS374
2	G-6120	Octal Bus Driver, Invert.	IC3	74LS240
3	G-0689	Quad 2 To 1 Multiplexer	IC4, IC21, IC22, IC23, IC24, IC25, IC26, IC28, IC56, IC57, IC58, IC64	74LS157
4	G-6122	CRT Controller	IC5	HD46505SP
5	G-6153	PROM "B"	IC6	6331-1J
6	G-6154	PROM "F"	IC7	6331-1J
7	G-0679	Hex Inverter	IC8, IC30	74LS04
8	G-6013	4 Bit Adder	IC9, IC10, IC11, IC15, IC20	74LS283
9	G-0686	Quad 2-Input Exclusive Or	IC12, IC13, IC14, IC27	74LS86
10	53706	Dual D Latch	IC16	74LS74
11	G-6009	Hex D-Type Flip-Flop	IC17, IC18, IC29, IC39, IC53	74LS174
12	G-0680	Quad 2-Input And Gate	IC19, IC54	74LS08
13	G-0681	Triple 3-Input Nand Gate	IC31, IC42, IC62, IC63	74LS10
14	G-6019	RAM - 1K X 4	IC32, IC33, IC34, IC35, IC36, IC37	2114
15	G-6005	1 Of 8 Decoder/ Demultiplexer	IC38, IC49	74LS138
16	G-0683	Quad 2-Input Or Gate	IC40	74LS32
17	G-6117	Quad Bus Buffer Gate	IC41	74LS125
18	G-6121	Octal Buffer, Invert.	IC43, IC44, IC45, IC46, IC47, IC48, IC76, IC77, IC78, IC79	74LS244
19	G-6151	PROM "FSD"	IC50	2732
20	G-6152	PROM "FSU"	IC51	2732
21	G-0687	Dual J-K Flip-Flop	IC61	74LS107
22	G-6119	8 Bit Shift Register	IC65, IC66, IC74, IC75	74LS166
23	G-0688	8 To 1 Multiplexer	IC69, IC70	74LS151
24	G-6118	Quad Exclusive Or Gate	IC71	74LS136
25	G-0678	Quad 2-Input Nor Gate	IC72	74LS02
26	G-0677	Quad 2-Input Nand Gate	IC73	74LS00
27	G-6123	RAM 2K X 8	IC67, IC68	MSM 2128
28	49264	Resistor 1/4W 5%	R1, R2, R3, R5, R8, R10, R13, R16, R18	470 OHM
29	53982	Resistor 1/4W 5%	R4, R9, R11, R12, R17, R19	220 OHM
30	51564	Resistor 1/4W 5%	R6, R7, R14, R15, R21, R24	1K OHM

SK-8 P.C. BOARD ASSEMBLY

G-6140-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
31	51289	Resistor 1/4W 5%	R20	100 OHM 1K OHM X 8 .1 MFD 100 PF
32	53978	Resistor Pack	RA1, RA2	
33	G-6137	Capacitor, Disc 25V	PC	
34	53327	Capacitor, Disc 63V	Back Side	
35	51303	6 Station Dip Switch SPST	DS2	
36	51304	8 Station Dip Switch SPST	DS1	
37	52724	16 Contact Solder Dip Socket	IC6, IC7	
38	52723	18 Contact Solder Dip Socket	IC32, IC33, IC34, IC35, IC36, IC37	
39	52722	24 Contact Solder Dip Socket	IC50, IC51, IC67, IC68	
40	53711	40 Contact Solder Dip Socket	IC5	
41	G-6172	50 Circuit Header	SN1, SN2	
42	ST-10943	P.C. Board Support		

SECTION 5

BASIC TROUBLESHOOTING

GENERAL

Be careful - certain components of monitor utilize high voltage

Solid-State Control Panel

Turn off power before changing components

Do not use VOM on P.C. Board as use may damage P.C. Board components

When attaching connectors, be sure to observe polarity

K4600 COLOR MONITOR SAFETY INFORMATION

WARNING:

An isolation transformer must be used between the AC supply and the AC plug of the monitor before servicing or testing is performed since the chassis and the heat sink are directly connected to one side of the AC line, which could present a shock hazard. The chassis of the monitor should NEVER be connected to ground. Before servicing is performed, read all the precautions labeled on the CRT and chassis.

WARNING:

Parts which influence x-ray radiation in horizontal deflection, high voltage circuits and picture tube etc. are indicated by ★ in the parts list for replacement purposes. Use only the type shown in the parts list.

WARNING:

For continued safety replace safety critical components only with manufacturer recommended parts. These parts are identified by shading and by Δ on the schematic diagram.

For replacement purposes, use the same type or specified type of wire and cable, ensuring that the positioning of the wires is followed (especially for high voltage and power supply circuits). Use of alternative wiring or positioning could result in damage to the monitor or in a shock or fire hazard.

The picture tube used employs integral implosion protection and should be replaced with a tube of the same type number for continued safety.

IMPORTANT: In the event that game exhibits erratic behavior, i.e. resetting in the middle of a game, or failure to power op, CHECK THE FUSES!

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

When handling the CRT, shatterproof goggles should be worn after completely discharging the high voltage circuit. DO NOT lift the picture tube by the neck.

PERFORMANCE AND OPERATING DATA

Apply a suitable power source to the monitor through an isolation transformer.

Apply a suitable signal source to the monitor PCB by means of P205.

Set up controls.

All controls are preset at the factory, but may be adjusted to suit program material.

1. SUPPLY

Voltage 108 VAC - 132 VAC

Frequency 50 Hz - 60 Hz

Note: Apply supply voltage through an isolation transformer with 1 Amp. capability.

2. HIGH VOLTAGE (EHT)

For 19"V models 25.5 ± 0.8 K.V. at 0 Beam

Note: Condition for above 1 (beam) = 0
A.C. = 120V

3. SERVICE SET-UP CONTROLS

A. V. Adjustment VR501 set for 127V DC

B. Vertical Size Cont = VR302

C. Vertical Hold Cont = VR301

D. Horizontal Hold Cont = VR351

E. Horizontal Width Cont = L702

F. Focus Control = VR702

G. Screen Control = VR406

H. Video Drive Controls - Red Drive = VR401
Green Drive = VR402

I. CRT Cut Off Controls - Red Cutoff = VR403
Green Cutoff = VR404
Blue Cutoff = VR405

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

COLOR MONITOR SERVICE INSTRUCTIONS

FOCUS

Adjust the Focus control (VR702), located on the HV unit (T701), for maximum over-all definition and fine picture detail.

+127V ADJUSTMENT (See Fig. 1)

The +127V adj. control (VR501) is adjusted at the factory. However, if readjustment should be required, proceed as follows.

1. Operate monitor for at least 15 minutes at 120V AC line.
2. Connect Positive lead of V.T.V.M. to blue lead of TR502 negative lead to chassis ground.
3. Adjust VR501 to obtain +127V reading.
4. After adjustment VR501 must be locked with a sealing varnish.

CIRCUIT PROTECTION

A 3.0A pigtail fuse, mounted on the Main Board has been provided to protect the Power Output Circuit.

HORIZONTAL OSC. ALIGNMENT

(See Fig. 2)

A warm-up period of at least five minutes should be allowed before alignment is carried out. Set VR351 to center position. Adjust L351 after grounding R328 plug. (TP32 of Vert/Horiz. P.C. Board) through a 1 μ F/50V capacitor. Adjust L351 to obtain normal picture.

After adjustment, remove 1 μ F/50V capacitor.

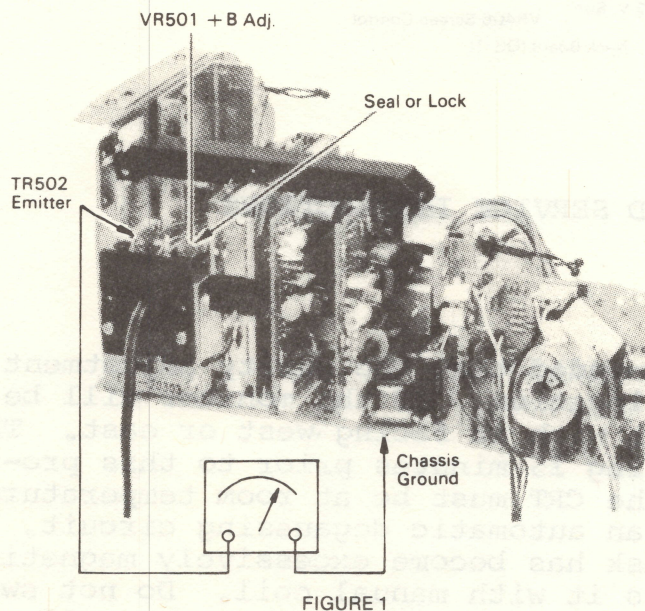


FIGURE 1

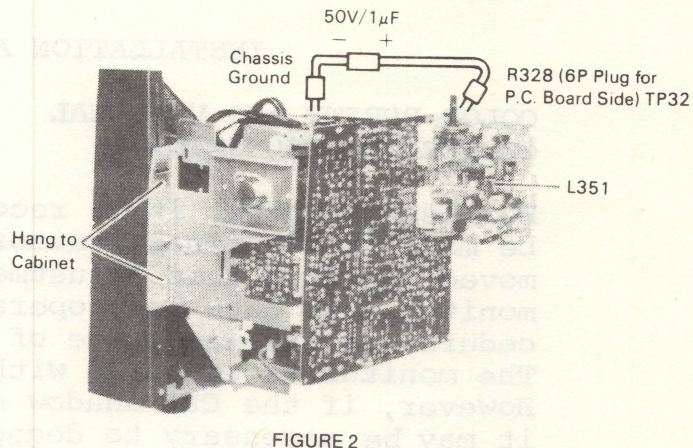


FIGURE 2

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

COLOR MONITOR SERVICE INSTRUCTIONS

BLACK LEVEL CONTROL ADJUSTMENT

This control has been set at the factory and should not need further attention. If however when the game is connected a slight adjustment of VR201 may be necessary to obtain the proper black level (the black portion of the picture just extinguished).

VERTICAL SIZE (HEIGHT)

The vertical height control is a screw-driver adjustment. Location of this control is shown in Fig. 3. This control must be adjusted slowly, if necessary, until the picture or test pattern attains the correct vertical proportions.

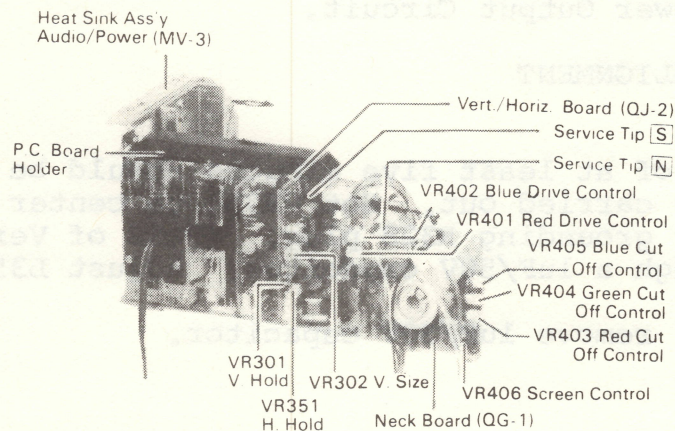


FIGURE 3

INSTALLATION AND SERVICE INSTRUCTIONS

COLOR PURITY AND VERTICAL CENTERING ADJUSTMENT

For best results, it is recommended that the purity adjustment be made in the final monitor location. If the monitor will be moved, perform this adjustment with it facing west or east. The monitor must have been operating 15 minutes prior to this procedure and the faceplate of the CRT must be at room temperature. The monitor is equipped with an automatic degaussing circuit. However, if the CRT shadow mask has become excessively magnetized, it may be necessary to degauss it with manual coil. Do not switch the coil OFF while the raster shows any effect from the coil.

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

INSTALLATION AND SERVICE INSTRUCTIONS

COLOR PURITY AND VERTICAL CENTERING ADJUSTMENT (CONT'D)

Purity Magnets are used for Color Purity and V Centering Adjustment.

Purity Adjustment procedure is as follows.

1. Remove R-G-B signal from monitor.
2. Turn Green Cut off Control (VR404) on the Neck Board fully CCW.
Turn Red and Blue Cut off Control (VR405) fully CW.
3. Pull the Deflection Yoke backward so that the Magenta belt will appear. (See Fig. 4)
4. Move the two Purity Magnets and bring the Magenta belt to the mechanical center of the screen (See Fig. 5) The vertical center position should be set VRS to $-5/64$ " (-2 MM) as shown in Fig. 6.
Insert service tip "N" on Neck circuit board to "S" on Vert./Horiz. circuit board (See Fig. 13). To check, use the Green raster at low intensity. Be sure to return the service tips to their original positions for the next check.
5. Push the Deflection Yoke forward gradually and fix it at the place where the Magenta screen becomes uniform throughout.
6. Turn Cut off Control, and Drive Control and confirm that each color is uniform.
7. If the color is not uniform, re-adjust it moving Purity Magnets slightly.
8. Move a pair of Purity Magnets at the same time (do not change the angle of the pair), and adjust the vert. center to center of screen.
9. Obtain the three colors and confirm whether white uniformity is balanced.
10. Insert the temporary wedge as shown in Fig. 5 and adjust the angle of Deflection Yoke.

STATIC CONVERGENCE ADJUSTMENT

A recently developed Deflection Yoke and Electron Guns construction has been used on this equipment in combination with In-Line Guns and Black Stripe Screen to make a barrel-type magnetic-field distribution for vertical deflection and a pin-cushion-type magnetic field for horizontal deflection with which a self-converging system can be obtained. This type is different from conventional unity-magnetic field distribution type deflection yoke. 4-Pole Magnets and 6-Pole magnets are employed for static convergence instead of a Convergence Yoke.

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

STATIC CONVERGENCE ADJUSTMENT (CONT'D)

1. A cross hatch signal should be connected to the monitor.
2. A pair of 4-Pole Convergence Magnets are provided and adjusted to converge the blue and red beams. When the Pole opens to the left and right 45° symmetrically, the magnetic field maximizes. Red and blue beams move to the left and right oppositely (See Fig. 7-a and 7-b). Variation of the angle between the tabs adjusts the convergence of red and blue vertical lines. When the both 4-Pole Convergence Magnet Tabs are rotated as a pair, the convergence of the red and blue horizontal lines is adjusted.
3. A pair of 6-Pole Convergence Magnets are also provided and adjusted to converge the magenta (red + blue) to green beams. When the Pole opens to the left and right 30° symmetrically, the magnetic field is maximized. Red and blue beams both move to the left and right (See Fig. 8-c and 8-d). Variation of the opening angle adjusts the convergence of magenta to green vertical lines. When both 6-Pole Convergence Magnet Tabs are rotated as a pair the convergence of magenta to green horizontal lines is adjusted.

PRECISE ADJUSTMENT OF DYNAMIC CONVERGENCE (See Fig. 10 and 11)

1. Feed a cross hatch signal to the monitor.
2. Insert the temporary wedge and fix Deflection Yoke so as to obtain the best circumference convergence (See Fig. 10 and 11).

NOTE:

The temporary wedges may need to be moved during adjustments.

4. Insert three rubber wedges to the position as shown in Fig. 9 to obtain the best circumference convergence.

NOTE:

- 1) Tilting the angle of the yoke up and down adjusts the crossover of both vertical and horizontal red and blue lines. (See Fig. 10 (a) and (b)).
- 2) Tilting the angle of the yoke sideways adjusts the parallel convergence of both horizontal and vertical lines at the edges of the screen. See Fig. 11-a and b.
- 3) Use three rubber wedges (thick and thin rubber wedges are used for a purpose).
- 4) The angle of each rubber wedges are shown in Fig. 9.
- 5) After three rubber wedges have been inserted, pull out the temporary wedge.
- 6) Fix the rubber wedges with chloroprene rubber adhesive.

SECTION 5

BASIC TROUBLESHOOTING (CONT'D)

BLACK AND WHITE TRACKING (With R/G.B. inputs grounded)

1. Set Black Level Control (VR201) to mid point.
2. Set Red and Blue Drive Controls (VR401 & VR402) to their mechanical center.
3. Set the G2 Screen Control (VR406) and the 3 Cut-off Controls (VR403, VR404, & VR405) to minimum (CCW).
4. Slowly turn up G2 screen control until the first faint color appears.
5. Slowly turn up the other two color cut-off controls in turn to match the first.
6. Remove ground from R/G/B/ inputs. Adjust Red and Blue Drive Controls (VR401 & VR402) for white screen.

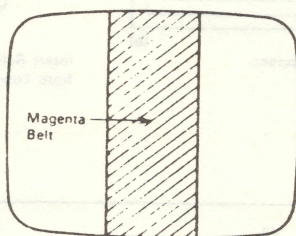


FIGURE 4

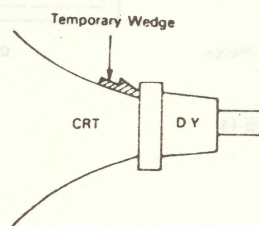


FIGURE 5

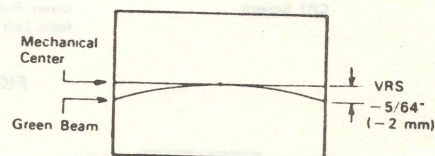
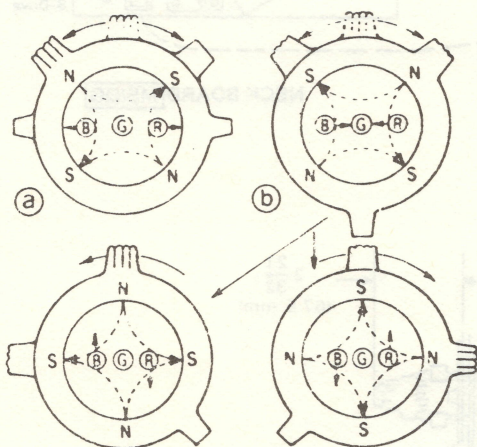
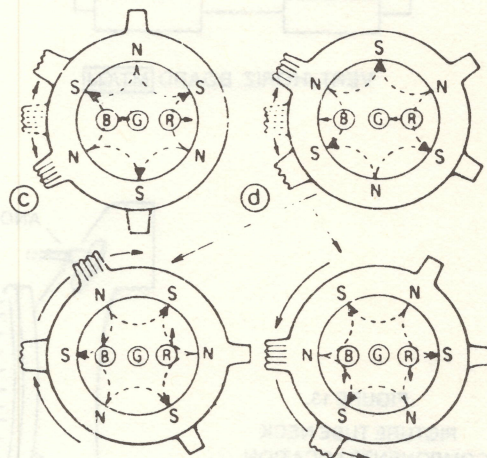


FIGURE 6



4-Pole Magnets and the Movement of Beams

FIGURE 7



6-Pole Magnets and the Movement of Beams

FIGURE 8

INSTALLATION AND SERVICE INSTRUCTIONS

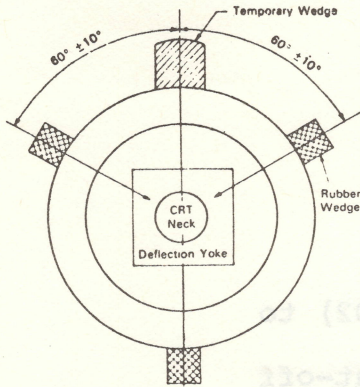


FIGURE 9

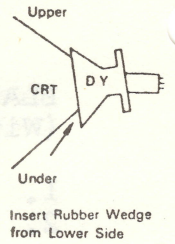
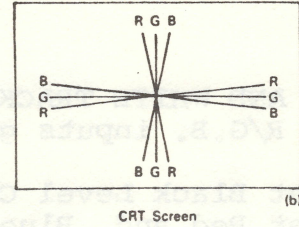
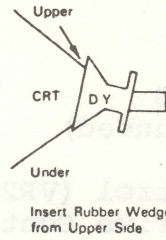
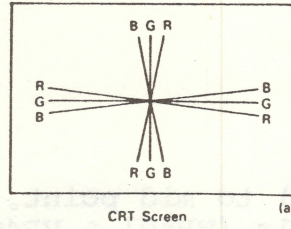


FIGURE 10

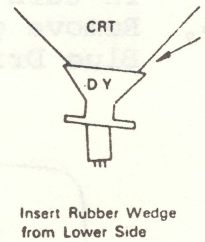
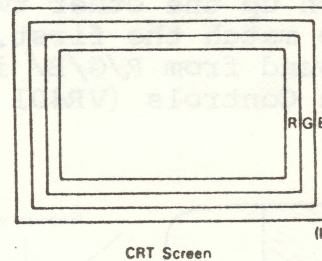
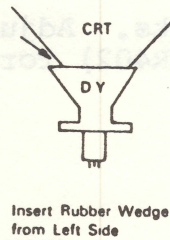
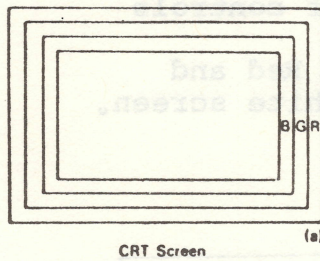


FIGURE 11

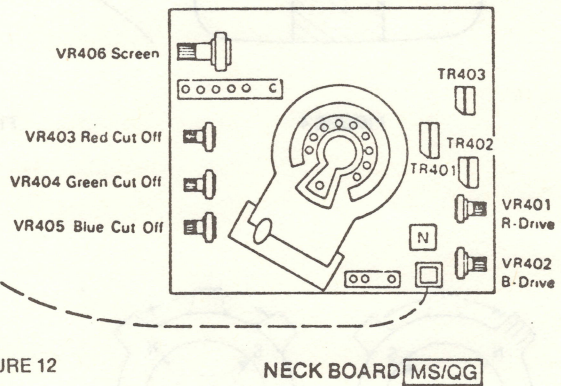
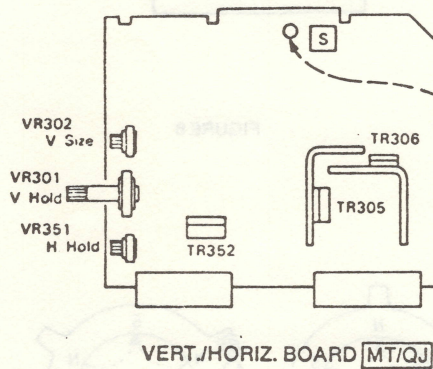
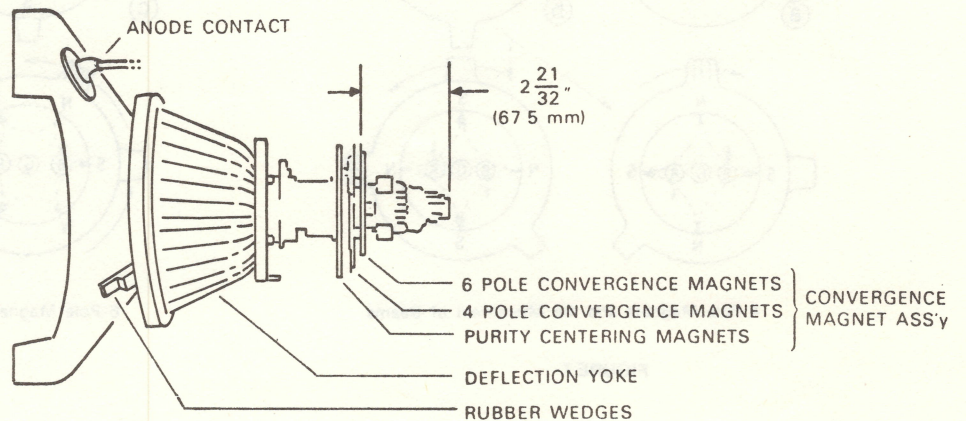
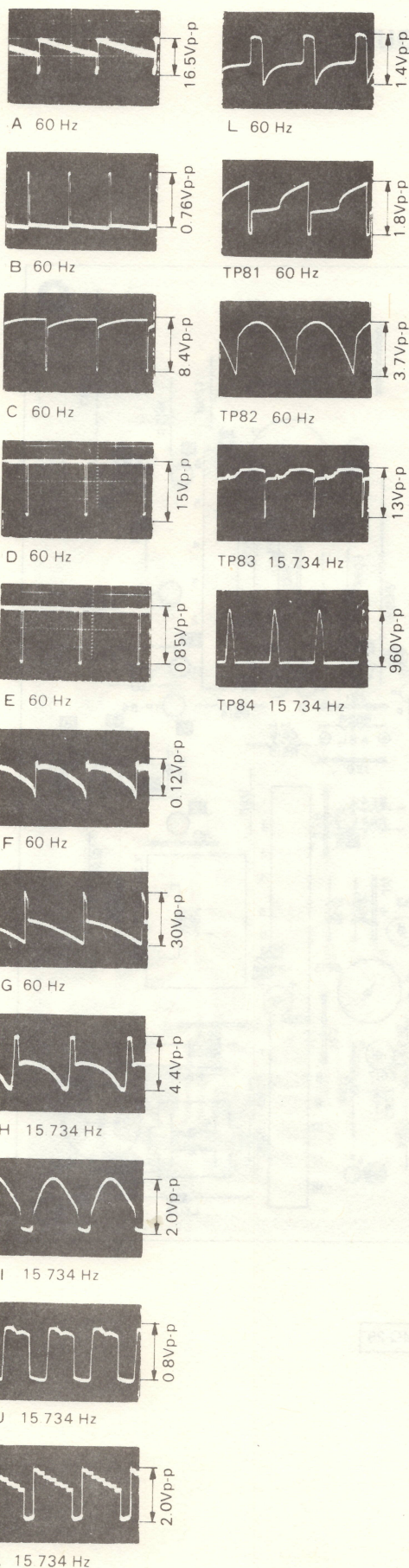


FIGURE 12

FIGURE 13.
PICTURE TUBE NECK
COMPONENTS LOCATION





Power Supply Voltage and Symbols

Symbols	Line Voltage	Working Circuit
	15V	Vert. — Drive stage ABL — Bias CRT Cut-Off
	30V	Vert. Output Side pin Trans. — Bias
	127V	Horiz. Osc. Horiz. Drive Horiz. Output
	160V	Video Output
	890V	Screen-Bias



SERVICE TECHNICIAN WARNING X-RAY RADIATION PRECAUTION:

THIS PRODUCT CONTAINS CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RAY RADIATION PROTECTION.

FOR REPLACEMENT PURPOSES, USE ONLY TYPE PARTS SHOWN IN THE PARTS LIST.



CAUTION: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

OSCILLOSCOPE WAVEFORM PATTERN

The waveforms shown are as observed on the wide band oscilloscope with the monitor turned to a reasonably strong signal and a normal picture. The voltages shown on each waveform are the approximate peak amplitudes. The frequency accompanying each waveform indicates the repetition rate of waveform not the sweep rate of the oscilloscope.

If the waveforms are observed on the oscilloscope with a poor high frequency response, the corner of the pulses will tend to be more rounded than those shown and the amplitude of any high frequency pulse will tend to be less.

P.C. BOARD LAYOUT

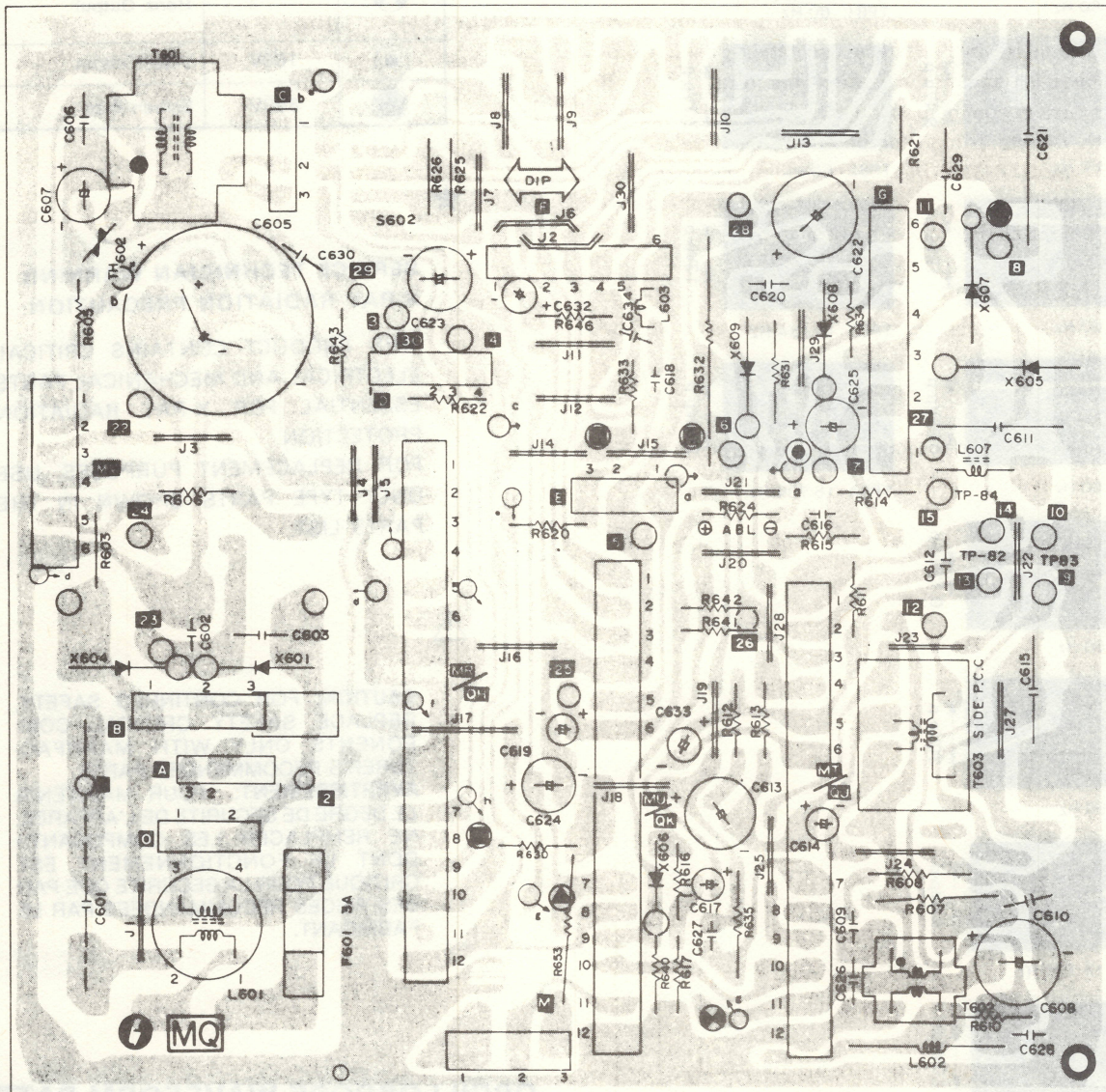


FIGURE 14. MAIN P.C. BOARD MQ-29

P.C. BOARD LAYOUT

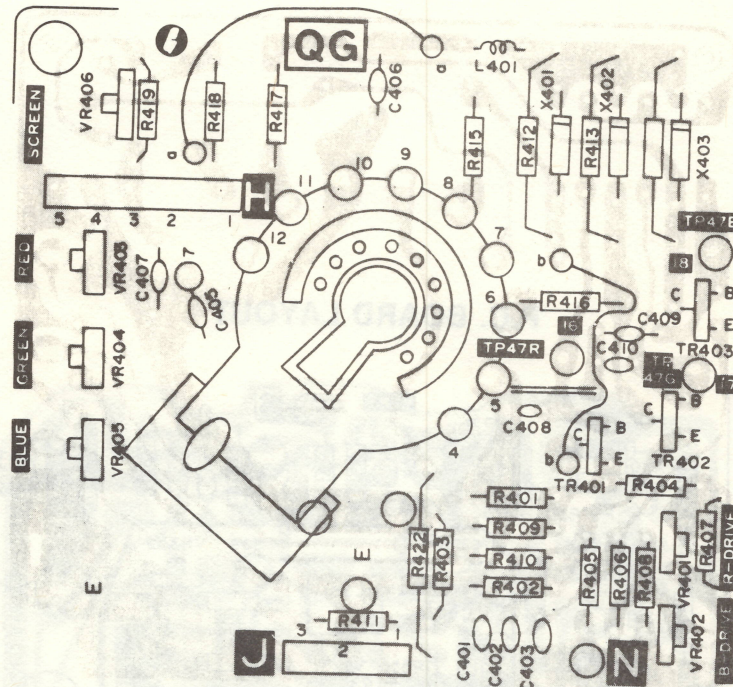


FIGURE 15. NECK P.C. BOARD MS/QG

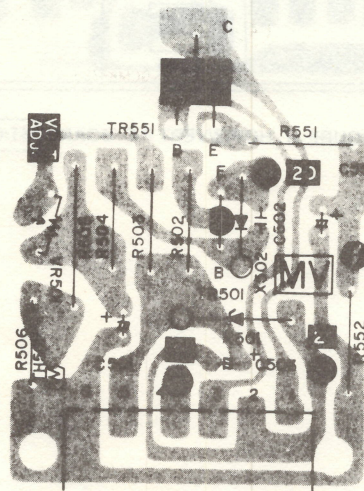
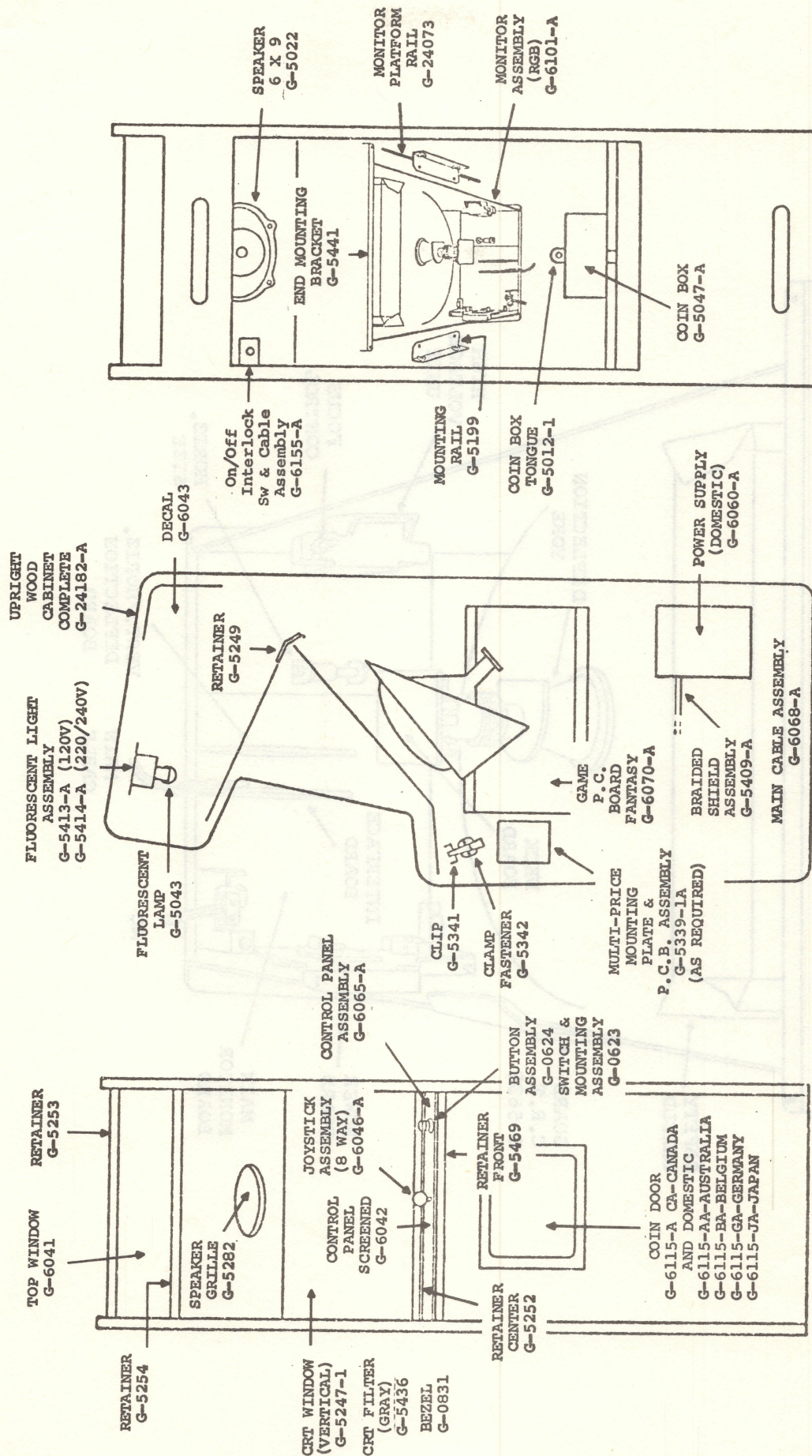
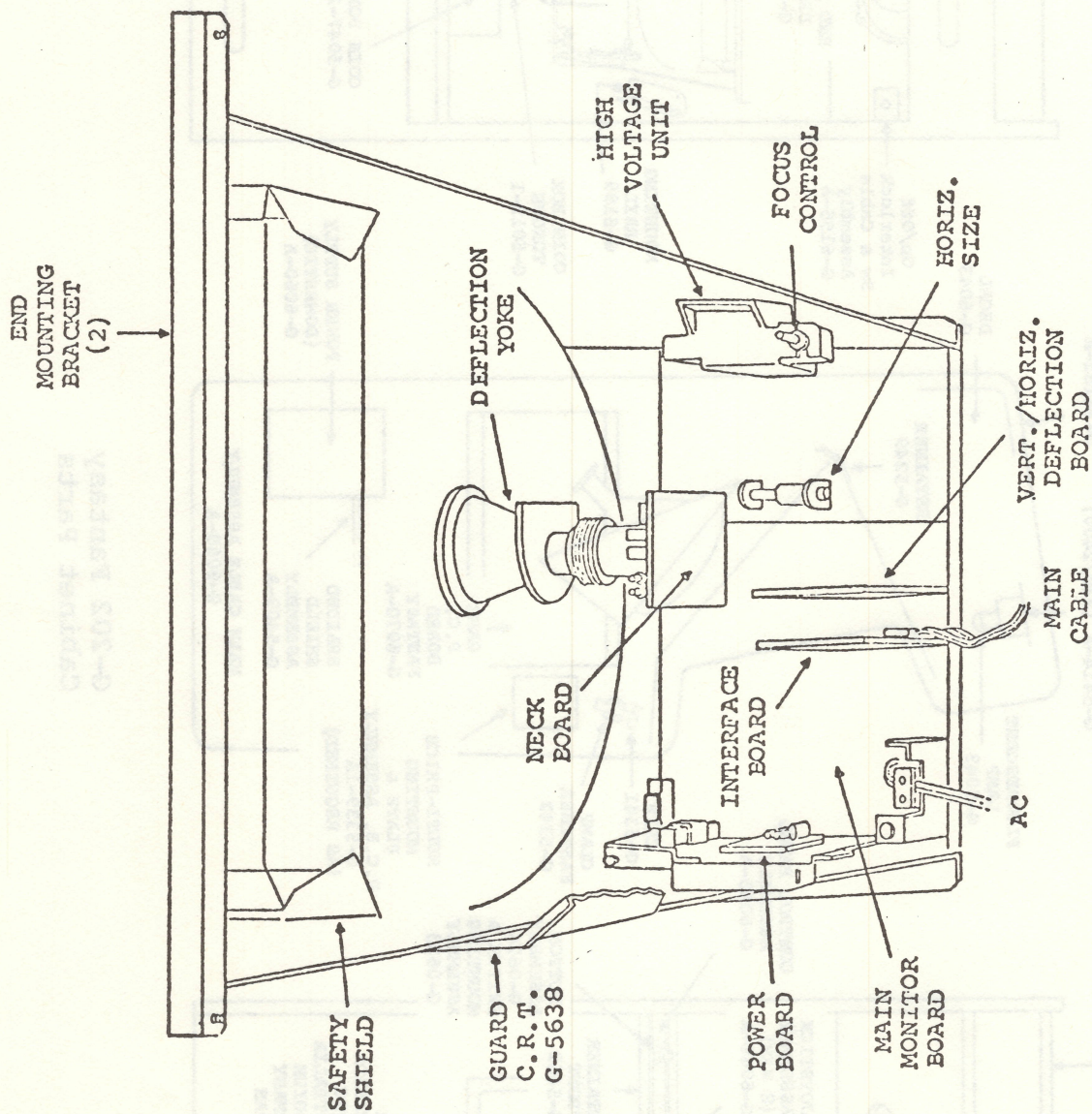


FIGURE 16. POWER PC BOARD MV

A-3



G-202 Fantasy
Cabinet Parts



WELLS-GARDNER MONITOR ASSEMBLY

POWER SUPPLY G-6060-A

