Congo Bongo

PRELIMINARY OWNER'S MANUAL

SEGA®

MANUAL PART NO.
420-0979

CONGO BONGO^{TM}

PRELIMINARY OWNER'S MANUAL

MANUFACTURED BY

SEGA®

TLX 910-335-1621

CONGO BONGO^{TM} PRELIMINARY OWNER'S MANUAL

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INTRODUCTION

CONGO BONGO™ is a microprocessor based coin-operated electronic game, that makes extensive use of digital integrated circuitry and television monitor concepts. This manual is intended for the use of maintenance technicians who possess a general working knowledge of solid-state circuitry and video monitor theory. Any individual NOT knowledgeable in these areas SHOULD NOT attempt repair of the electronics portions of the game.

In addition to this manual and training in electronics, troubleshooting and repair will be facilitated by: access to general electronic type handtools, a multimeter, a 50 to 100 MHz oscilloscope and a logic probe would be helpful.

The information contained in this manual is preliminary and subject to change before printing of final manual.

Technical assistance is available toll-free by calling:
    1-800-854-1938 outside California
    1-800-722-8576 inside California
Parts information assistance is available toll-free by calling:
    1-800-854-1900 outside California
    1-800-722-8575 inside California

Questions or comments concerning CONGO BONGO or any of our games are welcome and should be directed to:
    Customer Service Manager
    SEGA Electronics, Inc.
    16250 Technology Drive
    San Diego, California 92127-1985

IMPORTANT NOTES

The following note is included in compliance with FCC Rules:

WARNING: This equipment generates and uses radio frequency energy and if
not installed and used properly in strict accordance with the instruction
manual, may cause harmful interference to radio communications. It has been
tested and found to comply with the limits for Class A computing devices
pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide
reasonable protection against interference when operated in a commercial
environment.

Operation of this equipment in a residential area is likely to cause
interference in which case the user at his own expense will be required
to take whatever measures may be required to correct the interference.

OTHER NOTES

NEVER remove circuit board connections while power is on.

NEVER replace any components with anything other than exact replacement parts.

DO NOT replace fuses with anything other than proper value. A blown fuse
indicates an overload condition within the game. Replacing the fuse with
a higher value can cause damage to internal components, if an overload
occurs.

ALWAYS consult the manual before attempting repair.

GAME CONCEPT

Jungle drums pound as CONGO BONGO^{TM}, the cartoon adventure that pits man against monkey, takes you on the craziest, most action-packed safari ever! With fantastic 3-dimensional-like graphics and wonderful native sounds, SEGA's CONGO BONGO lures explorers of all ages to chase Bongo, the mischievious gorilla, through four vivid scenes of jungle fun. By use of an 8-way joystick and a jump button, the player maneuvers his hunter through the various scenes and avoids obstacles and dangers in his path.

In the first scene, Bongo roars defiantly from the top of Steep Peak as the hunter approaches. The hunter must climb the treacherous cliffside to reach the bridge above, while avoiding the bouncing coconuts Bongo throws down. Once accross the bridge, the hunter must slide down a slope and knock the green monkey off the ledge. Green monkeys will block the hunter's path and if not pushed over a cliff or jumped over, the hunter cannot pass.

Next the hunter must jump over a perilous, collapsing chasm and climb the cliff to Primate Plateau. Here several friendly-looking monkeys scamper about playfully. Be careful though, as the cheerful chimps will cling to the hunter, slowing him down. By using the jump button, the player can shake the chimps off the hunter, but it must be done quickly, because if three chimps grab the hunter, they will pick the hunter up and throw him over the side and into the river. Once past the monkeys, the hunter must jump the river again and climb up to the top where a chagrined Bongo loses his smile and runs off into the jungle.

In the second scene, Bongo taunts the hunter from across Snake Lake. Immediately scorpions descend upon the hunter and he must decide which route to take quickly. Snake Lake is a maze of bridges and islands with snakes guarding every route. The hunter must avoid the snakes by jumping over them. The hunter should attempt to reach the island nearest Bongo and jump onto the back of the hippo and then safely to shore. Beware of the hippo as he dives and surfaces. Once safely to shore, Bongo gets worried and scampers off again.

The third scene opens with the hunter in a mole hole on Rhino Ridge. A herd of charging rhinos must be avoided in the hunter's attempt to capture Bongo. The hunter can avoid the rhinos by jumping over them or ducking into a mole hole. When ducking into a mole hole, the player must depress the jump button for the hunter to duck down and avoid the rhinos.

In the fourth scene, a weary Bongo naps in a chair on the far side of Lazy Lagoon. To reach Bongo, the hunter must cross Lazy Lagoon by jumping on lily pads, hippos and fish, that might sink at minute. Once across Lazy Lagoon, the hunter must dodge the last charging rhinos and climb the last bluff to capture Bongo. After Bongo is captured, the scenes repeat with increasing difficulty.

CONGO BONGO is a one or two player game with players alternating at the loss of each hunter. Each scene is timed by the bonus counter in the upper left corner of the screen. As time passes, the bonus decreases. If the bonus counter reaches zero, the player loses that hunter, the bonus counter is reset and play continues if he has other hunters available. Game ends with the loss of the last hunter.

SCORING

	POINTS
EACH STEP TAKEN	10
JUMPING ONTO HIPPO, FISH OR LILY PAD	100
(INCREASES BY 50 EACH ROUND)	
JUMPING INTO A MOLE HOLE	1000
JUMPING ACROSS A CHASM	500

AT THE SUCCESSFUL COMPLETION OF EACH ROUND, THE PLAYER IS AWARDED THE NUMBER OF POINTS REMAINING IN THE BONUS BOX.

OPTION SELECTION

○ OPTION SWITCH SETTINGS   DIP SW NO.1

TEST SW
DIP SW NO.1
DIP SW NO.2
SOUND VOLUME

OPTION		1	2	3	4	5	6	7	8
UPRIGHT									OFF
TABLE									ON
SOUND ON								ON	
SOUND OFF								OFF	
FREE PLAYS						OFF	OFF		
5 MEN						OFF	ON		
4 MEN						ON	OFF		
3 MEN						ON	ON		
GAME DIFFICULTY	EASY			ON	ON				
	MEDIUM			ON	OFF				
	HARD			OFF	ON				
	HARDEST			OFF	OFF				
EXTRA SCORE	10,000	ON	ON						
	20,000	ON	OFF						
	30,000	OFF	ON						
	40,000	OFF	OFF						
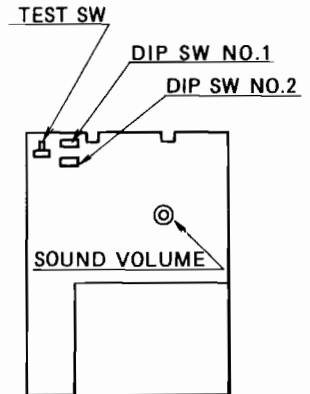
○ COIN / CREDIT OPTIONS SWITCH   DIP SW NO.2

OPTION		1	2	3	4	5	6	7	8
4 COINS	1 CREDIT	ON	ON	ON	ON	ON	ON	ON	ON
3 COINS	1 CREDIT	ON	ON	ON	OFF	ON	ON	ON	OFF
2 COINS	1 CREDIT	ON	ON	OFF	ON	ON	ON	OFF	ON
1 COIN	1 CREDIT	ON	ON	OFF	OFF	ON	ON	OFF	OFF
1 COIN	2 CREDITS	ON	OFF	ON	ON	ON	OFF	ON	ON
1 COIN	3 CREDITS	ON	OFF	ON	OFF	ON	OFF	ON	OFF
1 COIN	4 CREDITS	ON	OFF	OFF	ON	ON	OFF	OFF	ON
1 COIN	5 CREDITS	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
1 COIN	6 CREDITS	OFF	ON	ON	ON	OFF	ON	ON	ON
2 COINS 1 CREDIT 4 COINS 2 CREDITS 5 COINS 3 CREDITS 6 COINS 4 CREDITS		OFF	ON	ON	OFF	OFF	ON	ON	OFF
2 COINS 1 CREDIT 3 COINS 2 CREDITS 4 COINS 3 CREDITS		OFF	ON	OFF	ON	OFF	ON	OFF	ON
1 COIN 1 CREDIT 2 COINS 2 CREDITS 3 COINS 3 CREDITS 4 COINS 4 CREDITS 5 COINS 6 CREDITS		OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
1 COIN 1 CREDIT 2 COINS 2 CREDITS 3 COINS 3 CREDITS 4 COINS 5 CREDITS		OFF	OFF	ON	ON	OFF	OFF	ON	ON
1 COIN 1 CREDIT 2 COINS 3 CREDITS		OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
1 COIN 2 CREDITS 2 COINS 4 CREDITS 3 COINS 6 CREDITS 4 COINS 8 CREDITS 5 COINS 11 CREDITS		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
1 COIN 2 CREDITS 2 COINS 4 CREDITS 3 COINS 6 CREDITS 4 COINS 9 CREDITS		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
		COIN SW1(A)				COIN SW2(B)			

SELF-TEST

CONGO BONGO^{TM} is equipped with a diagnostics self-testing program that is initiated by pressing the Self-Test button located on the Volume Control Block Assembly. The test is used to detect malfunctions in Video alignment, I/O interface and P.C.B. electronics.
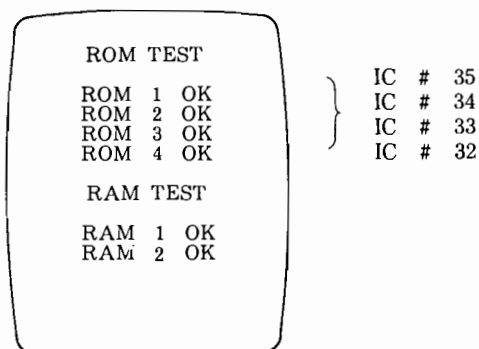
The test will appear in the following order, with the words "OK" or "BAD" being displayed on the screen in accordance with the condition of the tested circuit. Self-Test step sequencing is done by pressing the Player 1 button after each individual test.

```
        ╭─────────────╮
        │ SELF TEST   │              ①                    ②
        │   START     │              │                    │
        ╰──────┬──────╯              │                    │
    ┌──────────────┐         ┌──────────────┐     ┌──────────────┐
(1) │ ROM TEST     │     (5) │ INPUT        │ (11)│ SOUND        │
    │ SUM CHECK    │         │ SWITCH       │     │ TEST         │
    └──────┬───────┘         │ TEST         │     └──────┬───────┘
    ┌──────────────┐         └──────┬───────┘            │
(2) │ WORK RAM     │         ┌──────────────┐     ╭──────────────╮
    │ TEST         │     (6) │ OUTPUT       │     │    END       │
    └──────┬───────┘         │ TEST         │     ╰──────────────╯
    ┌──────────────┐         └──────┬───────┘
(3) │ BACK SCENE   │         ┌──────────────┐
    │ TEST         │     (7) │ DIP SWITCH   │
    └──────┬───────┘         │ TEST         │
    ┌──────────────┐         └──────┬───────┘
(4) │ TARGET       │         ┌──────────────┐
    │ PATTERN      │     (8) │ VIDEO RAM    │
    │ TEST         │         │ TEST         │
    └──────┬───────┘         └──────┬───────┘
           │                 ┌──────────────┐
          ①              (9) │ CHARACTER    │
                             │ PATTERN      │
                             │ TEST         │
                             └──────┬───────┘
                             ┌──────────────────┐
                        (10) │ COLOR REFPRENCE  │
                             │ VIDEO BANK SELECT│
                             │ COLOR BANK SELECT│
                             │ TEST             │
                             └────────┬─────────┘
                                     ②
```
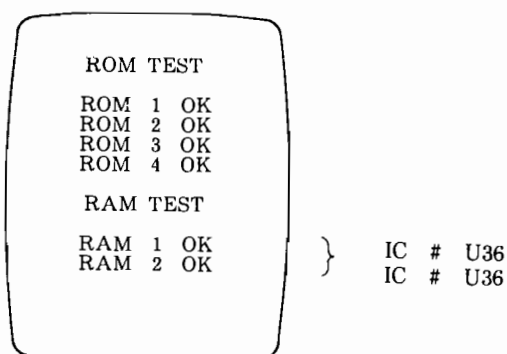
6
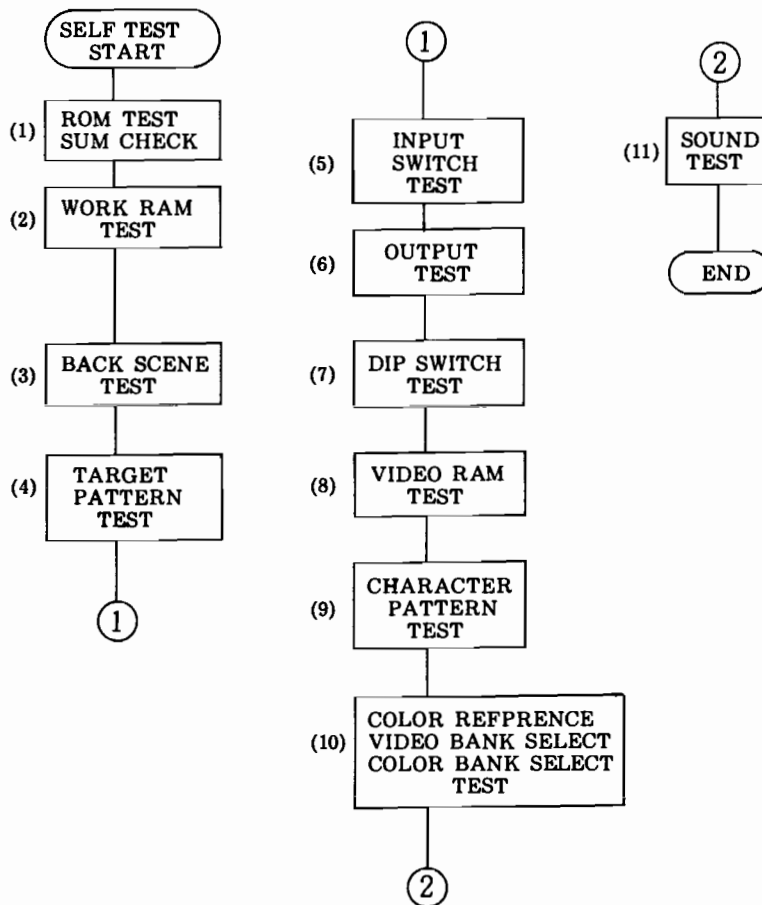
1. ROM Test

    This test checks the four main program EPROMs by performing
individual "check sum" tests. These EPROMs are located on the Control
Board.

```
        ROM TEST                        IC  #  35
        ROM  1  OK                      IC  #  34
        ROM  2  OK                   }
        ROM  3  OK                      IC  #  33
        ROM  4  OK                      IC  #  32

        RAM TEST

        RAM  1  OK
        RAM  2  OK
```

2. RAM Test

    This test checks RAM 1 and RAM 2 by performing a cross-talk test
between each adjacent bit in the RAMs. These RAMs are located on the
Control Board.

```
        ROM TEST

        ROM  1  OK
        ROM  2  OK
        ROM  3  OK
        ROM  4  OK

        RAM TEST

        RAM  1  OK          }        IC  #  U36
        RAM  2  OK                   IC  #  U36
```

3. Background Scene Test

    This test checks the background displays of the game in eight (8)
individual steps. Advance through the steps by pressing the Player 1
button, until the eighth display (a blank screen) is reached.


```
     1              2              3              4
```
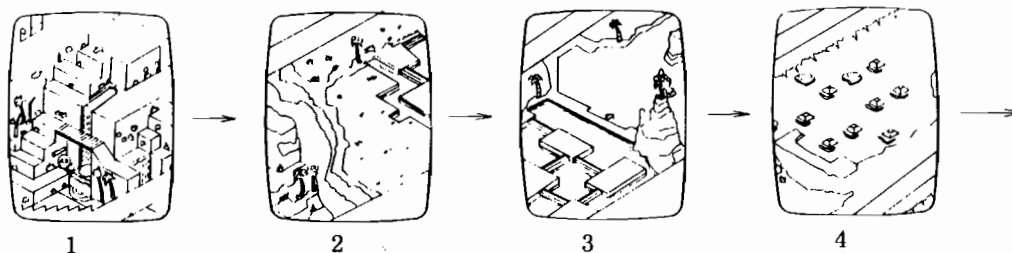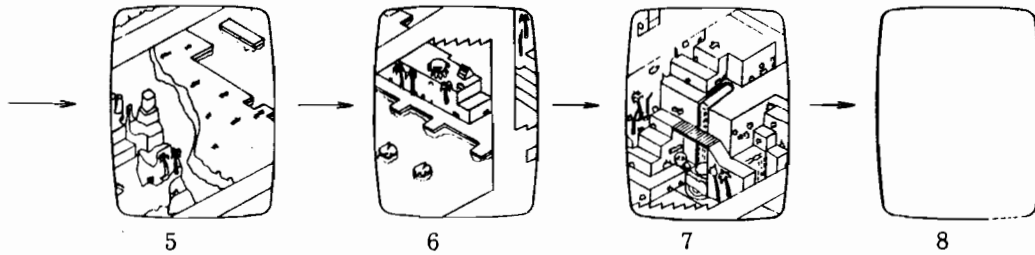
4. Target Test

Here we check the target patterns used in the game in eight (8) individual steps. Again, advance through the test with the Player 1 button, scene by scene. Movement and 180° Flip (for Cocktail Tables) are verified here as well.
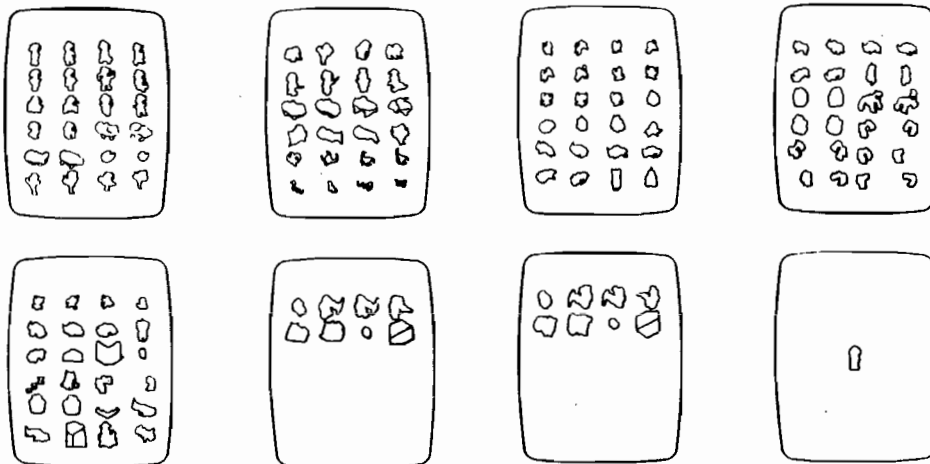
5. Input Test

This test checks the input switches used for operator control, and input signals from the player controls to software.

```
INPUT TEST
MAIN
  SOUTH   OK
  NORTH   OK
  EAST    OK
  WEST    OK
  JUMP    OK

SUB
  SOUTH   OK
  NORTH   OK
  EAST    OK
  WEST    OK
  JUMP    OK

  1 PLAY  OK
  2 PLAY  OK
  COIN A  OK
  COIN B  OK
  SERVC   OK
```

6. Output Test

This test verifies output ports used to interface computer
software to game hardware.

```
 _____              _____              _____
|              |            |              |            |              |
| OUTPUT TEST  |            |              |            | OUTPUT TEST  |
| COINAER  OK  |            |              |            | COINAEN  OK  |
| COINBER  OK  |            |        FLIP  |            | COINBEN  OK  |
| SERVCEN  OK  |            |    OK   COUNTB |           | SERVCEN  OK  |
| COUNTA   OK  |            |    OK   COUNTA |           | COUNTA   OK  |
| COUNTB       |            |    OK   SERVCEN |          | COUNTB   OK  |
|              |            |    OK   COINBEN |          | FLIP         |
|              |            |    OK   COINAEN |          |              |
|              |            |   OUTPUT TEST |            |              |
|_____|            |_____|            |_____|
```

7. DIP Switches

Operation of the DIP Switches are checked here, internally, by
simultaneously turning on, and then off, all odd switch positions,
followed by all even switch positions. "Test 1" is displayed at the
end of the cycle. Pressing the Player 1 button initiates "Test 2" for
DIP Switch 2.

8. Video RAM Test

Here Video RAMs used for character pattern display are tested.
These RAMs are located on the Video Board.

```
 _____
|              |
|              |
|  VRAM TEST   |
|  VRAM   OK   |
|              |
|              |
|              |
|_____|
```
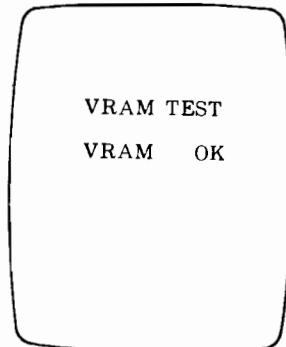
9. Character Pattern Test

    This test checks the ROMs used for character patterns and picture
patterns. During this test all the patterns contained within each
ROM will be displayed. Character pattern ROMs are located on the
Video Board.
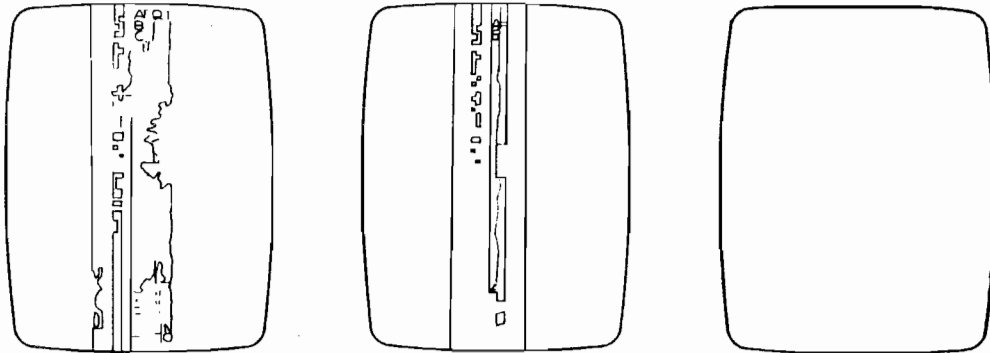
10. Color Control Reference Test

    Character pattern and background picture color control is checked
here by color reference changes with each pressing of the Player 1
button.
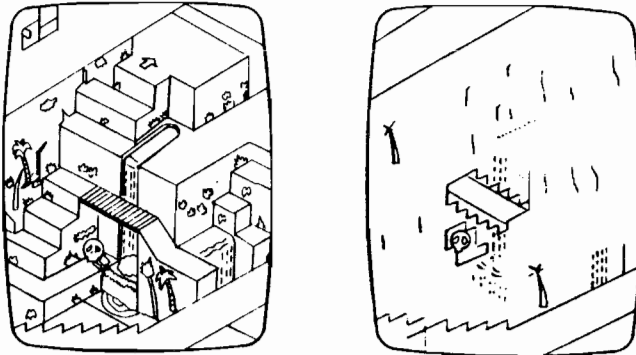
11. Sound Port Test

    This test verifies that proper sound outputs are generated with each
pressing of the Player 1 button. Twenty-nine individual sounds are
generated, one at a time, sequenced by the Player 1 button, and appear
in order on the following page.

SOUND TEST
01
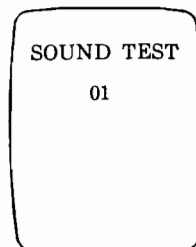
11. Sound Port Test (cont.)

    01   No sound

    02   Gorilla lullaby

    03   Player victory music

    04   Player clear music

    05   "Player goes to Heaven" music (in the water)

    06   "Player goes to Heaven" music (other than in the water)

    07   Fire

    08   Player step sound

    09   Player drop sound

    10   Player jump sound

    11   "Monkey on my back" sound

    12   Held by monkey sound

    13   Hit by coconuts sound

    14   "Crumbling crevasse" sound

    15   Passage of snake sound

    16   Rush of rhino sound (A)

    17   Rush of rhino sound (B)

    18   Rhino screeching to a stop sound

    19   Player digging sound

    20   Fish sound

    21   Special Bonus sound

    22   Credit sound

    23   Gorilla laughing

    24   Hippo sinking sound

    25   Background music for scene # 1

    26   Background music for scene # 2

    27   Background music for scene # 3

    28   Background music for scene # 4

    29   Bonus score up sound

CABINET
WIRING DIAGRAM

Gremlin/SEGA
San Diego California 92123

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		700-0138	A

SCALE NONE | SHEET 3 OF

700-0138 | A

19" Color Monitor Vertical—Electrohome G07-907

200-0019
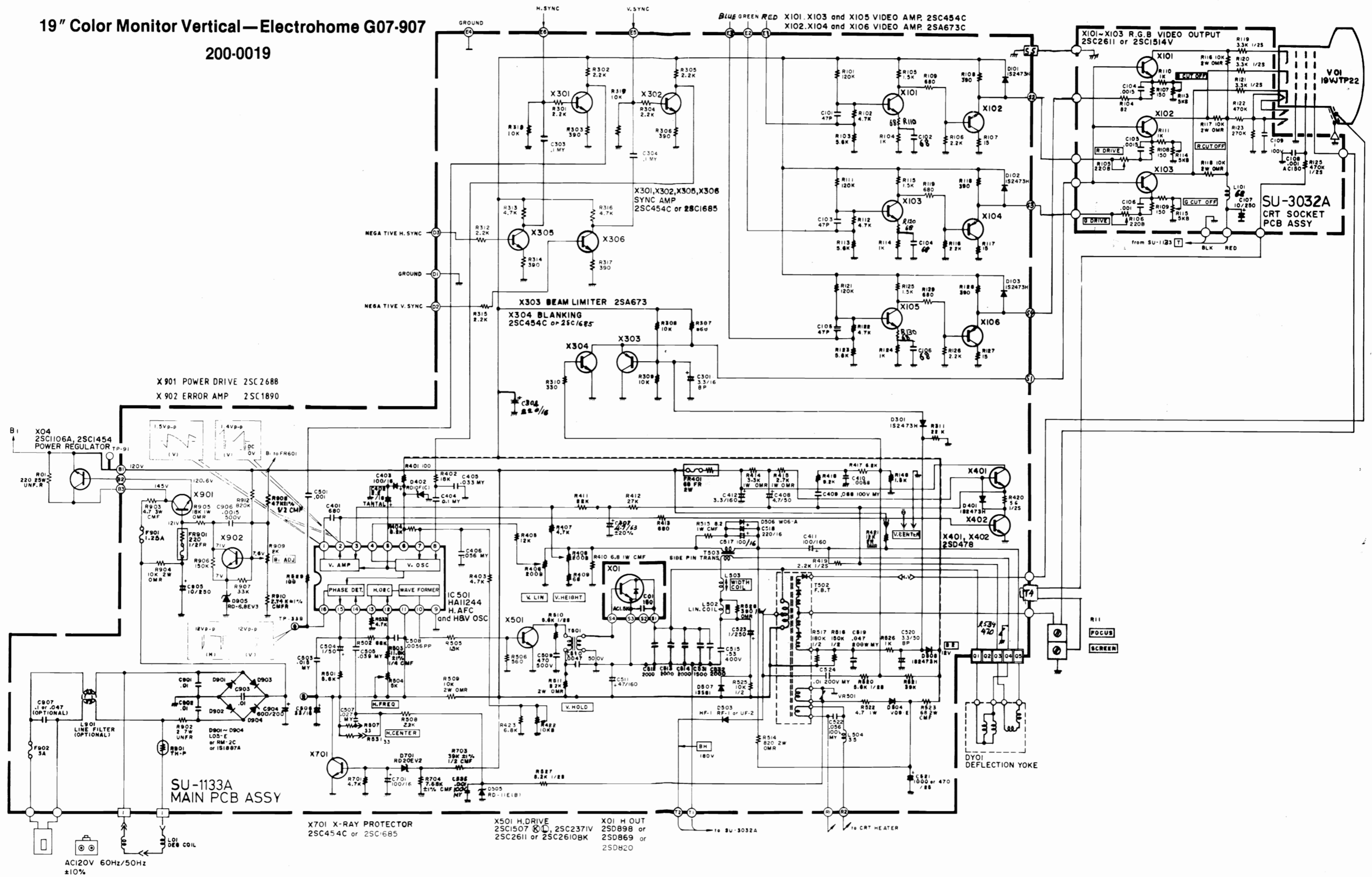
Schematic diagram of the Electrohome G07-907 19" Color Monitor Vertical, including SU-1133A Main PCB Assy and SU-3032A CRT Socket PCB Assy.

19" Color Monitor — Wells Gardner K4961 schematic diagram (200-0091)
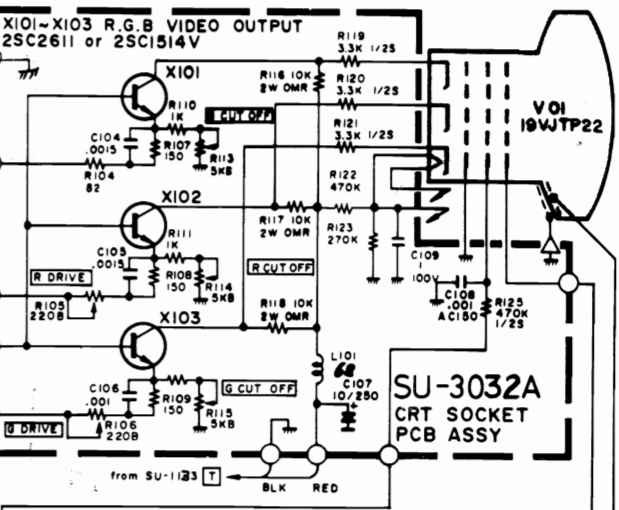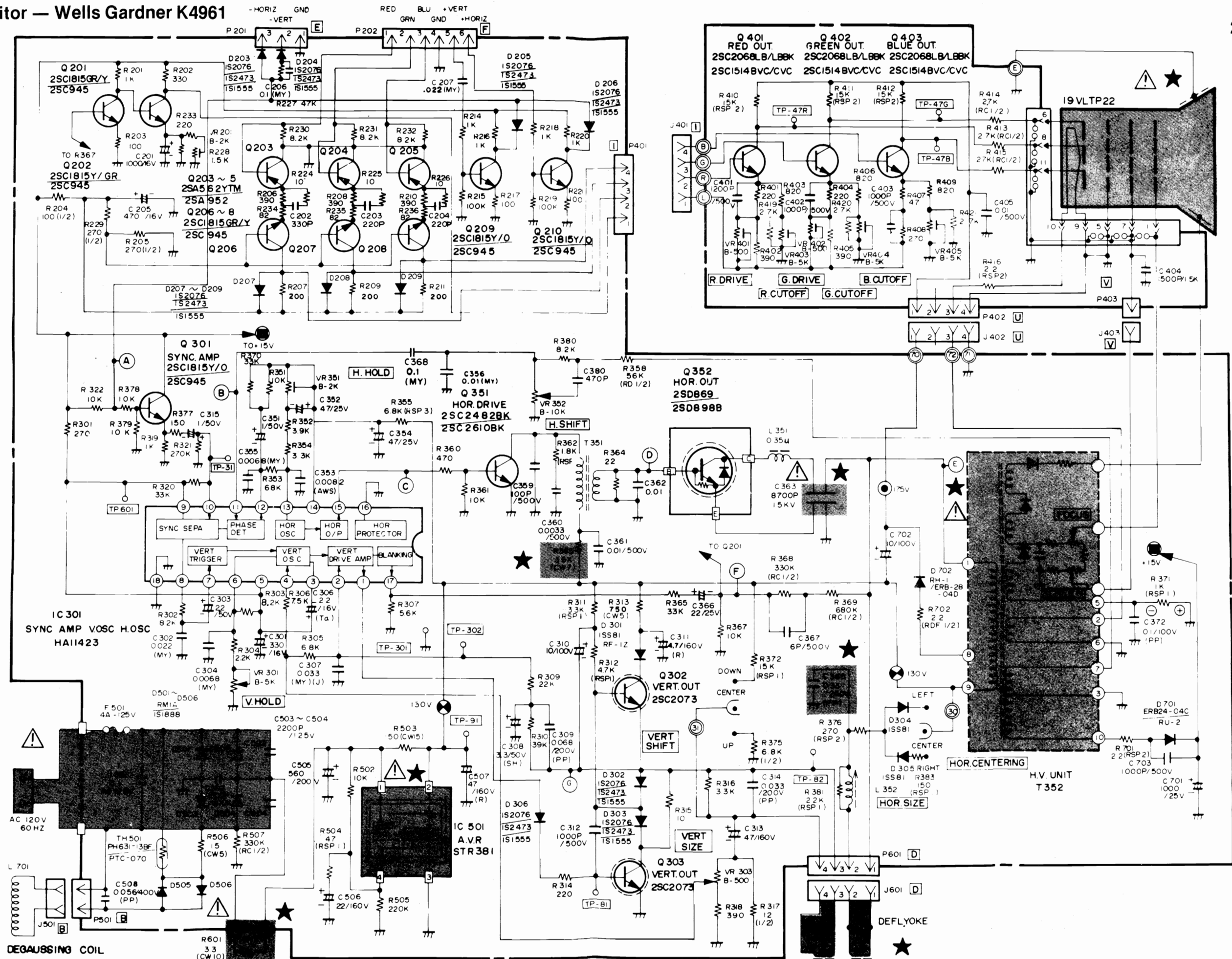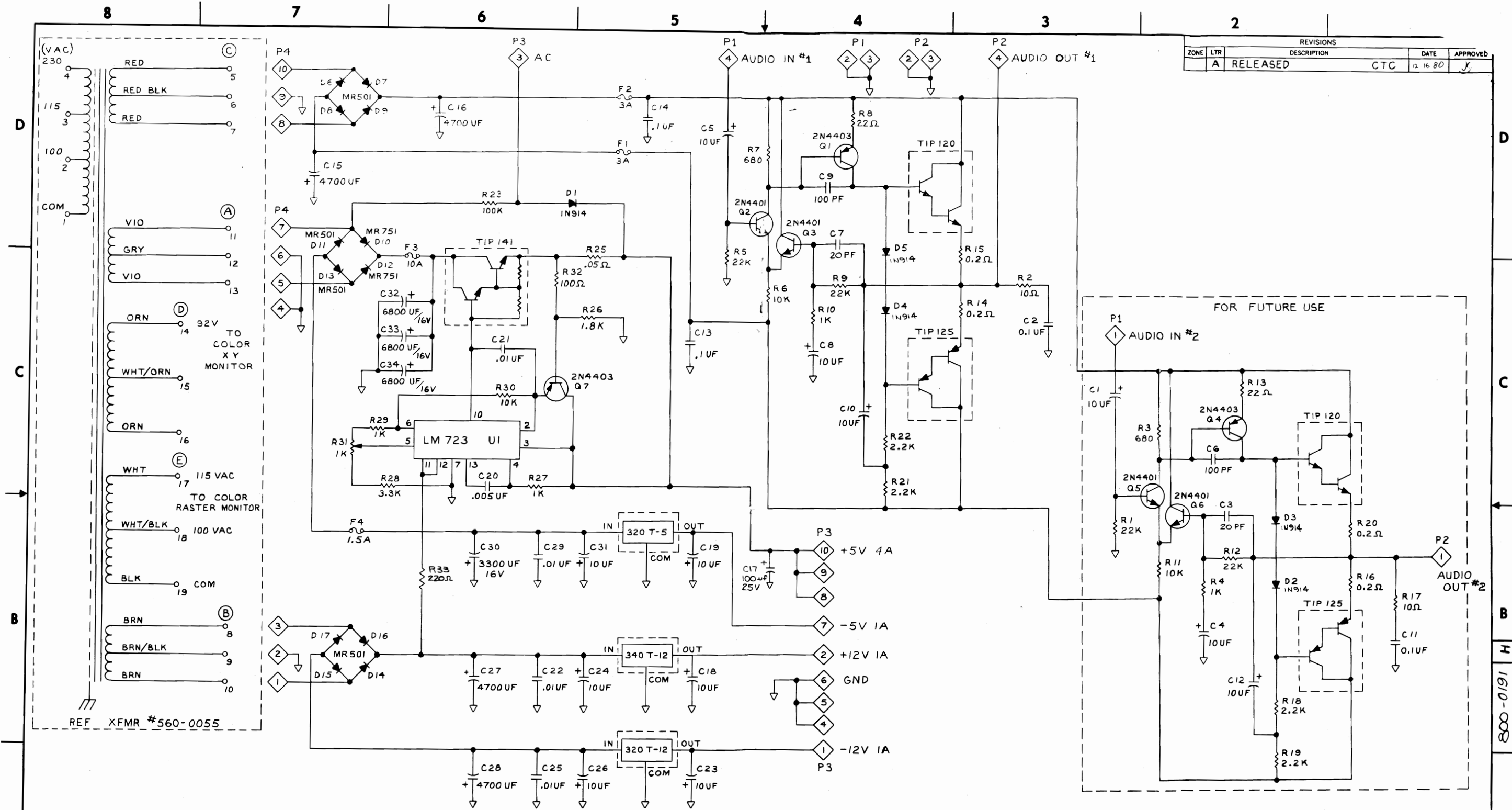
NOTE: ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W ±5%.

REF XFMR #560-0055

230 (VAC)
115
100
COM

RED
RED BLK
RED
VIO
GRY
VIO
ORN   92V TO COLOR XY MONITOR
WHT/ORN
ORN
WHT   115 VAC TO COLOR RASTER MONITOR
WHT/BLK   100 VAC
BLK   COM
BRN
BRN/BLK
BRN

P3 AC
AUDIO IN #1
AUDIO OUT #1
AUDIO IN #2
AUDIO OUT #2

FOR FUTURE USE

MR501
4700 UF C16
4700 UF C15
R23 100K   D1 1N914
TIP 141
MR751
MR501
C32 6800 UF/16V
C33 6800 UF/16V
C34 6800 UF/16V
C21 .01UF
R30 10K
2N4403 Q7
LM 723 U1
R29 1K
R31 1K
R28 3.3K
C20 .005UF
R27 1K
R33 220Ω
F3 10A
F4 1.5A
R32 100Ω
R25 .05Ω
R26 1.8K
C13 .1UF

F2 3A
C14 .1UF
C5 10UF
R7 680
R8 22Ω
2N4403 Q1
TIP 120
2N4401 Q2
2N4401 Q3
C7 20PF
C9 100PF
R5 22K
R6 10K
R9 22K
R10 1K
C8 10UF
D5 1N914
D4 1N914
R15 0.2Ω
R14 0.2Ω
R2 10Ω
C2 0.1UF
TIP 125
C10 10UF
R22 2.2K
R21 2.2K
F1 3A

320 T-5
C30 3300 UF/16V
C29 .01UF
C31 10UF
C19 10UF
C17 100UF 25V
P3 10 +5V 4A
P3 7 -5V 1A

340 T-12
MR501
C27 4700 UF
C22 .01UF
C24 10UF
C18 10UF
P3 2 +12V 1A
P3 6 GND

320 T-12
C28 4700 UF
C25 .01UF
C26 10UF
C23 10UF
P3 1 -12V 1A

C1 10UF
R3 680
R13 22Ω
2N4403 Q4
TIP 120
2N4401 Q5
2N4401 Q6
C6 100PF
C3 20PF
D3 1N914
R20 0.2Ω
R1 22K
R11 10K
R12 22K
R4 1K
C4 10UF
D2 1N914
R16 0.2Ω
R17 10Ω
C11 0.1UF
TIP 125
C12 10UF
R18 2.2K
R19 2.2K

G-80 Power Supply

SIZE D   CODE IDENT NO.   DRAWING NO. 800-0191   REV H
SCALE NONE   SHEET 3 OF 3

800-0191

FINAL MANUAL ORDER FORM

PLEASE FILL IN THE INFORMATION BELOW AND RETURN IT TO US. WHEN THE
FINAL OWNER'S MANUAL IS AVAILABLE, IT WILL BE SHIPPED DIRECTLY TO
YOU, FREE OF CHARGE.
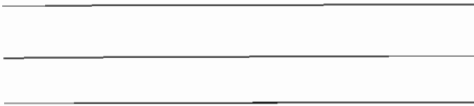

NAME _____

COMPANY NAME _____

COMPANY ADDRESS _____

_____

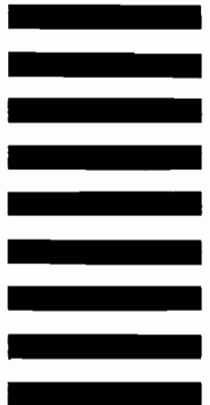PHONE NUMBER _____

GAME SERIAL NUMBER _____

CONGO BONGO™

IIII

BUSINESS REPLY MAIL
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