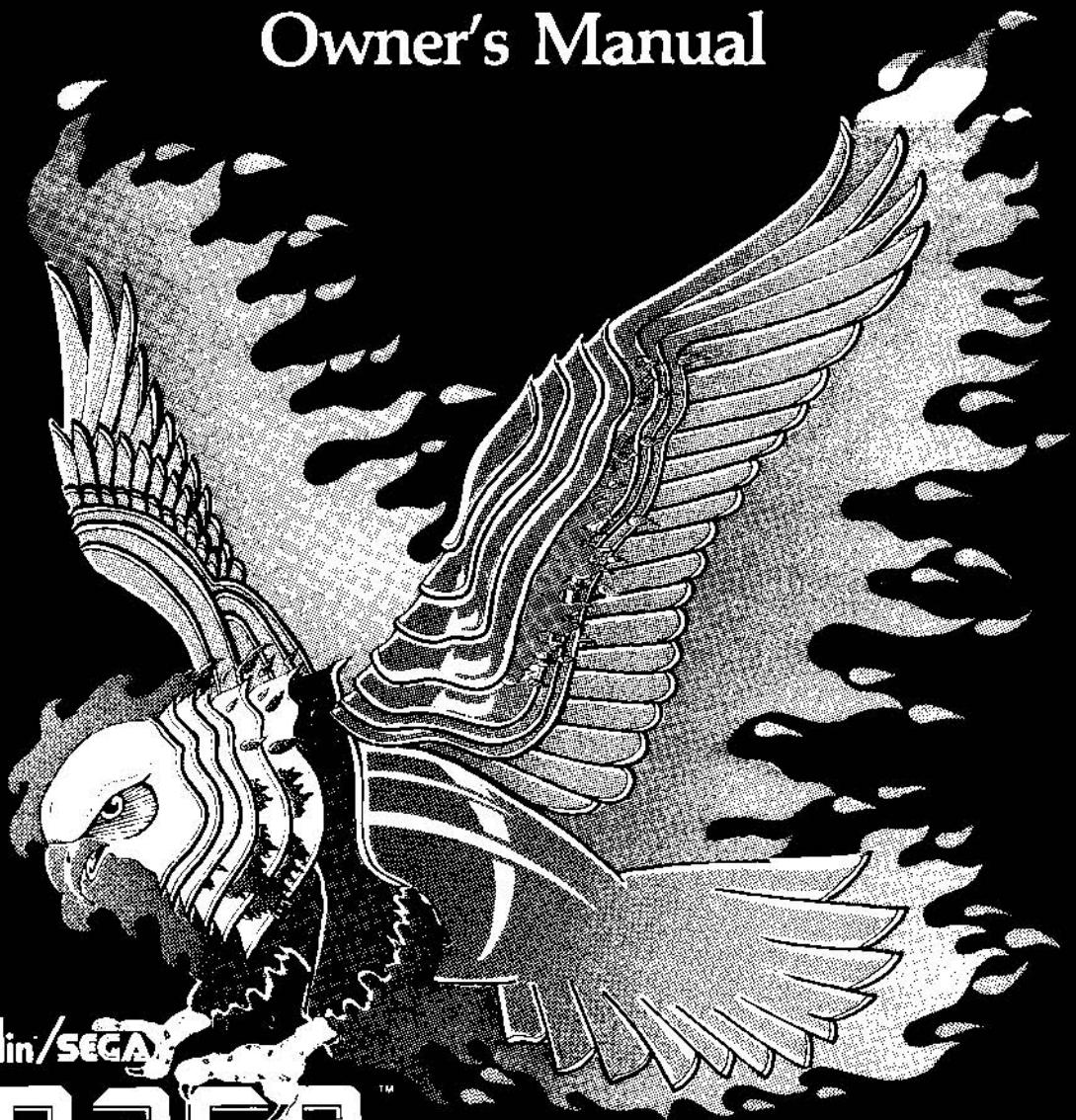


Owner's Manual



Gremlin/SEGA

**Space
firebird**

MANUAL PART NO.
420-0533



Operating Instructions and Service Manual

MANUFACTURED BY

Gremlin/SEGA

TLX 910-335-1621

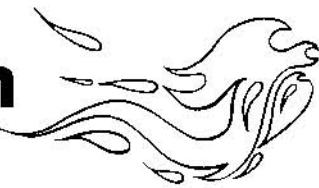
SPACE FIREBIRD OWNER'S MANUAL
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introduction



This is an electronic game that makes extensive use of digital integrated circuitry and television monitor circuitry. This manual assumes the maintenance technician possesses a general knowledge of solid state circuitry, microprocessor, TTL digital, integrated circuitry and T.V. monitor concepts. Any individual not knowledgeable in these areas should not attempt repair of the electronic portion of the game. It should be noted that any attempt to repair the game in the field without the express consent of the factory will immediately void the warranty!!

SERVICE TECHNICIAN NOTE:

The system reset circuitry described above requires that the coin counter be attached to the system. If there is a coin counter problem and no replacement is available, the game will function properly if a 10K Ohm resistor is connected across the coin counter input pins to the video logic board.

also

important notes

An important service note is posted in this game and is repeated here for emphasis:

If at any time the T.V. screen shows a meaningless display or the game otherwise malfunctions, simply drop a coin into the coin mechanism. This should correct the problem. If not, the game requires service.

The circuitry in this game has been arranged so that the insertion of a quarter through the coin mechanism will reset the restart in the system. This clears up temporary problems caused by power line disturbances, static, etc.

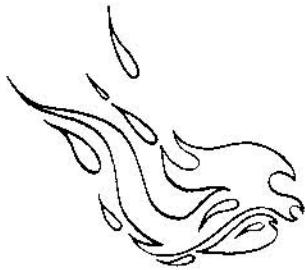
Never replace any components with anything other than exact replacement parts.

Never remove circuit board connections while power is on.

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

Always consult the manual before attempting repairs.

Correspondence regarding this game should be addressed to:
GREMLIN/SEGA
8401 Aero Drive
San Diego, California 92123
(714) 277-8700



installation procedures

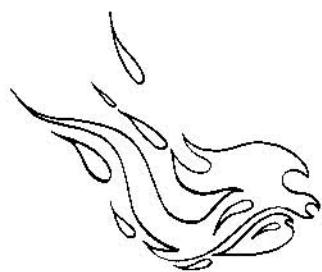
Your new "Space Firebird" game is ready to play immediately upon arrival. But, we at GREMLIN/SEGA are quality-minded and feel that your inspection is the final step in the Quality Control process.

Before you plug in your game, open the rear access panel and make a final

inspection of the interior of the game. Check all connectors to ensure they are firmly seated. Check the ICs to verify that they are securely plugged in or soldered in place and remove any foreign objects and loose bits of solder. Make sure all major subassemblies are plugged in properly.

INSTALLATION REQUIREMENTS

| | |
|----------------|--|
| Power | 100 VAC, 60 HZ (nominal), 175 watts 110VAC, 60 HZ (nominal), 175 watts 220 VAC, 60 HZ (nominal), 175 watts |
| Temperture | 0 to 38°C (32 to 100°F) |
| Humidity | Not over 95% relative |
| Space Required | 25 1/2 W x 28 in.D (64.77 cmW x 71.12 cmD.) |
| Height | 67 in. (170.18 cm) |

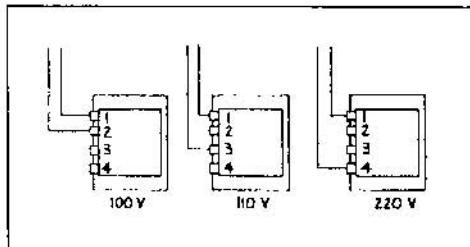


voltage selection

Before plugging in your game, make sure that the game voltage is correct for your location. Locate the two leads from the AC junction box to the power transformer. For 100 VAC, they should be connected to terminals 1 and 2 on the power transformer. For 110 VAC, connect 1 and 3. For 220 VAC applications, they should be connected to 1 and 4.

You will also notice on the AC junction box that there is a safety interlock switch. When the rear panel is in place the switch is depressed and the game receives power. Removing the rear panel, the switch returns to original position and the power is cut off from the game. For servicing, this switch can be pulled out and power will be restored.

POWER SUPPLY TRANSFORMER OPTIONS



ALSO, THE TV MONITOR MUST BE CONVERTED TO THE SAME VOLTAGE INPUT AS THE GAME TRANSFORMER. REFER TO THE MONITOR MANUAL IN THE GAME.



game concept

"Space Firebird" is a one or two player game in which players are attacked from all sides by highly maneuverable Firebirds. Players can move space ship left or right and shoot a rapid-fire laser at attacking Firebirds. A special Warp Mode allows the space ship to escape danger and fire at the flock of aliens.

FIREBIRDS

The space Firebirds are an unique set of adversaries. There are three different birds, the Emperor, Eagle and Gull, which fly together in complex looping formations, firing and attacking from all directions. The player must keep track of the laser hits because each bird has a different resistance level to hits. The fearless Emperor is destroyed by four hits, the Eagle with two hits and the soaring Gull with one hit. The Eagle also has a deadly bomb which is launched at the space ship. Extra points are scored by hitting the bomb before it explodes. The bomb when hit, scatters into deadly shrapnel. To avoid the flying shrapnel, the bomb must be hit from directly underneath.

SPACE SHIP

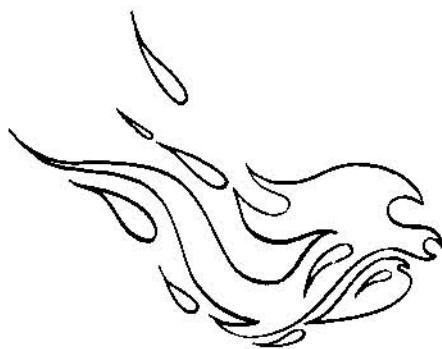
The space ship can be moved right or left to evade attacking Firebirds. Depressing the fire button enables the space ship to shoot its laser at approaching Firebirds. Players receive 3 (4, 5 or 6) space ship per play.

WARP MODE

Activate warp mode to escape impeding danger or to strike out at approaching birds. There is only warp mode per space ship. When activated, the space ship is launched into space with a force field around it that deflects enemy fire. In warp mode, Firebirds can be eliminated by ramming into them or by firing at close range.

SCORING

By destorying the Emperor, a player receives 100 points, the Eagle nets 50 points, the Gull—20 points and the bomb scores 50 to 200 points. Each battle consists of 50 Firebirds and 1,000 bonus points are awarded if all are destoryed. If all Firebirds are destoryed, the player moves into a new battle sequence that increases in difficulty. One new space ship is awarded for a score of 5,000 (8,000) points. Game ends when all space ships are destoryed.



options selection

Your "Space Firebird" game is equipped with a set of switches that allows operators a number of options. The switches are located on the game logic board.

Switch adjustments **MUST** be done with the power off. Switches are set at 3 space ships, 1 coin/1 play, and 5,000 points for an extra ship when machine is shipped.

| | DIP SWITCH SETTING | | | | | |
|----------------------------------|--------------------|-----|-----|-----|-----|-----|
| | A | B | C | D | E | F |
| Number of Space Ships | | | | | | |
| 3 | on | on | | | | |
| 4 | off | on | | | | |
| 5 | on | off | | | | |
| 6 | off | off | | | | |
| Coinage | | | | | | |
| 1 coin/1 play | | | on | on | | |
| 2 coins/1 play | | | off | on | | |
| 1 coin/3 plays | | | on | off | | |
| 1 coin/2 plays | | | off | off | | |
| Score Level For Extra Space Ship | | | | | on | |
| 5,000 points | | | | | off | |
| 8,000 points | | | | | | |
| Table: Up-right | | | | | | on |
| Table | | | | | | off |
| Up-right | | | | | | |



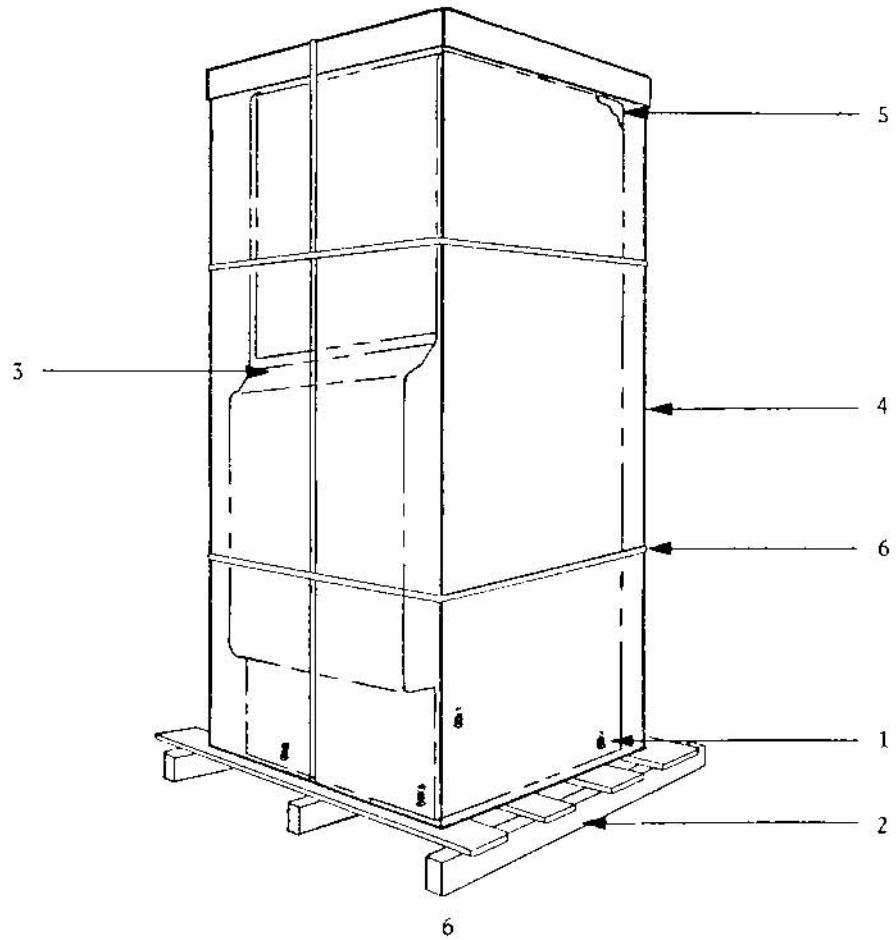
repackaging instructions

Should it be necessary to ship this game, follow the instructions below for game recrating:

- A) If the original shipping bolts have been discarded (Ref. 1), obtain four 5/16-18 x 1 3/4" hex head bolts with 5/16" flat washers. Carefully lay the game on its side and attach skid (Ref. 2).
- B) Place game upright. Tape game keys to upper flange of operator's panel (Ref. 3). Crate the game using appropriate shock-absorbent packing

material (Ref. 4). Include padding on all four corners of the game. (Ref. 5). After crating is complete, secure package with strapping (Ref. 6.)

NOTE: If the game is to be shipped to GREMLIN for service or repair, attach a tag identifying the distributor and indicate the service or repair to be made; include the full serial number of the game.
GAME MUST BE SHIPPED PREPAID.





maintenance and troubleshooting procedures

Always check and confirm the following items when it is believed that a problem has developed. These items are relatively simple but commonly overlooked.

1. Is the power switch on?
2. Are the fuses intact?

There are three fuses (not counting the monitor fuses which are detailed in the monitor manual accompanying this game). One fuse is located on the AC junction box. The other two are on the power supply PC board. If a fuse blows out after being replaced, it indicates trouble in another component. **ALWAYS** replace with the prescribed capacity fuse, as normal equipment may be damaged if larger fuses are used as a substitute.

3. Are the connectors firmly inserted?
Poor connector connections must be considered for any indication of trouble. Check all related connectors for poor contact. Although disconnected connectors are easily spotted, poor contacts are difficult to locate. The connectors should therefore be pushed in firmly and then loosened to spot poor connections. When testing the PC board connectors, **ALWAYS** turn off the power.

4. Turn power supply off and on again.
As the unit may return to normal if the control circuit is reset when the game seems abnormal, turn the power off and on to see if the trouble will clear up.
5. Are there any metallic objects on the PC board?
Ensure that there are no metallic objects on the PC board, as this will cause shorts in the system. Also refrain from putting other objects inside the cabinet.
6. Ensure that all eproms are firmly seated in the logic board.

The main logic board, video board and sound board are equipped with test points designed to simplify troubleshooting these boards. You will also find these test points listed on the game schematics.

MAIN LOGIC BOARD

- TP1 The dot clock produced in the primary stage of video timing.
- TP2 Z80 clock pulse.
- TP3 The inverted horizontal blanking signal.
- TP4 The vertical blanking signal.
- TP5 The inverted sync signal.
- TP6 Is HI except when the game is reset then it pulses LO.
- TP7 Is LO except when the game is coined then it pulses HI.
- TP8 Is always HI.
- TP9 Is LO except when the game is reset then it pulses HI.
- TP10 Ground.
- TP11 Ground.

VIDEO BOARD

- TP1 The red driver to the monitor.
- TP2 The green driver to the monitor.
- TP3 The blue driver to the monitor.
- TP4 The vertical sync driver to the monitor.
- TP5 Inverted horizontal blanking signal from logic board.
- TP6 Inverted vertical blanking signal.
- TP7 The "IN RENGE" signal at 2A pin 5.
- TP8 The "OLIVE" signal at 2A pin 12.
- TP9 DO29—pulses HI when either the computer or player fires.
- TP10 The stop signal. Appears only on initial reset.
- TP11 Ground.

SOUND BOARD

- TP1 Blanking timing clock enabler.
- TP2 Inverted vertical blanking signal.

The following instructions will help you trace down and find most problems. The procedures are listed by the more common kinds of problems that could arise. Read through all the steps first, then implement them one at a time. You will need an AC/DC voltmeter and an oscilloscope.

NO PICTURE—TV TUBE AND FLUORESCENT LAMP ARE OFF

1. Plug the game in and check to see that it is receiving 115 (230) VAC. Measure 115 VAC at the input terminals of the game transformer. If it is not present, proceed to next step.
2. Check fuse located on the bottom of the AC junction box. If it is good, proceed to next step.
3. Remove the cover of the junction box. Measure 115 VAC on the output of the EMI filter. If it is not present, the EMI filter may be bad or one of the AC line connections in the junction box may be loose. UNPLUG the game and re-check these connections.
4. If the fluorescent lamp still does not operate, turn the game off and then turn it on again. This usually re-starts the lamp. If it doesn't, turn the lamp in its socket. This will re-seat it for a better connection. Sometimes the lamp works loose during shipment.

NO PICTURE—TV TUBE AND FLUORESCENT LAMP ARE ON. SCREEN BLACK

1. First make a quick check of the monitor-to-logic board connections. Are all wires making contact with the pin connector? Are the wires secure on the monitor plug-in connector?
2. Check 1A, 1B, 1C, 1D, 1E, 1F, 1G, 2B, 2C, 2D, and 2E on the main logic board for proper video timing signals.

SCAMBLED PICTURE OR LOSS OF VERTICAL OR HORIZONTAL HOLD

1. Check test points 1 through 5 on the main logic board.

IMPORTANT NOTE—All input from the video board to the monitor passes through a video interface board which consists of a single chip. For any monitor problems not corrected by above procedures, the video interface board may be suspect.

SOUND PROBLEM OR NO SOUND

1. Check wires running from CPU board to sound board and power supply to ensure they are intact.
2. If they are not broken then check U3 pin 3 of the power supply board. If there is no signal there, check the sound board.

INCORRECT POWER SUPPLY

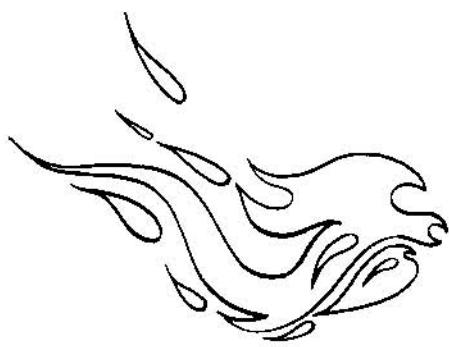
1. Unplug harness from power supply to logic board. Recheck voltages. If voltages have corrected themselves, either there is a short on the logic board or the voltage regulator is breaking down under load. Replace the regulator which is associated with the faculty voltage.

GAME DOES NOT COIN UP

1. A common problem with a game that does not coin up is that the coin switch trip wire is out of adjustment. Usually, all that is necessary is to bend the trip wire up or down, depending on whether a heavier or lighter tension is needed.
2. Don't overlook the possibility of an incorrect or faulty coin switch-to-logic board connection. Sometimes these wires work loose from the coin switches.
3. Check main logic board, IC 3M, 3N, or 4N. Also check TR1.

PLAYER CONTROLS NOT WORKING

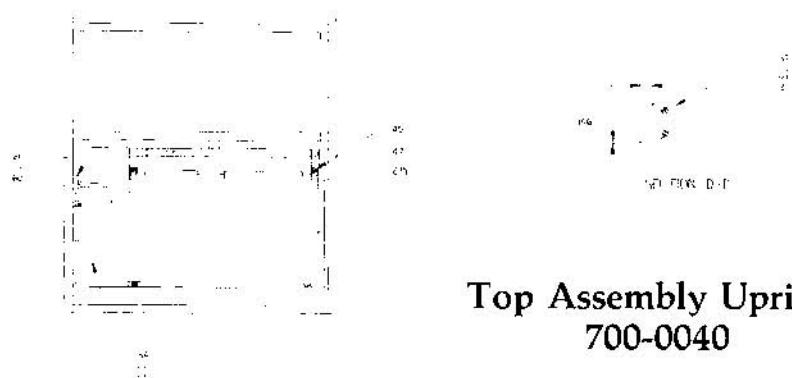
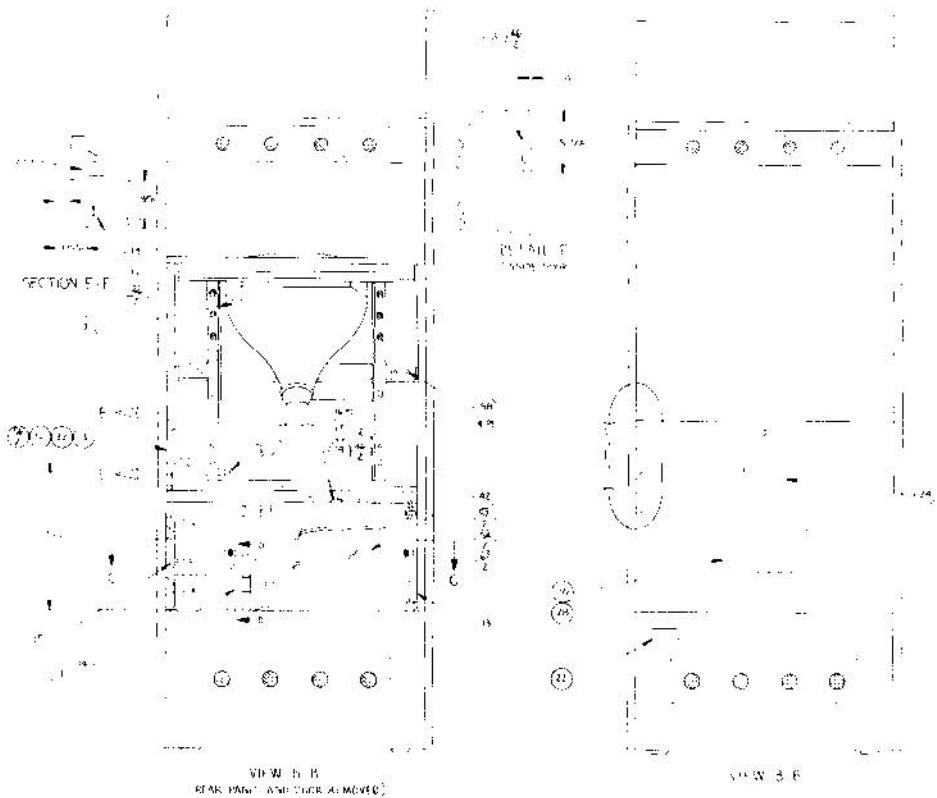
1. Check first to be sure all control switch connections are secure. This includes checking the black ground wire leads.
2. If these connections are good, make sure the control panel leads are intact inside the connector to the logic board.
3. Check the main logic board, IC 1J and 1K.



parts catalog

top assembly upright

| PARTS LIST | | | DWG NO. 700-0040 |
|------------|----------------|------------------|--------------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 1 | 130-0001 | 1 | SPEAKER GAME 6×9 |
| 2 | 130-0002 | 1 | SPEAKER COVER |
| 3 | 140-0021 | 1 | COVER J-BOX |
| 4 | 140-0049 | 1 | CABINET DIRECT WOODGRAIN |
| 5 | 250-0032 | 1 | FR. BEZEL |
| 6 | 250-0034 | 1 | SPRING RETAINER |
| 7 | 250-0038 | 1 | MOLDING STRIP |
| 8 | 250-0048 | 1 | CLIP SWITCH |
| 9 | 250-0356 | 2 | BRKT CLR MON. |
| 10 | 250-0430 | 1 | GROUND STRAP UPR. |
| 11 | 250-0435 | 1 | RIGHT ANGLE BRKT RIGHT |
| 12 | 250-0436 | 1 | RIGHT ANGLE BRKT LEFT |
| 13 | 252-0090 | 1 | ELECTRONIC SUPPORT BLOCK RIGHT |
| 14 | 252-0091 | 1 | ELECTRONIC SUPPORT BLOCK LEFT |
| 15 | 253-0104 | 1 | PANEL MONITOR |
| 16 | 253-0197 | 1 | PANEL LOGO S/F |
| 17 | 280-0005 | 17 | CABLE TIE |
| 18 | 280-0323 | 3 | ELECTRO TAPSICE AMP |
| 19 | 280-0327 | 17 | BASE TIE WRAP |
| 20 | 320-0020 | 2" | SEALANT FOAM |
| 21 | 390-0019 | 1 | LAMP FLUOR 18" |
| 22 | 420-0028 | 1 | DECAL S/N |
| 23 | 420-0030 | 1 | DECAL CAUTION 115V |
| 24 | 420-0040 | 1 | DECAL RECYCLE |
| 25 | 420-0041 | 1 | DECAL S/N SMALL |



Top Assembly Upright
700-0040

top assembly upright

| PARTS LIST | | | DWG NO. 700-0040 |
|------------|----------------|------------------|-----------------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 26 | 420-0132 | 1 | LBL PRICE 25° |
| 27 | 420-0507 | 1 | LIGHT BAFFLE |
| 28 | 420-0526 | 1 | MANUAL ELECTROHOME (VERTICAL MT) |
| 29 | 420-0532 | 1 | GRAPHIC INTERIOR CENTER |
| 30 | 420-0533 | 1 | MANUAL S/F |
| 31 | 800-0136 | 1 | ASSY HARN SPEAKER |
| 32 | 800-0140 | 1 | ASSY MONITOR COLOR 19" VERTICAL |
| 33 | 800-0145 | 1 | ASSY AC JUNCTION BOX |
| 34 | 800-0146 | 1 | ASSY GAME PWR SUP ISO |
| 35 | 800-0153 | 1 | ASSY GROUND STRAP 18" |
| 36 | 800-3120 | 1 | ASSY CONTROL PANEL S/F |
| 37 | 800-3123 | 1 | ASSY VIDEO INTERFACE S/F |
| 38 | 800-3125 | 1 | ASSY HARN COIN MECH |
| 39 | 800-3126 | 1 | ASSY HARN POWER S/F |
| 40 | 800-3127 | 1 | ASSY HARN CONTROL PANEL |
| 41 | 800-3124 | 1 | ASSY HARN SPEAKER S/F |
| 42 | 834-0042 | 1 | ASSY GAME ELECTRONIC S/F |
| 43 | 800-3131 | 1 | ASSY COIN MECH S/F |
| 44 | 800-0147 | 1 | FLUOR LAMP ASSY 2 |
| 45 | 280-0324 | 2 | CABLE CLAMP NYLON |
| 46 | | 36 | SCR. PHL. PN. HD #6×1½" SHT. MTL. |
| 47 | | 12 | SCR. PHL. RD. HD #8×1½" SHT. MTL. |
| 48 | | 4 | SCR. MACH. SLOT HD. 8-32×1½" |
| 49 | | 9 | BOLT CARRIAGE 10-24×1¼" |
| 50 | | 4 | NUT HEX 8-32 |

top assembly upright

| PARTS LIST | | | DWG NO. 700-0040 |
|------------|----------------|------------------|-------------------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 51 | | 9 | NUT, WING 10-24 |
| 52 | | 6 | WASHER FLAT #8 |
| 53 | | 14 | WASHER FLAT #10 |
| 54 | | 6 | WASHER LOCK SPLIT #8 |
| 55 | | 6 | WASHER LOCK SPLIT #10 |
| 56 | | 6 | SCR. PHL. PN.HD #8X11/14" SHT. MTL. |
| 57 | | 6 | NUT HEX 10-24 |
| 58 | | 6 | SCR. PH. PN. HD #8×1¼" SHT. MTL. |
| 59 | | 5 | BOLT CARRIAGE 10-24×1½" |
| 60 | | 1 | FLAT HD. WOOD SCR #8×1" |
| 61 | | REF | SUPPORT BLOCK FURNISHED WITH CAB. |
| 62 | | 2 | NUT WING 8-32 |
| 63 | | 2 | SCR. PHL. PN. HD. #6×1" SHT. MTL. |
| 64 | 420-0537 | 1 | GRAPHIC GAME INSTRUCTIONS |
| 65 | 420-0538 | 1 | GRAPHIC WARP INSTRUCTIONS |
| 66 | 420-0539 | 1 | CARDBOARD BACKING |

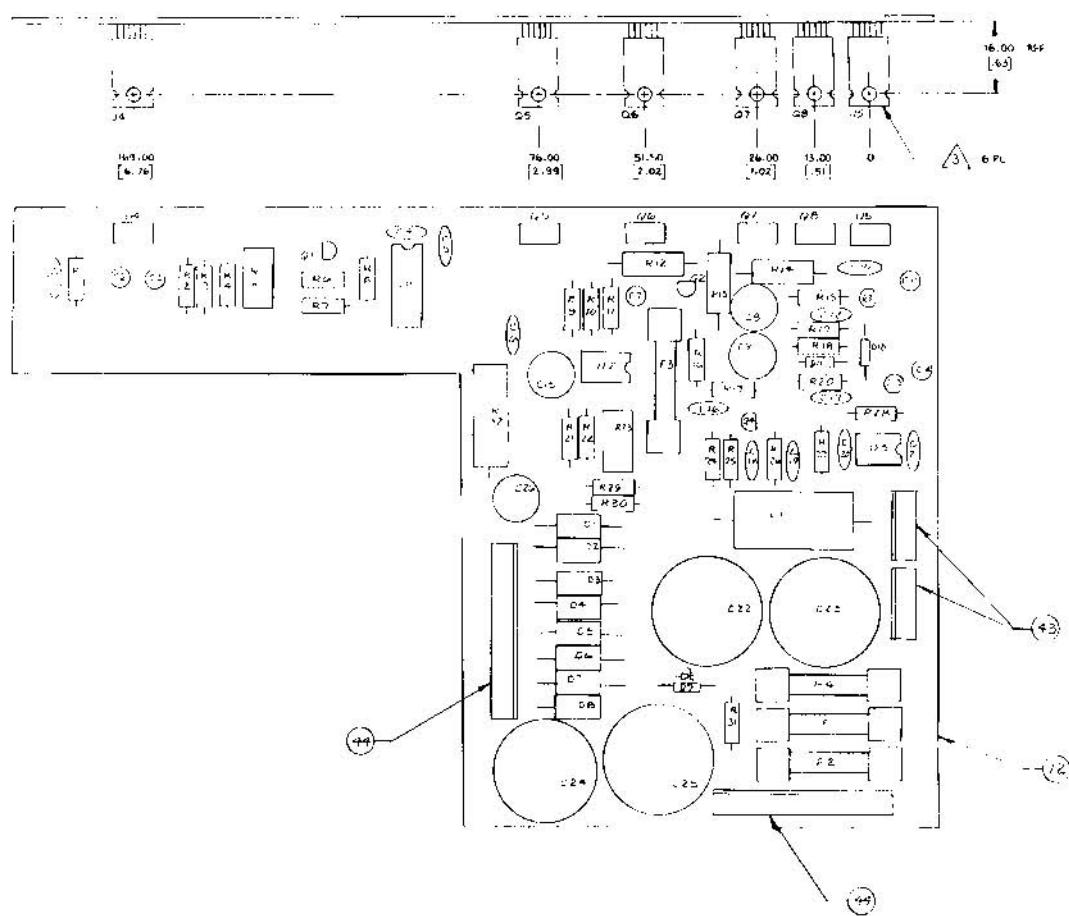
P.C. assembly game power supply

| PARTS LIST | | | DWG NO. 800-0128 |
|------------|----------------|----------------------|---------------------------------|
| Item # | Gremlin Part # | Description | Ref Des |
| 1 | 150-0088 | CAPE 10 uf 25V RDL | C2, C3, C7, C11, C13, C14 |
| 2 | 150-0092 | CAPE 100 uf 25V RDL | C8, C9, C15, C26 |
| 3 | 150-0095 | CAPE 3300 uf 16V RDL | C24 |
| 4 | 150-0096 | CAPE 6800 uf 16V RDL | C25 |
| 5 | 150-0097 | CAPE 4700 uf 25V RDL | C22, C23 |
| 6 | 151-0001 | CAP CER .05 uf 50V | C1, C6, C20, C21 |
| 7 | 151-0002 | CAP CER 100 pf 50V | C10, C16, C17 |
| 8 | 151-0007 | CAP CER .005 uf 100V | C5 |
| 9 | 151-0008 | CAP CER .001 uf 50V | C12, C18 |
| 10 | 151-0011 | CAP CER .01 uf 50V | C4 |
| 11 | 151-0012 | CAP CER .1 uf 50V | C19 |
| 12 | 170-0202 | PC BOARD | |
| 13 | 180-0008 | CHOKE 1 uH | L1 |
| 14 | 313-0001 | IC LM 723 DIP | U1 |
| 15 | 313-0004 | IC LM 741 EN DIP | U2, U3 |
| 16 | 313-0015 | IC LM 320T-12 | U5 |
| 17 | 313-0023 | IC LM 320T-5 | U4 |
| 18 | 471-0011 | RES 10 OHM ½W 5% | R26 |
| 19 | 471-0101 | RES 100 OHM ½W 5% | R2 |
| 20 | 471-0102 | RES 1K OHM ½W 5% | R6, R7, R11, R15, R16, R21, R22 |
| 21 | 471-0103 | RES 10K OHM ½W 5% | R8, R19 |
| 22 | 471-0122 | RES 1.2K OHM ½W 5% | R3 |

P.C. assembly game power supply

| PARTS LIST | | | DWG NO. 800-0128 |
|------------|----------------|--------------------|--------------------|
| Item # | Gremlin Part # | Description | Ref Des |
| 23 | 471-0221 | RES 220 OHM ½W 5% | R17, R18, R24, R25 |
| 24 | 471-0222 | RES 2.2K OHM ½W 5% | R28 |
| 25 | 471-0272 | RES 2.7K OHM ½W 5% | R30, R31 |
| 26 | 471-0332 | RES 3.3K OHM ½W 5% | R4 |
| 27 | 471-0471 | RES 470 OHM ½W 5% | R9 |
| 28 | 471-0472 | RES 4.7K OHM ½W 5% | R1, R29 |
| 29 | 471-0473 | RES 47K OHM ½W 5% | R10, R20, R27 |
| 30 | 473-00R1 | RES .1 OHM 5W 3% | R32 |
| 31 | 473-00R2 | RES .2 OHM 3W 5% | R12-R14 |
| 32 | 475-0004 | POT 1K CAR PCMTV | R5, R23 |
| 33 | 481-0004 | DIODE MR501 | D1-D8 |
| 34 | 481-0008 | DIODE IN5231 | D9 |
| 35 | 481-0006 | DIODE IN914/IN4148 | D10, D11 |
| 36 | 482-0006 | XSTR 2N4403 | Q1, Q2, Q4 |
| 37 | 482-0014 | XSTR 2N4401 | Q3 |
| 38 | 482-0019 | XSTR TIP 120 | Q5, Q7 |
| 39 | 482-0100 | XSTR TIP 125 | Q6, Q8 |
| 40 | 514-0002 | FUSE 3A NORM | F1, F3, F4 |
| 41 | 514-0003 | CLIP FUSE MTG | F2 |
| 42 | 514-0006 | FUSE 1.5A NORM | |
| 43 | 212-0004 | CONN 4 PIN M | |
| 44 | 212-0021 | CONN 10 PIN M | |

P.C. Assembly Game Power Supply
800-0128



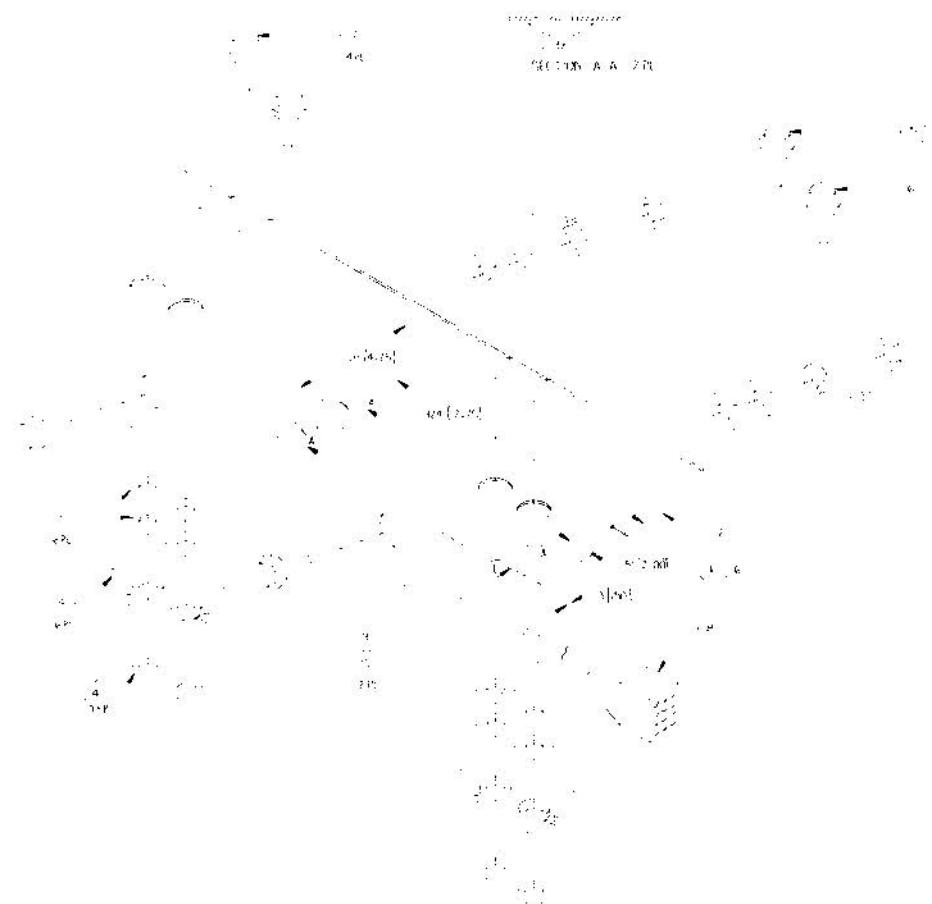
assembly coin mechanism

| PARTS LIST | | | |
|-------------------|-----------------------|-------------------------|---------------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 1 | 250-0285 | 1 | FRAME CASH DOOR, MODIFIED |
| 2 | 220-0066 | 2 | COIN MECHANISM |
| 3 | 220-0008 | 1 | COUNTER, DIGITAL |
| 4 | 220-0035 | 1 | LOCK, FORT LOCK IR |
| 5 | | | |
| 6 | 800-3132 | 1 | ASSY, HARN, COIN MECH INTERFACE |
| 7 | | | |
| 8 | 420-0038 | 1 | DECAL, IMPORTANT NOTE |
| 9 | 280-0327 | 3 | BASE TIE WRAP |
| 10 | 280-0323 | 2 | ELECTRO TAP SPLICE AMP |
| 11 | 800-0152 | 1 | ASSY SERVICE SWITCH |
| 12 | 280-0005 | 3 | CABLE TIE |
| 13 | | 7 | SCREW #8-32 X 1/2" TAMPER-PROOF |
| 14 | | 8 | WASHER, LOCK SPLIT #8 |
| 15 | | 8 | NUT, HEX #8-32 |
| 16 | | 1 | SCREW #8-32 X 1" TAMPER-PROOF |
| 17 | | 2 | SCREW SHT METAL #6 X 3/8" |
| 18 | | 2 | SCREW SHT METAL #6 X 1/2" |
| 19 | 510-0042 | 2 | COIN SWITCH |

Assembly Coin Mechanism
800-3131

assembly control panel

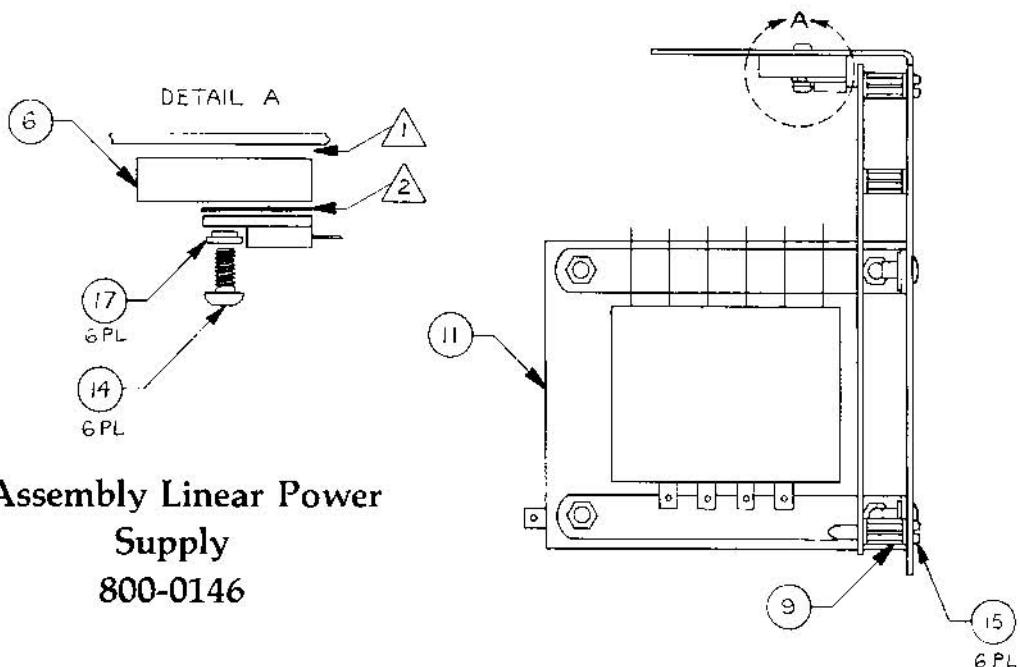
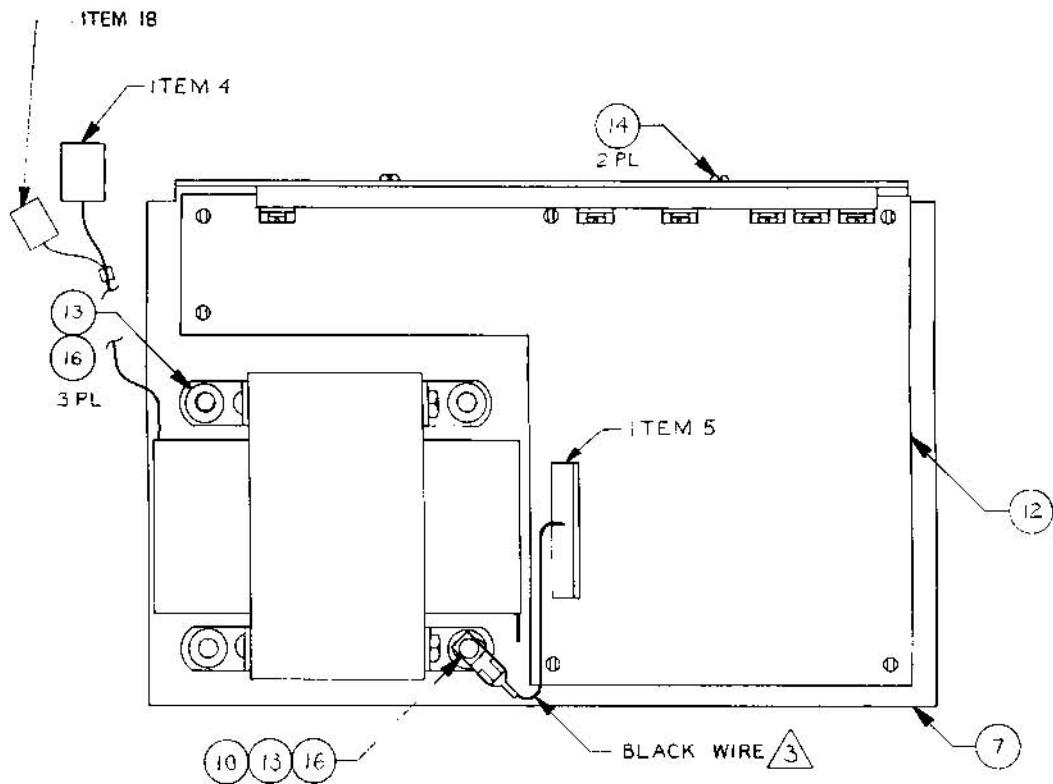
| PARTS LIST | | | DWG NO. 800-3120 |
|------------|----------------|------------------|--------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 1 | 253-0196 | 1 | GRAPHIC CONTROL PANEL |
| 2 | 250-0367 | 1 | SUB PANEL METAL S/F UP |
| 3 | 253-0031 | 12 | SPACER, WICO SWITCH |
| 4 | 510-0023 | 6 | ASSEMBLY SWITCH WICO |
| 5 | 240-0111 | 1 | BUTTON PLGR BLUE |
| 6 | 240-0006 | 1 | BUTTON PLGR RED |
| 7 | 240-0009 | 4 | BUTTON PLGR YEL |
| 8 | 800-3130 | 1 | ASSY HARN PLAYER CONTROL |
| 9 | 280-0327 | 2 | BASE TIE WRAP |
| 10 | 280-0005 | 2 | CABLE TIE |



Control Panel
800-3120

assembly linear power supply

| PARTS LIST | | | DWG NO. 800-0146 |
|------------|----------------|------------------|--------------------------------------|
| Item # | Gremlin Part # | Qty Per Assembly | Description |
| 1 | 211-0005 | 7 | CONN CRIMP LOCK |
| 2 | 211-0017 | 1 | CONN FEM QUICK $\frac{1}{4}$ |
| 3 | 211-0042 | 5 | CONN SOCKET AMP |
| 4 | 211-0059 | 1 | CONN PLUG 3 PIN AMP |
| 5 | 212-0016 | 1 | CONN FEM 10 PIN |
| 6 | 250-0433 | 1 | HEAT SINK PWR SPLY ISOL |
| 7 | 250-0434 | 1 | CHASSIS PWR SPLY ISOL |
| 8 | 280-0005 | 4 | CABLE TIE |
| 9 | 280-0014 | 6 | STAND OFF CLIPS |
| 10 | 280-0117 | 1 | TAB, RIVET |
| 11 | 560-0054 | 1 | XFMR ISOL |
| 12 | 800-0128 | 1 | P.C. ASSY GM PWR SPLY |
| 13 | | 4 | RIVET POP 3/16 |
| 14 | | 8 | SCR MACH PN HD #4-40 X $\frac{1}{4}$ |
| 15 | | 6 | SCR SHT METAL #6 X $\frac{1}{2}$ |
| 16 | | 4 | WASHER FLAT #10 |
| 17 | | 6 | TRANSISTOR INSULATOR |
| 18 | 211-0043 | 1 | CONN PLUG 2 PIN AMP |
| 19 | 280-0323 | 2 | ELECTRIC TAP SPLICE |
| 20 | 600-0079 | 6" | 2 COND ZIP CORD |



Assembly Linear Power Supply
800-0146

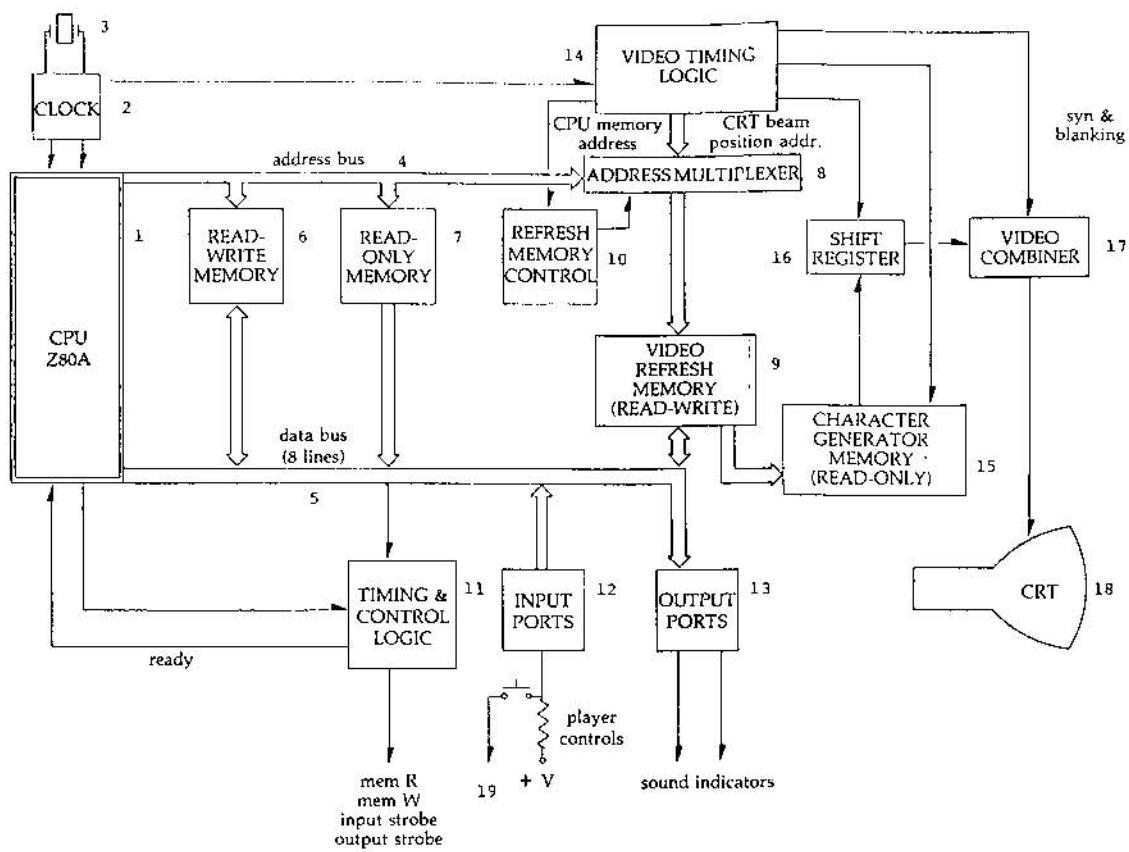


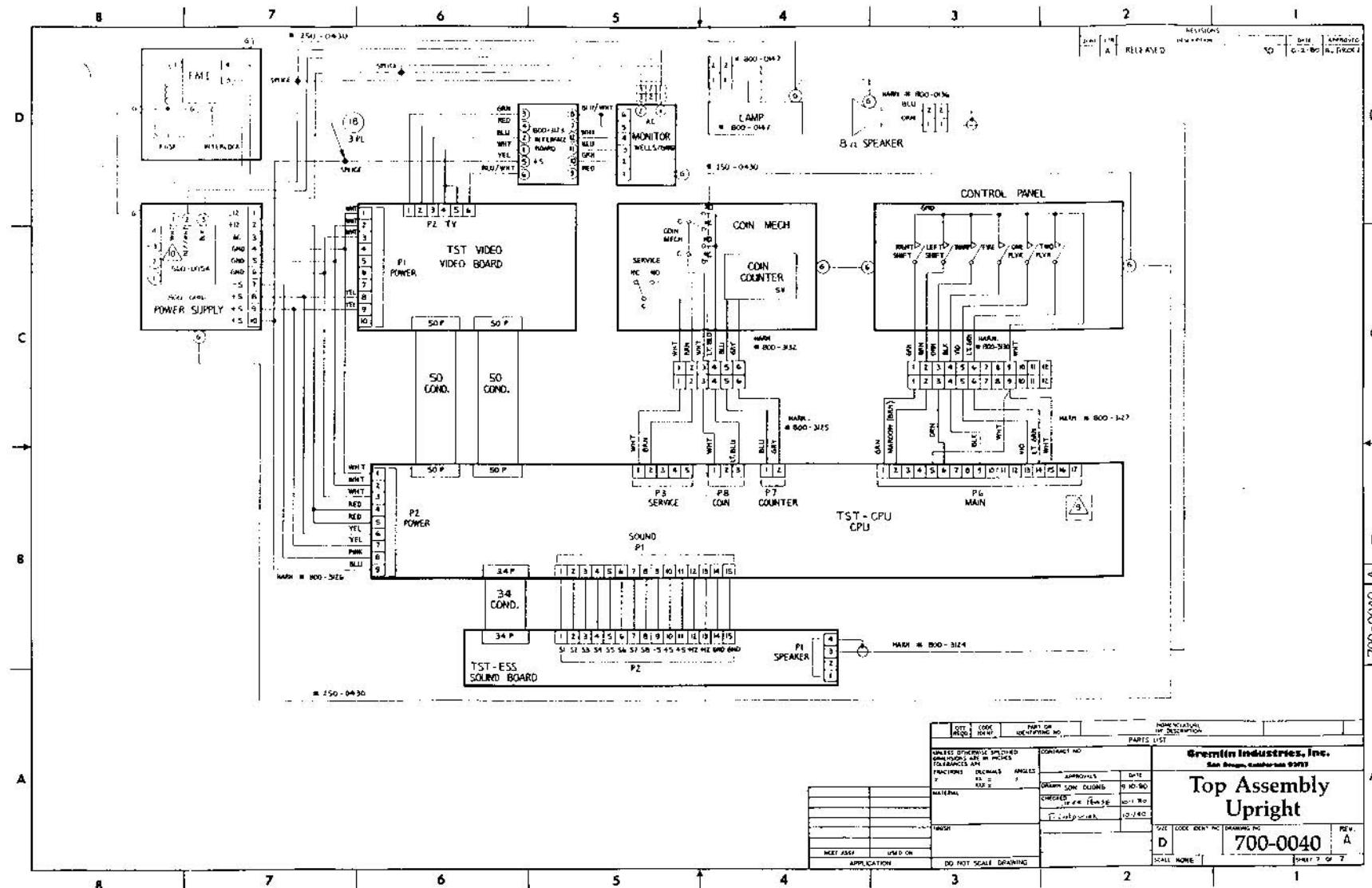
recommended spare parts

| Gremlin Part # | Description | Quantities Per 10 Games |
|----------------|--------------------------------|----------------------------|
| 130-0001 | Speaker | 1 |
| 130-0002 | speaker cover | 2 |
| 200-0019,21/22 | color monitor | 1 |
| 220-0035 | lock (coin door) | 2 |
| 220-0066 | coin mechanism | 2 |
| 240-0006 | red button | 5 |
| 240-0009 | yellow button | 5 |
| 240-0111 | blue button | 5 |
| 250-0034 | spring retainer | 5 |
| 250-0285 | front cash door | 1 |
| 253-0104 | panel monitor | 1 |
| 253-0197 | panel logo S/F | 2 |
| 253-0196 | control panel graphics S/F | 1 |
| 390-0019 | fluorescent lamp | 1 |
| 420-0532 | interior graphics S/F | 1 |
| 420-0533 | manual S/F | 2 |
| 420-0486 | manual electrohome monitor | 1 |
| 510-0051 | switch pushbutton slide | 1 |
| 510-0023 | WICO switch assembly | 5 |
| 514-0001 | 2A fuse (AC junction box) | 5 |
| 560-0054 | game transformer | 1 |
| 230-0013 | 8.00 MHZ crystal | 3 |
| 834-0041 | video interface board | 1 |
| 514-0002 | 3A fuse (power supply board) | 5 |
| 514-0006 | 1.5A fuse (power supply board) | 5 |
| 230-0032 | 20.160 MHZ crystal | 3 |
| 316-0767 | TST 5E Eprom (CPU) | 1 |
| 316-0768 | TST 5F Eprom (CPU) | 1 |
| 316-0769 | TST 5H Eprom (CPU) | 1 |
| 316-0770 | TST 5I Eprom (CPU) | 1 |
| 316-0771 | TST 5J Eprom (CPU) | 1 |
| 316-0772 | TST 5K Eprom (CPU) | 1 |
| 316-0773 | TST 5M Eprom (CPU) | 1 |
| 316-0774 | TST 5N Eprom (CPU) | 1 |
| 316-0775 | TST 20 Eprom (sound) | 1 |
| 316-0776 | TST 5K Eprom (video) | 1 |
| 316-0777 | TST 6K Eprom (video) | 1 |
| 313-0036 | MB3712 IC (linear-sound) | 3 |
| 315-0069 | 8020 IC (ram-video) | 3 |
| 315-0071 | MB7063 IC (ram-video) | 3 |
| 316-0778 | 4I-A Prom (video) | 2 |
| 316-0779 | 3N-A Prom video | 2 |

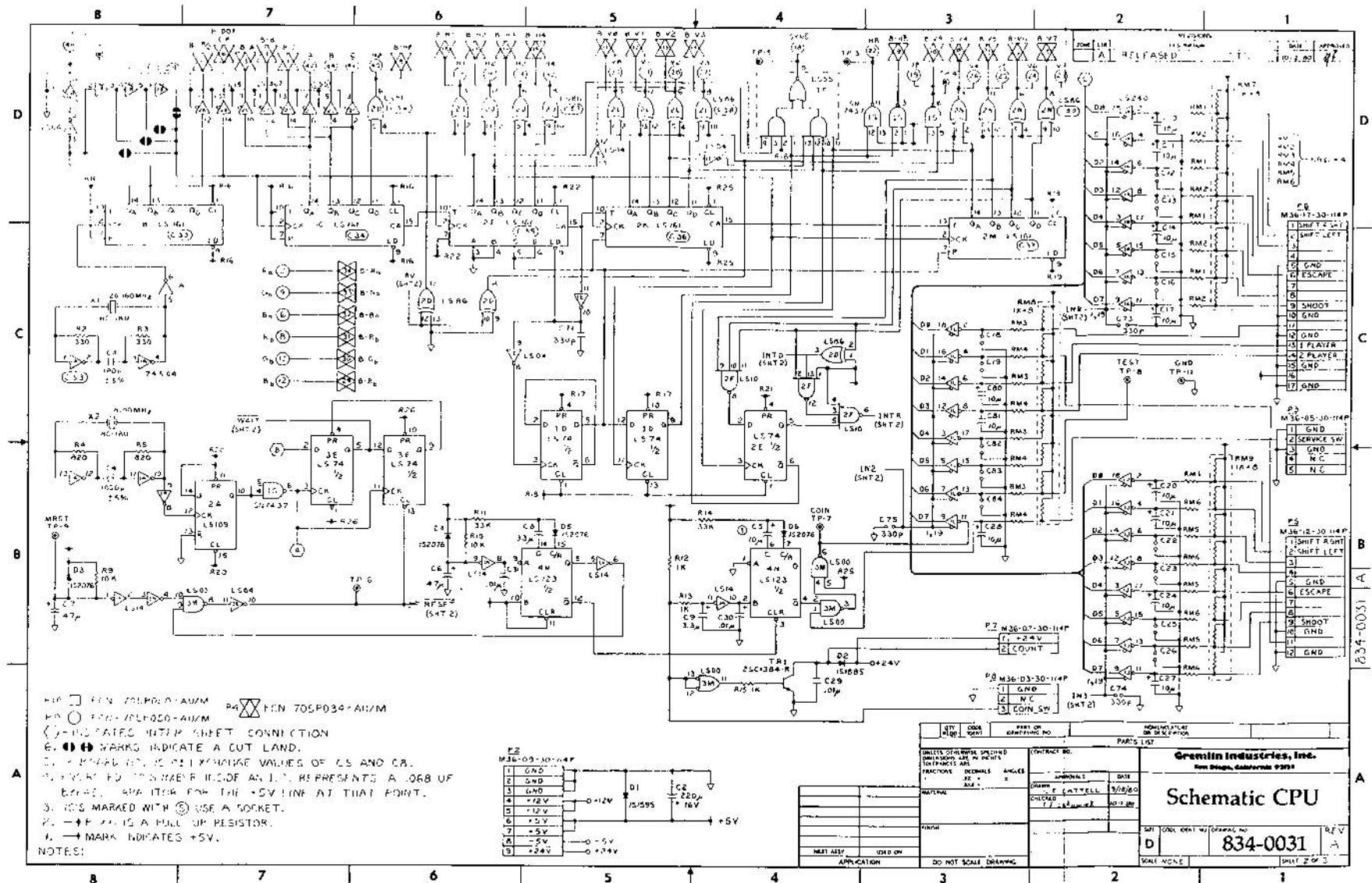
BLOCK DIAGRAM: Refer to schematics
for parts that make up this diagram.

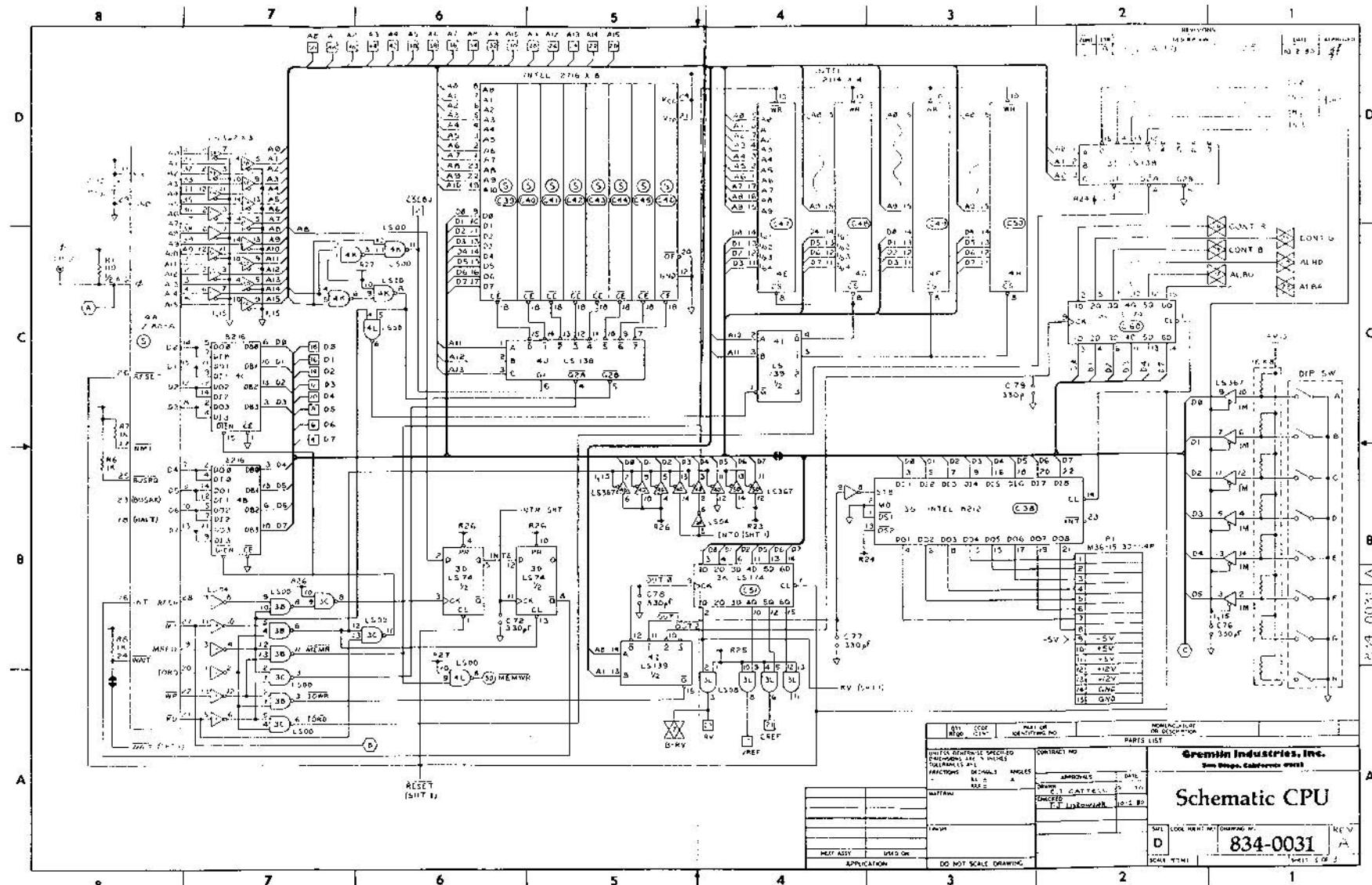
1. Logic Board 4A.
2. Logic Board 1A, 1G, and 2A.
3. Logic Board 8.00 MHZ Crystal,
20.160 MHZ Crystal.
4. Logic Board A0 through A15 on
Z80, buffered by 5B, 5C, and 5D.
5. D0 through D7 on Z80, buffered by
4B and 4C.
6. Logic Board 4E, 4F, 4G, and 4H.
7. Logic Board All Eproms.
8. Logic Board 3I, 4I and 4J; Video
Board 4B, 5A, and 6A.
9. Video Board 5B, 5C, 5D, 5E, 6B, 6C,
6D, 6E, 6G and 6H.
10. Video Board 4B and 5A; Logic Board
3A, 3B, 4A, 4L, and 6A.
11. Logic Board 3A, 3B, 3I, 4A, and 4L.
12. Logic Board 1J, 1K, and 1L.
13. Logic Board 1G, 2B, 2C, 2D, 2J, 2L,
2N, 3G, and 3J.
14. Logic Board 1A, 1B, 1C, 1D, 1E, 1F,
1G, 2B, 2C, 2D, 2E, 2F, 2I, 2J, 2K,
2L, 2M, and 2N.
15. Video Board 5K and 6K.
16. Video Board 3H, 4H, 4N, 5M, and
6M.
17. Video Board 1A and 3N.
18. Monitor.
19. Player controls.

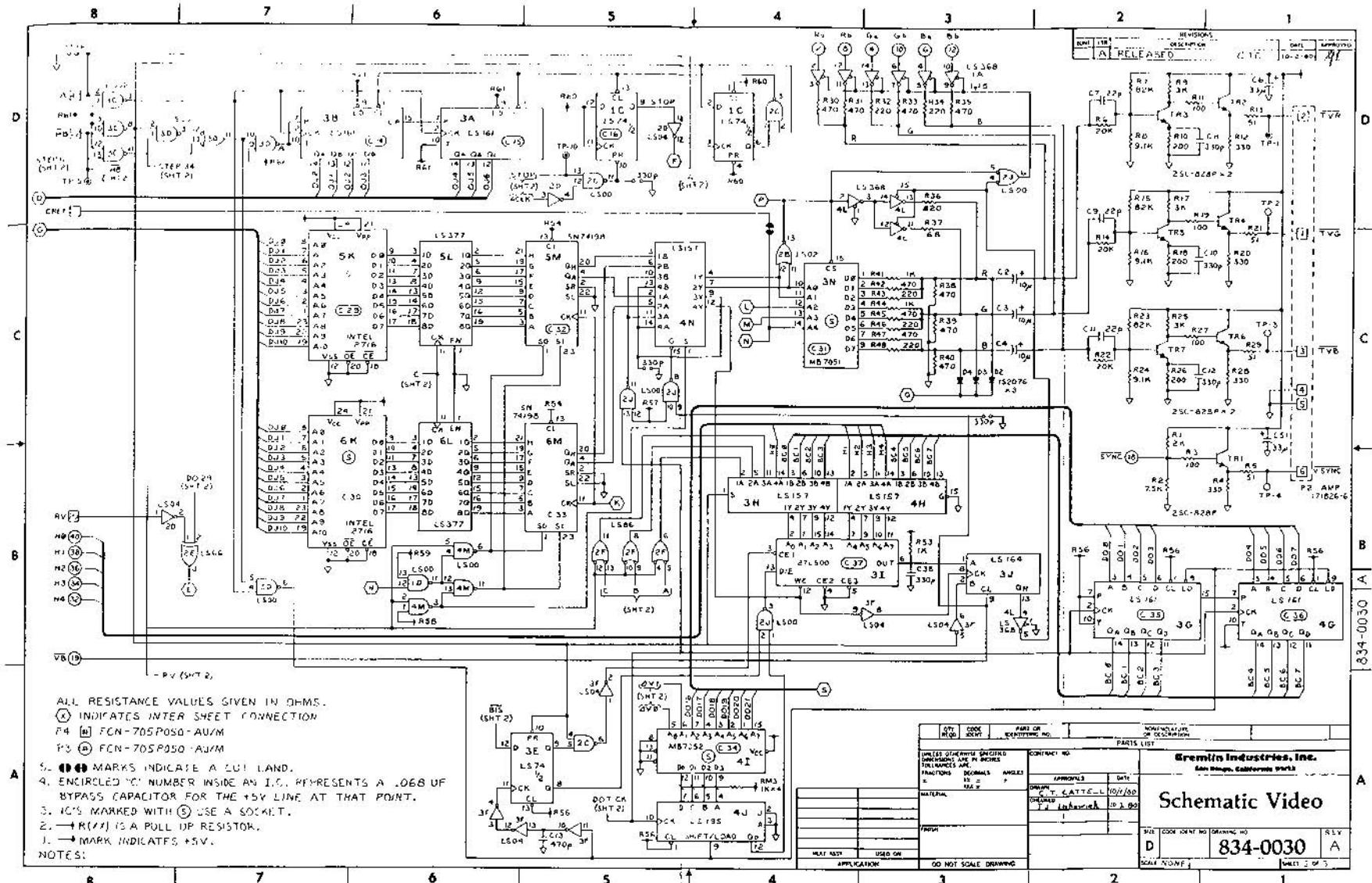




| LINE NO. | CODE | COMP. | PART NO. | DESCRIPTION |
|---|----------|-------|-------------|-------------|
| NOTES: DIFFERENCES SHOWN TOLERANCES ARE IN THOUSANDS OF AN INCHES FRACTIONS IN EIGHTS | | | | |
| ANGLES IN DEGREES KOD X | | | | |
| CONTRACT NO. APPROVALS DATE DRAWN BY CHECKED BY CIRCUIT DESIGNER TANISH | | | | |
| PARTS LIST | | | | |
| Gremlin Industries, Inc. San Diego, California 92117 | | | | |
| Top Assembly Upright | | | | |
| DATE | CODE | COMP. | DRAWING NO. | REV. |
| D | 700-0040 | | A | |
| SCALE: 1/4 INCH = 1 FT | | | | |
| PAGE 2 OF 2 | | | | |







ALL RESISTANCE VALUES GIVEN IN OHMS.

INDICATES INTER SHEET CONNECTION

F4 FCN-705P050-AU/M

P3 FCN-705P950-AJ/M

- MARKS INDICATE A CUT LAND.

- 1. ENCIRCLED 'C' NUMBER INSIDE AN I.C. REPRESENTS A .068 UF BYPASS CAPACITOR FOR THE +5V LINE AT THAT POINT.
 - 2. IC'S MARKED WITH \oplus USE A SOCKET.
 - 3. $\rightarrow R(\#)$ IS A PULL UP RESISTOR.
 - 4. \rightarrow MARK INDICATES +5V.

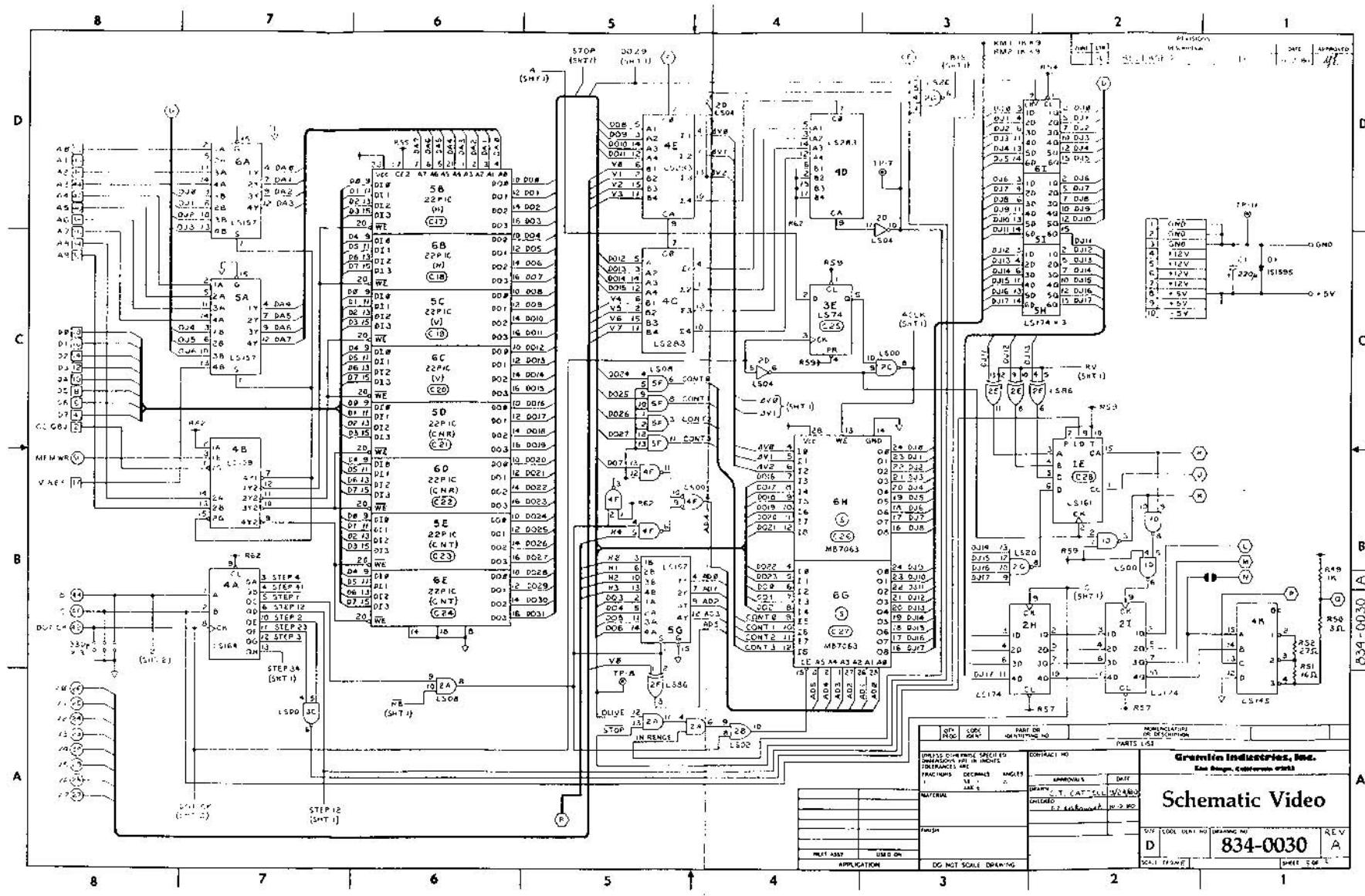
51

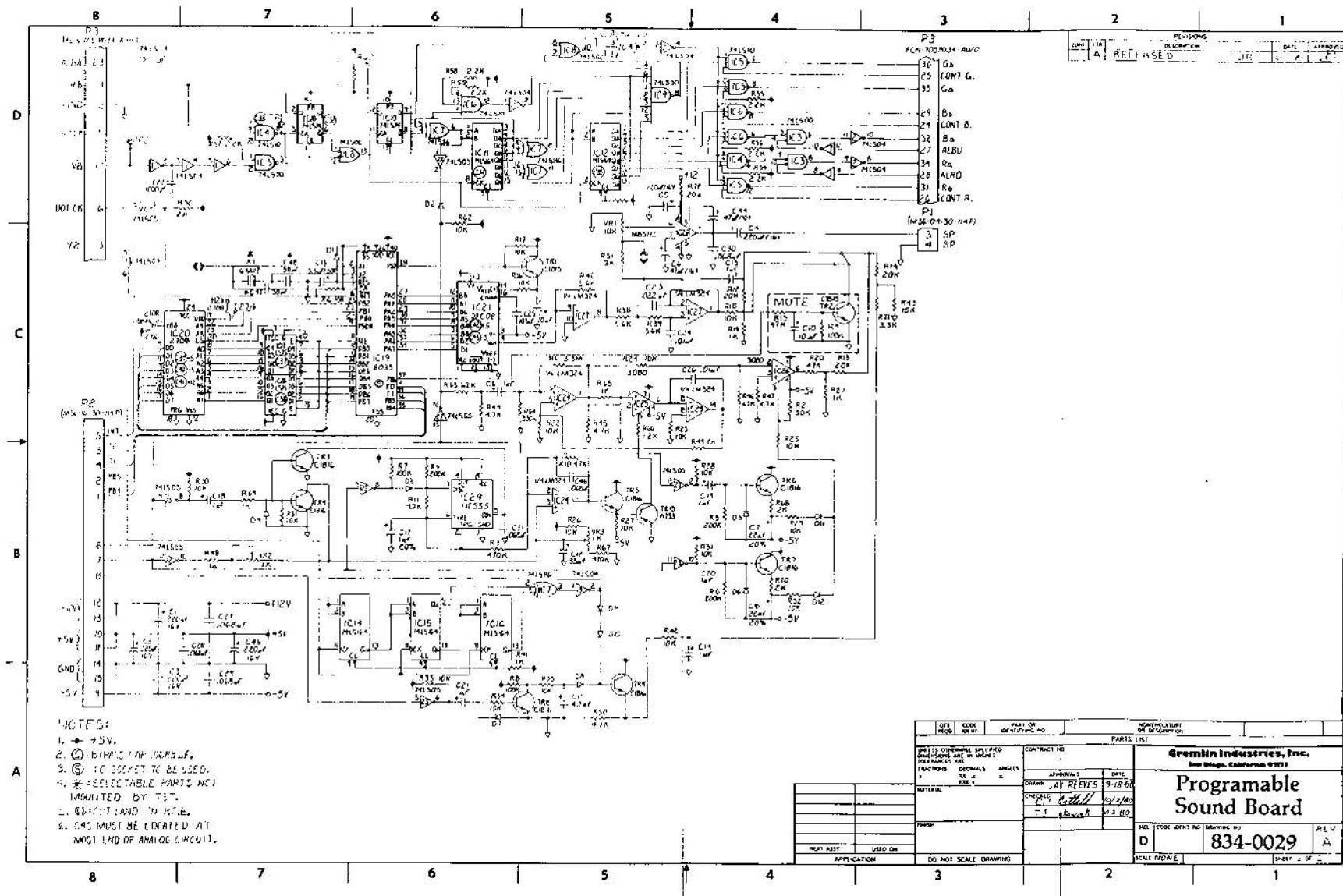
Gremitt Industries, Inc.
401 River, Coloma, Mich.

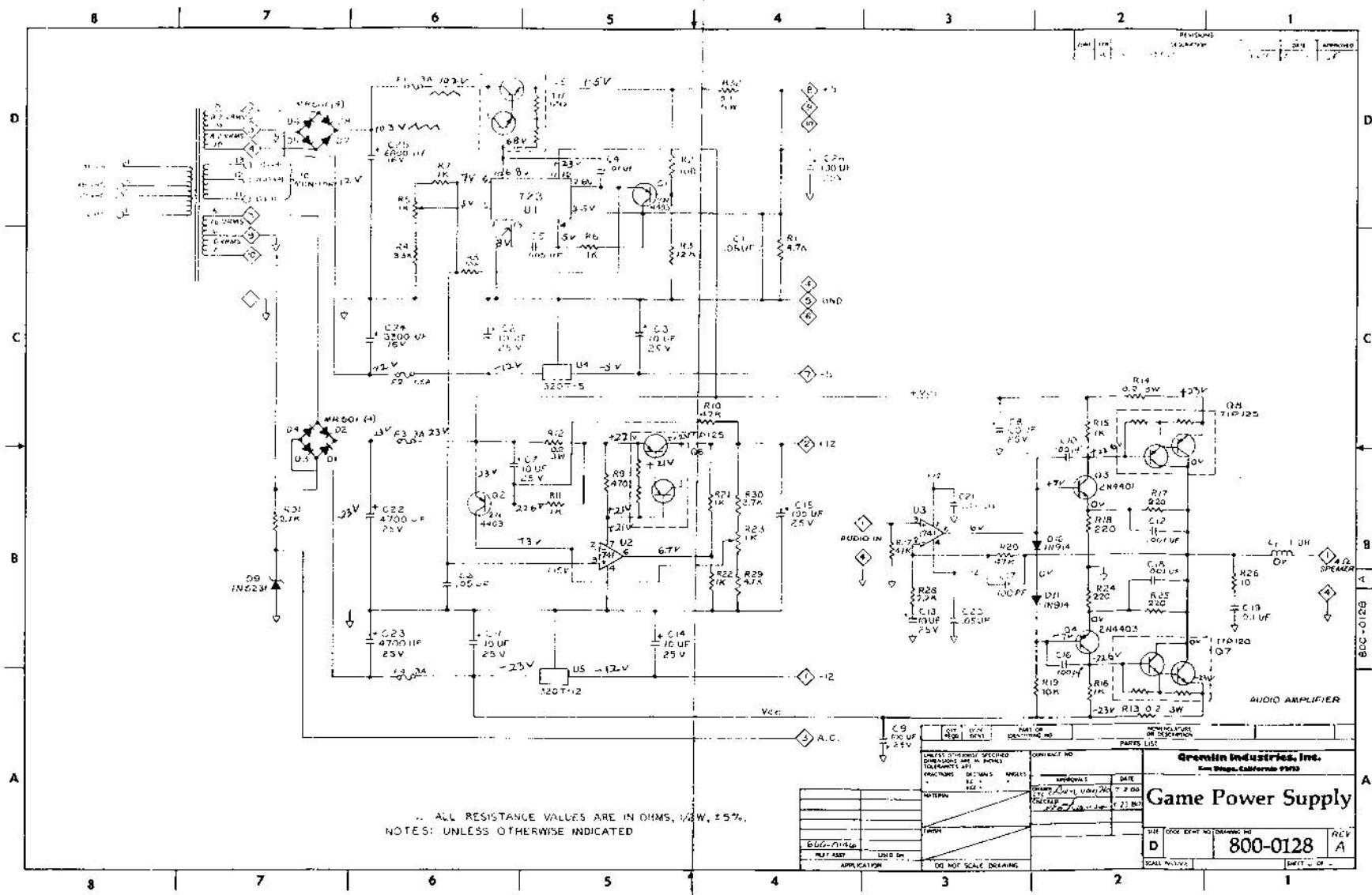
Schematic Video

DOC IDENT NO: DRAWING NO:

834-0030





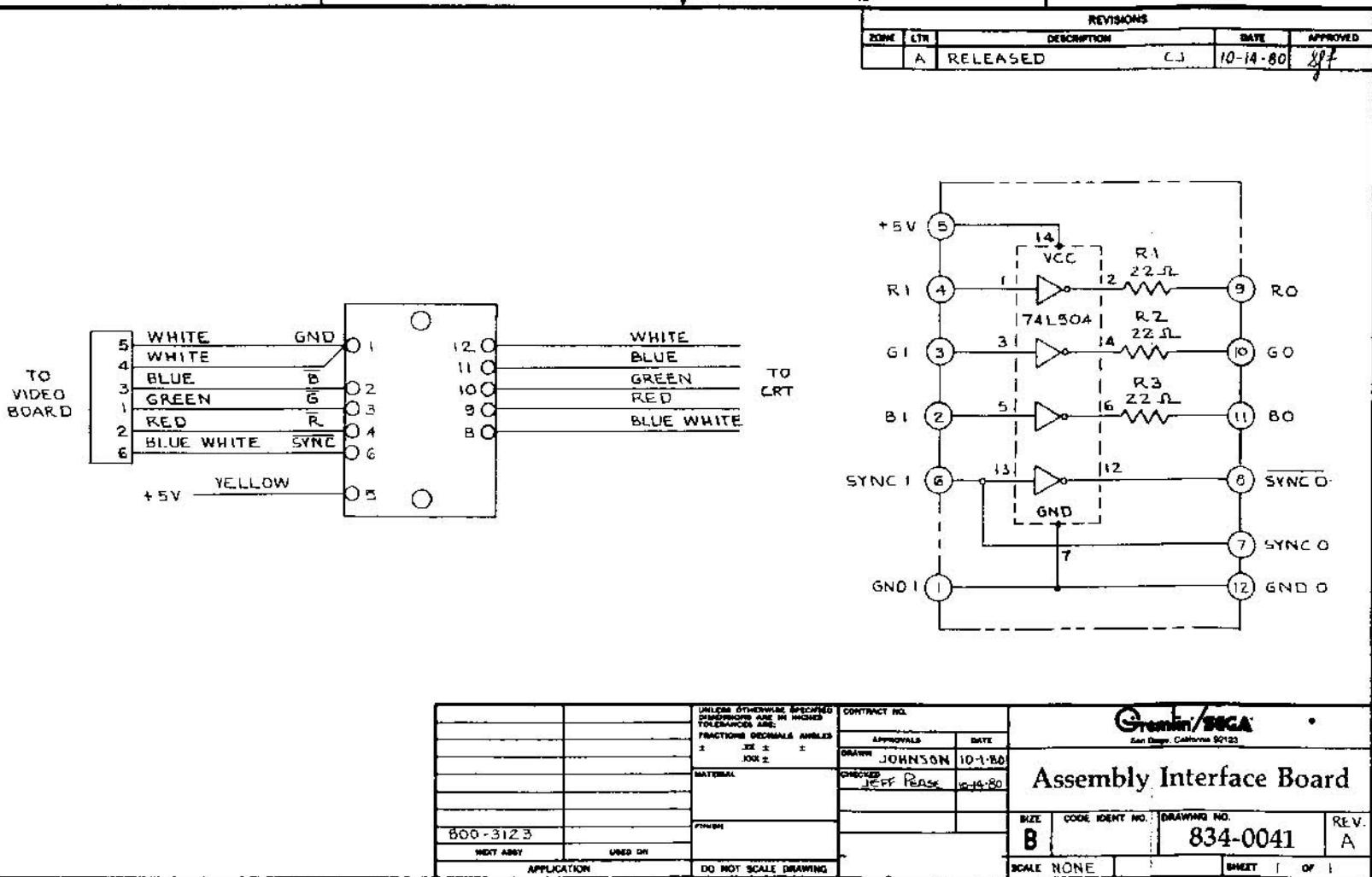


4

3

2

1



4

3

2

1